Founded in 1976, Samtec is much more than just another connector company. We put people first, along with a commitment to exceptional service, quality products and innovative technologies that take the industry further faster. This is enabled by our unique, fully integrated business model, which allows for true collaboration and innovation without the limits of traditional business models.

We believe that taking care of our customers and our employees is paramount in how we approach our business, and this belief is deeply ingrained throughout Samtec worldwide.

INNOVATIVE TECHNOLOGIES

At Samtec, integration leads to innovation. We are leading the way in high-performance system design and support for complete system optimization from SILICON-TO-SILICON™. Samtec is positioned to produce solutions quickly, with higher densities, faster speeds and smaller footprints to meet the demands of next generation systems.

From standard cataloged products to unique high-performance design, Samtec’s SOLUTION BLOCKS are designed to support any interconnectivity need, regardless of application, performance requirements or environment.

SUDDEN SERVICE®

Samtec is the service leader in the industry, offering unmatched technical support, free product samples and access to online resources, and innovative online tools to help streamline the design process.
HIGH-SPEED BOARD-TO-BOARD
OPEN-PIN-FIELD ARRAYS | GROUND PLANE STRIPS | EDGE CARDS | ULTRA-MICRO | BACKPLANE

RUGGED/POWER
ULTRA RUGGED | BLADE POWER | RUGGED I/O | BOARD-TO-BOARD | DISCRETE WIRE

FLEXIBLE STACKING
LOW PROFILE | PASS-THROUGH | ONE-PIECE | SKYSCRAPERS | SHROUDED HEADERS | IDC SYSTEMS
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High-Speed Edge Card Connectors
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Micro Coax & Twinax Cable 120-121
SEARAY™ High-Density System 122-123
FireFly™ Copper Micro Flyover System™ 124
PCI Express® 4.0 & 5.0 Systems 125-126
Generate™ High-Speed Test Cable 127
Additional High-Speed Cable Assemblies 128

General Policy Statement: Unless otherwise agreed by Samtec in writing, all sales of Samtec products are subject to Samtec’s Terms and Conditions of Sale located at https://www.samtec.com/about/legal#samtec terms. Federal Supply Code: 55322
Samtec’s integrated approach provides high-level design and development of advanced interconnect systems and TECHNOLOGIES, along with industry-leading expertise that allows us to offer effective strategies and support for optimizing the entire signal channel of high-performance systems.

Samtec is structured like no other company in the interconnect industry. We work in a fully integrated capacity that enables true collaboration and results in uniquely innovative PRODUCTS because our technology teams are not limited by the boundaries of traditional business units.
As bandwidth, scale and power requirements continue to challenge conventional engineering methods, we want to help optimize the landscape of your entire system - and develop solutions, together.

Samtec’s industry-leading signal integrity expertise, full system optimization strategies and, innovative products and technologies help address the challenges of next gen data transmission for a path to 224 Gbps and beyond.
Samtec’s Sudden Service® provides unmatched global service, free access to data and industry leading tools, along with engineering support, to help you design, develop, test and deliver the best solution for any complex application.

AWARD-WINNING SERVICE

#1 in Bishop’s Customer Survey of the Electronic Connector Industry.

Samtec has been consistently rated as the #1 connector company in North America, Europe and Asia. This is the highest overall rating in the Bishop & Associates’ U.S., Europe and Asia Customer Surveys of the Electronic Connector Industry.
UNMATCHED LEAD-TIMES
Innovative Programs & Systems Enable Deliveries in Days, Not Weeks.

Reserve
SHIPS TOMORROW
This designation allows customers to quickly and easily identify availability of over 200,000 of Samtec’s most popular connectors and cables - guaranteed to ship in 1-day.
Look for the Reserve badge throughout samtec.com to quickly determine if your part number is eligible, along with current availability, quantity breaks and pricing. Hundreds of part numbers are being added daily!

24 HOUR
SUDDEN SAMPLE
Free product samples, shipped in 24-hours or less have been a cornerstone of Samtec Sudden Service® since the company was founded. Visit samtec.com to quickly request your sample.

2 DAYS
WORLD DIRECT
An innovative shipping program that bridges the gap between manufacturing facilities and customers, allowing for manufacturing flexibility without increased costs, and with even faster lead-times. Contact ecustomerservice@samtec.com to learn more.

24/7 WORLDWIDE ACCESS
Samtec is the Electronics Industry’s Service & Technology Leader.

Technical Support
Signal Integrity Group: sig@samtec.com
Application Support Group: asg@samtec.com
Interconnect Processing Group: ipg@samtec.com

Supply Chain Support
MySamtec™ Real-Time Account Access: account.samtec.com
Personal Account Managers & CSRs: ecustomerservice@samtec.com
Upfront, Aggressive 24-Hour Quotes: pricing@samtec.com
www.SAMTEC.com

ONLINE TOOLS  Find, Design & Validate Your Solution

PICTURE SEARCH

Browse through a highlight reel of Samtec’s most popular products to find the ideal solution for your application, view specifications, check availability, order samples and more. Visit samtec.com/picturesearch.

SOLUTIONATOR®

Quickly build mated connector sets or design full cable assemblies using a wide variety of user-defined search parameters and filters, view specs and order samples.

- Samtec.com/hsb2b-solutionator
- Samtec.com/cablebuilder
- Samtec.com/hsb2b-solutionator
- Samtec.com/flex-solutionator
- Samtec.com/optics-solutionator
- Samtec.com/dw-cablebuilder
Samtec is committed to the continuous evolution of our award-winning website, providing customers with innovative design tools, technical resources and support needed to make finding, designing and ordering the right product as easy and streamlined as possible.

**DOWNLOADS**

**3D Models**
Quickly configure, preview and download models in more than 150 different formats, including AutoCad, Solid Edge, Inventor and many more.

**PCB Footprint / eCAD Models**
Instantly view, download and design with over 200,000 ready-to-use eCAD models. These detailed models have been formatted to work with leading schematic captures and include accurate assembly, silkscreen and 3D features.

**Test Reports**
Samtec provides immediate access to a variety of testing and qualification reports for our products, including high-speed characterization, thermal, frequency and time domain, Extended Life Product™, Severe Environment Testing, and others.

**Technical Library**
Samtec's online Technical Library contains a wealth of resources, including Prints & Specifications, White Papers, Application Notes, Test Reports, Product Videos, Design Guides, Processing Information and much more.

**mysamtec™**
Samtec’s user-friendly eCommerce platform allows you to quickly and easily check product availability and pricing, as well as place and manage your orders online.
MODIFIED & CUSTOM SOLUTIONS

With dedicated Application Specific Product engineers and technicians, Samtec is open to customizing interconnects spanning every product category we offer, which includes both simple modifications as well as completely new and custom designs.

INDUSTRY-LEADING SUPPORT & EXPERTISE

- Full engineering, design and prototype support
- Design, simulation and processing assistance
- Dedicated Application Specific Product engineers and technicians
- Industry-leading Customer Service
- Quotes and samples turned around in 24 hours
- Flexible, quick-turn in-house manufacturing
- Customer specific testing - AS9102 FAIs available
- ITAR compliant with U.S. based manufacturing
- Contact the Application Specific Products Group at asp@samtec.com to discuss your application

EXPRESS MODIFICATIONS & ENGINEERED CUSTOMS

- Up to 50 µ" Gold and Tin Lead plating available
- Polarized positions
- Modified stack heights, latching and screw downs
- Modified contacts, bodies, stamping, plating, wiring, molding and much more
- Ruggedizing features including strain relief, plastic housings, screw downs, latches, locks, etc.
- Mix-and-match cable end options for application specific requirements
- Many non-cataloged cable standards available, including 75 Ω micro coax & high-density twinax solutions
- Solutions for Optics in extreme environments: Samtec MIL-coat protected, salt-fog impenetrable, mitigation for tin whiskers, fungal resistant, extreme shock and vibration, full support for liquid immersion cooling

Visit samtec.com/custom for details.
HIGH-SPEED HIGH-DENSITY ARRAYS

EXTREME DENSITY • HIGH-PERFORMANCE • MAXIMUM DESIGN FLEXIBILITY

16-17 NOVARAY® EXTREME PERFORMANCE ARRAYS (NVAM, NVAF)

18-19 ACCELERATE® HP HIGH-PERFORMANCE ARRAYS (APM6, APF6)

20-21 ACCELERATE® HD HIGH-DENSITY ARRAYS (ADM6, ADF6)

22-23 ACCELERATE® MP POWER/SIGNAL ARRAYS (UDM6/UDF6)

24-27 SEARAY™ 1.27 mm PITCH OPEN-PIN-FIELD ARRAYS (SEAM, SEAF)

28-29 SEARAY™ 0.80 mm PITCH OPEN-PIN-FIELD ARRAYS (SEAM8, SEAF8)

30-31 LP ARRAY™ LOW PROFILE ARRAYS (LPAM, LPAF)

32 SUPERNOVA™ LOW PROFILE COMPRESSION INTERPOSERS (GMI)
EXTREME PERFORMANCE HIGH-DENSITY ARRAYS
(0.80 mm) .0315" x (1.80 mm) .071" PITCH

FEATURES & BENEFITS
- 112 Gbps PAM4 per channel
- 48 fully shielded differential pairs per square inch
- 4.0 Tbps aggregate data rate - 9 IEEE, 400G channels
- Extremely low crosstalk beyond 40 GHz
- Incredibly tight impedance control
- Minimal variance in data rate as stack height increases
- Utilizes 40% less space with the same data throughput as compared to traditional arrays
- PCIe® 6.0/CXL 3.1 capable

KEY SPECIFICATIONS (NVAM/NVAF)

<table>
<thead>
<tr>
<th>TOTAL PAIRS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>WORKING VOLTAGE</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 32 pairs</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>2.1 A per pin (signal) 9.6 A per pin (ground)</td>
<td>200 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.

samtec.com/NovaRay

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Total Pairs  
Insulator Material  
Contact Material  
Plating Operating Temp Range  
Current Rating  
Working Voltage  
Lead-Free Solderable

- **NVAM**
  - Board Mates: NVAF
  - Standoffs: GPSO

- **NVAF**
  - Board Mates: NVAM
  - Standoffs: GPSO

**Mated Heights**

<table>
<thead>
<tr>
<th>NVAF Lead Style</th>
<th>NVAM Lead Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>02.0</td>
<td>02.0</td>
</tr>
<tr>
<td>05.0</td>
<td>05.0</td>
</tr>
<tr>
<td>07.0</td>
<td>07.0</td>
</tr>
</tbody>
</table>

*A: Processing conditions will affect mated height.

**Notes:**
- Some sizes, styles and options are non-standard, non-returnable

---

**Aggregate Data Rate (NRZ)**

<table>
<thead>
<tr>
<th>Gbps</th>
<th>1 Bank</th>
<th>2 Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>448</td>
<td>2 Row</td>
<td>4 Row</td>
</tr>
<tr>
<td>672</td>
<td>3 Row</td>
<td>4 Row</td>
</tr>
<tr>
<td>896</td>
<td>2 Row</td>
<td>3 Row</td>
</tr>
<tr>
<td>1344</td>
<td>16 Pairs</td>
<td>4 Row</td>
</tr>
<tr>
<td>1792</td>
<td>24 Pairs</td>
<td>32 Pairs</td>
</tr>
</tbody>
</table>

**Notes:**
- Some sizes, styles and options are non-standard, non-returnable
ACCELRATE® HP

HIGH-PERFORMANCE ARRAY SYSTEM
(0.635 mm) .025" PITCH

FEATURES & BENEFITS

- Flexible open-pin-field and cost optimized, extreme performance solution
- Low profile 5 mm and up to 10 mm stack heights
- 0.635 mm pitch
- Four row design with up to 400 total pins; roadmap to 1,000+ pins
- Data rate compatible with PCIe® 6.0/CXL™ 3.1 and 100 GbE
- In Development: 6, 8 and 10 rows, additional position counts

KEY SPECIFICATIONS (APM6/APF6)

<table>
<thead>
<tr>
<th>TOTAL PINS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 - 400</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>1.2 A (4 pins powered)</td>
<td>150 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.

Right-angle connector (samtec.com/APF6-RA)

APF6 Series; 120 pins
SERIES - NO. OF POSITIONS - LEAD STYLE - PLATING OPTION - NO. OF ROWS - OPTION - "X"R

APM6
Terminal

APF6
Socket

-020, -040, -060, -100 (per row)

-064 (per row) (APM6 & -01.9 lead style only)

-01.5 = 1.5 mm (APM6 only)

-01.9 = 1.9 mm (APM6-064 only)

-06.5 = 6.5 mm (APM6 only)

-03.5 = 3.5 mm (APF6 only)

-04 = Four Rows

(Leave blank for no alignment pin)

Leads:

-TR = Tape & Reel

- FR = Full Reel

Tape & Reel

(must order max. quantity per reel; contact Samtec for quantity breaks)

Notes:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?APF6

APF6
Board Mates:
APF6, APF6-RA

Standoffs:
GPSO

View complete specifications at: samtec.com?APF6-RA

MATED HEIGHTS *

<table>
<thead>
<tr>
<th>NO. OF POSITIONS PER ROW</th>
<th>A</th>
<th>LEAD STYLE</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-020</td>
<td>(17.82) .701</td>
<td>-01.5</td>
<td>(3.33) .131</td>
</tr>
<tr>
<td>-040</td>
<td>(30.52) 1.201</td>
<td>-01.9</td>
<td>(3.71) .146</td>
</tr>
<tr>
<td>-060</td>
<td>(43.22) 1.701</td>
<td>-06.5</td>
<td>(8.33) .328</td>
</tr>
<tr>
<td>-064</td>
<td>(45.21) 1.780</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-100</td>
<td>(68.62) 2.701</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Processing conditions will affect mated height.

View complete specifications at: samtec.com?APF6

Notes:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?APM6

MATED HEIGHTS *

<table>
<thead>
<tr>
<th>NO. OF POSITIONS PER ROW</th>
<th>A</th>
<th>LEAD STYLE</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-020</td>
<td>(17.82) .701</td>
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<td>(30.52) 1.201</td>
<td>-01.9</td>
<td>(3.71) .146</td>
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<tr>
<td>-100</td>
<td>(68.62) 2.701</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Processing conditions will affect mated height.

View complete specifications at: samtec.com?APM6

Notes:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?APF6

Right-angle
samtec.com?APF6-RA

Notes:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?APF6

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ACCELERATE® HD

HIGH-DENSITY SLIM BODY ARRAYS
(0.635 mm) .025" PITCH

FEATURES & BENEFITS

• Up to 400 positions in a 4-row design
• 5 mm, 7 mm, 9 mm, 10 mm, 11 mm, 12 mm 14 mm & 16 mm stack heights
• Slim 5 mm width body design
• Edge Rate® contact system optimized for signal integrity performance
• Open-pin-field for grounding and routing flexibility
• Supports 64 Gbps PAM4 (32 Gbps NRZ) applications
• PCIe® 6.0/CXL™ 3.1 capable

KEY SPECIFICATIONS (ADM6/ADF6)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>TOTAL POSITIONS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>WORKING VOLTAGE</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0.635 mm) .025&quot;</td>
<td>40 - 400</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 ºC to +125 ºC</td>
<td>1.4 A per pin (4 pins powered)</td>
<td>155 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SureWare™ ultra rugged guide post standoffs available (GPSO)

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.

samtec.com/AcceleRateHD

F-224 (Rev 20DEC23)

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
### ADM6

**Board Mates:** ADF6  
**Standoffs:** JSO, GPSO

### ADF6

**Board Mates:** ADM6  
**Standoffs:** JSO, GPSO

---

#### Overview

- **Series:** ADM6, ADF6  
- **No. of Positions:** -10, -20, -30, -40, -50, -60, -70, -80, -90, -100  
- **Lead Style:** -01.5, -03.5, -06.5, -07.5, -08.5  
- **Plating Option:** -L, -S, -STL  
- **No. of Rows:** 4  
- **Option:** -TR, -A, -FR

---

#### Lead Style Specifications

**ADF6**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01.5</td>
<td>(2.90) .114</td>
<td>(3.32) .131</td>
</tr>
<tr>
<td>-03.5</td>
<td>(4.90) .193</td>
<td>(5.32) .209</td>
</tr>
<tr>
<td>-06.5</td>
<td>(7.90) .311</td>
<td>(8.32) .328</td>
</tr>
<tr>
<td>-08.5</td>
<td>(9.90) .390</td>
<td>(10.32) .406</td>
</tr>
</tbody>
</table>

**ADM6**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-03.5</td>
<td>(3.23) .127</td>
<td>(3.65) .144</td>
</tr>
<tr>
<td>-07.5</td>
<td>(7.23) .285</td>
<td>(7.65) .301</td>
</tr>
</tbody>
</table>

---

#### Mated Heights

<table>
<thead>
<tr>
<th>ADF6 LEAD STYLE</th>
<th>ADM6 LEAD STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01.5</td>
<td>-01.5</td>
</tr>
<tr>
<td>-03.5</td>
<td>-03.5</td>
</tr>
<tr>
<td>-06.5</td>
<td>-06.5</td>
</tr>
<tr>
<td>-08.5</td>
<td>-08.5</td>
</tr>
</tbody>
</table>

- **ADF6 LEAD STYLE:**
  - -01.5: 0.197 inch (5 mm), 0.276 inch (7 mm), 0.394 inch (10 mm), 0.472 inch (12 mm), 0.551 inch (14 mm), 0.630 inch (16 mm)  
- **ADM6 LEAD STYLE:**
  - -01.5: 0.197 inch (5 mm), 0.276 inch (7 mm), 0.394 inch (10 mm), 0.472 inch (12 mm), 0.551 inch (14 mm), 0.630 inch (16 mm)  

*Processing conditions will affect mated height.

---

#### Notes

- Some sizes, styles, and options are non-standard, non-returnable.

---

View complete specifications at: [samtec.com?ADF6](http://samtec.com?ADF6)  
[View complete specifications at: samtec.com?ADM6](http://samtec.com?ADM6)

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FEATURES & BENEFITS

- Best in class density for power and signal
- Rotated power blades improve performance and simplify breakout region (BOR)
- Open-pin-field design for routing and grounding flexibility
- Low profile 5 mm stack height; up to 16 mm in development
- Up to 8 power and 240 signal positions; additional position counts in development
- 0.635 mm signal pitch
- Supports 64 Gbps PAM4 (32 Gbps NRZ) applications
- PCIe® 6.0/CXL™ 3.1 capable
- Optional alignment pins and weld tabs for a secure connection to the board
- Polarized guide posts for blind mating

KEY SPECIFICATIONS (UDM6/UDF6)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>STACK HEIGHTS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.635 mm (Signal)</td>
<td>5 mm</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ” (1.27 µm) Ni</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
<td>Yes</td>
</tr>
<tr>
<td>6.00 mm (Power)</td>
<td>6 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PCI-SIG®, PCI Express® and the PCIe® design marks are register trademarks and/or service marks of PCI-SIG.

samtec.com/AcceleRateMP

F-224 (Rev 19DEC23)
## UDM6/UDF6 SERIES

**UDM6**

<table>
<thead>
<tr>
<th>NO. OF SIGNAL POSITIONS</th>
<th>NO. OF POWER POSITIONS</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>OPTION</th>
<th>WELD TAB</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>–10, –40</td>
<td>–2, –4</td>
<td>–01.5</td>
<td>(L) = 10 (\mu) m (0.25 (\mu) m) Gold on contact area, Matte Tin on tail</td>
<td>(A) = Alignment Pin</td>
<td>–TH = Through-Hole</td>
<td>(-TR) = Tape &amp; Reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–S = 30 (\mu) m (0.76 (\mu) m) Gold on contact area, Matte Tin on tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>–STL = 30 (\mu) m (0.76 (\mu) m) Gold on contact area, Tin/Lead on solder tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**UDF6**

<table>
<thead>
<tr>
<th>NO. OF SIGNAL POSITIONS</th>
<th>NO. OF POWER POSITIONS</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>OPTION</th>
<th>WELD TAB</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>–10, –40</td>
<td>–2, –4</td>
<td>–03.5</td>
<td>(L) = 10 (\mu) m (0.25 (\mu) m) Gold on contact area, Matte Tin on tail</td>
<td>(A) = Alignment Pin</td>
<td>–TH = Through-Hole</td>
<td>(-TR) = Tape &amp; Reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–S = 30 (\mu) m (0.76 (\mu) m) Gold on contact area, Matte Tin on tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>–STL = 30 (\mu) m (0.76 (\mu) m) Gold on contact area, Tin/Lead on solder tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Some sizes, styles and options are non-standard, non-returnable.

UDM6 – Board Mates: UDF6
Standoffs: GPSO

UDF6 – Board Mates: UDF6
Standoffs: GPSO

View complete specifications at: samtec.com?UDM6
samtec.com/AccleRatemP
HIGH-DENSITY OPEN-PIN-FIELD ARRAYS
(1.27 mm) .050" PITCH

FEATURES & BENEFITS
- Maximum grounding & routing flexibility
- Up to 560 Edge Rate® contacts optimized for signal integrity performance.
- 7 mm to 40 mm stack heights
- Cable mates (SEAC Series) and Jack Screw Standoffs (JSO Series) also available
- Standards: VITA 47, VITA 57.1 FMC, VITA 57.4 FMC+, VITA 74 VNX, PISMO™ 2
- Supports high-speed protocols such as Ethernet, PCI Express®, Fibre Channel & InfiniBand™
- Severe Environment Testing qualified (SEAM/SEAF); aligns with MIL-DTL-55302. Visit samtec.com/set

MAXIMUM GROUNDING & ROUTING FLEXIBILITY

SERIES | INSULATOR MATERIAL | CONTACT MATERIAL | PLATING | OPERATING TEMP RANGE | CURRENT RATING | VOLTAGE RATING | LEAD-FREE SOLDERABLE
--- | --- | --- | --- | --- | --- | --- | ---
SEAM/SEAF | Black LCP | Copper Alloy | Au or Sn over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | 2.7 A (10 pins powered) | 240 VAC | Yes
SEAM-RA/SEAF-RA | Black LCP | Copper Alloy | Au or Sn over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | 1.9 A (10 pins powered) | 260 VAC | Yes
SEAM-GP | Black LCP | Copper Alloy | Au or Sn over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | 2.7 A (10 pins powered) | 240 VAC | Yes
SEAMP/SEAFP | Natural High Temp Nylon | Copper Alloy (SEAMP) | BeCu Alloy (SEAFP) | Au over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | 1.9 A (6 pins powered) | 225 VAC | Not Available
SEAR | Black LCP | Hard Gold Plated | Au over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | Contact Samtec | 240 VAC | Not Available
SEAMI | Black LCP | Copper Alloy | Au or Sn over 50 μ" (1.27 μm) Ni | -55 °C to +125 °C | Not Available | Not Available | Yes

Note: Some lengths, styles and options are non-standard, non-returnable.

samtec.com/SEARAY

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
(1.27 mm) .050" PITCH • SEAM/SEAF SERIES

**SERIES**

<table>
<thead>
<tr>
<th>SEAM Terminal</th>
<th>SEAF Socket</th>
</tr>
</thead>
</table>

**SERIES**

<table>
<thead>
<tr>
<th>SEAM Terminal</th>
<th>SEAF Socket</th>
</tr>
</thead>
</table>

**SPECIFY LEAD STYLE FROM CHART**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>NO. OF ROWS</th>
<th>SOLDER TYPE</th>
<th>A</th>
<th>K</th>
<th>&quot;X&quot; R</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>–02.0 –03.0</td>
<td>–1 = Tin/Lead Alloy Solder Charge</td>
<td>A</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>–05 –06 –08 –10</td>
<td>–2 = Lead-Free Solder Charge</td>
<td>K</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>S</td>
<td>–04 –05 –06 –08 –10</td>
<td>–3 = 30 µ&quot; (0.76 µm) Gold on contact area, Matte Tin on solder tail</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>STL</td>
<td>–04 –05 –06 –08 –10</td>
<td>–10 = Tin/Lead Alloy Solder Charge</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

**MATED HEIGHTS**

<table>
<thead>
<tr>
<th>SEAM LEAD STYLE</th>
<th>SEAF LEAD STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>–02.0</td>
<td>–05.0</td>
</tr>
<tr>
<td>–03.0</td>
<td>–06.0</td>
</tr>
<tr>
<td>–03.5</td>
<td>–06.5</td>
</tr>
<tr>
<td>–06.5</td>
<td>–07.5</td>
</tr>
<tr>
<td>–07.0</td>
<td>–08.5</td>
</tr>
<tr>
<td>–09.0</td>
<td>–10.5</td>
</tr>
</tbody>
</table>

**STANDARDS**

- VITA 47
- VITA 57.1 FMC
- VITA 57.4 FMC+
- VITA 74 VNX
- PISMO™ 2

Visit www.samtec.com/standards for more information.

Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302. Visit samtec.com/set
<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>01</th>
<th>PLATING OPTION</th>
<th>NO. OF ROWS</th>
<th>SOLDER TYPE</th>
<th>RA</th>
<th>OPTIONS</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAM</td>
<td>-20, -30, -40, -50</td>
<td></td>
<td>L</td>
<td>-04</td>
<td>-1</td>
<td>-04</td>
<td>GP</td>
<td>TR</td>
</tr>
<tr>
<td>SEAF</td>
<td></td>
<td></td>
<td>S</td>
<td>-08</td>
<td>-2</td>
<td>-06</td>
<td>GP</td>
<td>FR</td>
</tr>
</tbody>
</table>

**SEAM-RA**

Board Mates: SEAF, SEAF-RA, SEAFP

**SEAF-RA**

Board Mates: SEAM, SEAMP

**SEAM-GP**

Board Mates: SEAF-RA-GP

View complete specifications at: samtec.com/SEAM-RA & samtec.com/SEAF-RA

View complete specifications at: samtec.com/SEAM-GP

**SERIES**

- **SEAM**
  - Right-Angle Terminal
  - SEAM series

- **SEAF**
  - Right-Angle Socket
  - SEAF series

View complete specifications at: samtec.com?SEAM-RA & samtec.com?SEAF-RA

**Note:** Some lengths, styles and options are non-standard, non-returnable.
**SEARRAY™**

(1.27 mm) .050" PITCH • PRESS-FIT & 85 Ω OPEN-PIN-FIELD ARRAYS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>NO. OF ROWS</th>
<th>OPTION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAMP</td>
<td>-10, -20, -30, -40, -50</td>
<td>-02.0</td>
<td>L</td>
<td>-04, -06, -08, -10</td>
<td>-GP</td>
<td>-TR</td>
</tr>
<tr>
<td>Terminal</td>
<td></td>
<td>(SEAMP only)</td>
<td>Gold on contact area, Matte Tin on tail</td>
<td>(SEAMP only)</td>
<td>Guide Post</td>
<td>Tape &amp; Reel</td>
</tr>
<tr>
<td>SEAFP</td>
<td></td>
<td>-05.0</td>
<td>-S</td>
<td>-04, -06 &amp; -08 Rows only</td>
<td>-GP</td>
<td>-TR</td>
</tr>
<tr>
<td>Socket</td>
<td></td>
<td>(SEAEP only)</td>
<td>Gold on contact area, Matte Tin on tail</td>
<td>(SEAEP only)</td>
<td>Guide Post</td>
<td>Tape &amp; Reel</td>
</tr>
</tbody>
</table>

**SEAMP**

Board Mates: SEAF, SEAF-RA-GP, SEAEP

**SEAFP**

Board Mates: SEAM, SEAM-RA, SEAM


### SEAR

**85 Ω Tuned Riser**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>LEAD STYLE</th>
<th>NO. OF ROWS</th>
<th>085</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAR</td>
<td>-40, -50</td>
<td>-10.0</td>
<td>-06, -08, -10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-30.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SEAR**

Board Mates: SEAFC

View complete specifications at: samtec.com?SEAR & samtec.com?SEAMI.

### SEAMI

**85 Ω Tuned Terminal**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>PLATING OPTION</th>
<th>NO. OF ROWS</th>
<th>SOLDER TYPE</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAMI</td>
<td>-40, -50</td>
<td>-L</td>
<td>-08, -10</td>
<td>-1</td>
<td>-TR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 10 μ&quot; (0.25 μm) Gold on contact area, Matte Tin on solder tail</td>
<td></td>
<td>= Tin/Lead Alloy SolderCharge</td>
<td>Tape &amp; Reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-S</td>
<td></td>
<td>-2</td>
<td>-FR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 30 μ&quot; (0.76 μm) Gold on contact area, Matte Tin on solder tail</td>
<td></td>
<td>= Lead-Free Solder Charge</td>
<td>Full Reel Tape &amp; Reel</td>
</tr>
</tbody>
</table>

**SEAMI**

Board Mates: SEAF

View complete specifications at: samtec.com?SEAR & samtec.com?SEAMI.

Note: Some lengths, styles and options are non-standard, non-returnable

samtec.com/SEARAY

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ULTRA HIGH-DENSITY, HIGH-SPEED OPEN-PIN-FIELD ARRAYS
(0.80 mm) .0315" PITCH

FEATURES & BENEFITS

• 0.80 mm (.0315") pitch grid
• 50% board space savings versus .050" (1.27 mm) pitch arrays
• Performance up to 28 Gbps NRZ/56 Gbps PAM4
• Rugged Edge Rate® contact system
• Up to 500 I/Os
• 7 mm and 10 mm stack heights
• Solder charge terminations for ease of processing
• Lower insertion/withdrawal forces
• Severe Environment Testing qualified (SEAM8/SEAF8); aligns with MIL-DTL-55302.

Visit samtec.com/set

KEY SPECIFICATIONS (SEAF8/SEAM8)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAM8</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>1.3 A per pin (10 adjacent pins powered)</td>
<td>220 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>SEAF8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.1 A per pin (10 adjacent pins powered)</td>
<td>240 VAC</td>
<td></td>
</tr>
<tr>
<td>SEAF8-RA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Differential Pair  Single-Ended  Power

MAXIMUM GROUNDING & ROUTING FLEXIBILITY

0.80 mm pitch vs. 1.27 mm pitch
(60 pins shown)

(1.12 mm) .044" Nominal Wipe
SEAF8

Series: SEAM8
- Terminal
- SEAF8
  - Socket

- Series: SEAM8
  - Board Mates: SEAF8
  - Cable Mates: ESCA
  - Standoffs: JSO

- Series: SEAF8
  - Board Mates: SEAM8
  - Cable Mates: ESCA
  - Standoffs: JSO

SEAM8

- Lead Style
  - PLATING OPTION
    - SO2.0
      - 10
      - 20
      - 30
      - 40
      - 50
    - 1

- No. of Rows
  - SO2.0
    - 1
  - SO5.0
    - 3
  - STL
    - 3

- Solder Type
  - RA
    - SO2.0
    - SO5.0
  - GP
    - STL
  - FR
    - SO2.0

- Pin Count
  - 10
  - 20
  - 30
  - 40
  - 50

Notes:
- Some sizes, styles and options are non-standard, non-returnable

Mated Heights*

View complete specifications at: samtec.com?SEAM8

View complete specifications at: samtec.com?SEAF8

View complete specifications at: samtec.com/SEARAY8

 Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
LP ARRAY™
LOW PROFILE OPEN-PIN-FIELD ARRAYS
(1.27 mm) .050" PITCH

FEATURES & BENEFITS
• 4 mm, 4.5 mm, 5 mm stack heights
• Up to 400 I/Os
• 4, 6 and 8 row designs
• .050" (1.27 mm) pitch
• Dual beam contact system
• Solder crimp termination for ease of processing
• Board stacking standoffs available to assist with unmating and reduce risk for component damage on board

KEY SPECIFICATIONS (LPAM/LPAF)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>TOTAL PINS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>CURRENT RATING</th>
<th>WORKING VOLTAGE</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.27 mm x 1.27 mm</td>
<td>Up to 400 I/Os</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>2.2 A per pin (8 adjacent pins powered)</td>
<td>250 VAC</td>
<td>YES</td>
</tr>
</tbody>
</table>

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
(1.27 mm) .050" PITCH • LOW PROFILE OPEN-PIN-FIELD ARRAYS

**SERIES** - **NO. PINS PER ROW** - **LEAD STYLE** - **PLATING OPTION** - **NO. OF ROWS** - **SOLDER TYPE** - **"X"R**

<table>
<thead>
<tr>
<th>Series</th>
<th>No. Pins Per Row</th>
<th>Lead Style</th>
<th>Plating Option</th>
<th>No. of Rows</th>
<th>Solder Type</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPAM</td>
<td>–10, –20, –30, –40, –50 (-08 rows only)</td>
<td>–01.0 = (1.0 mm) .039&quot; (LPAM only)</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on contact area, Matte Tin on solder tail</td>
<td>–04</td>
<td>–K = Polyimide film Pick &amp; Place Pad</td>
<td>–K</td>
</tr>
<tr>
<td>LPAF</td>
<td>Socket</td>
<td>–01.5 = (1.5 mm) .060&quot; (LPAM only)</td>
<td>–S = 30 µ&quot; (0.76 µm) Gold on contact area, Matt Tin on solder tail</td>
<td>–06</td>
<td>–2 = Lead-Free Solder Crimp</td>
<td>–2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–03.0 = (3.0 mm) .118&quot; (LPAF only)</td>
<td></td>
<td>–08</td>
<td>–TR = Tape &amp; Reel</td>
<td>–TR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–03.5 = (3.5 mm) .138&quot; (LPAF only)</td>
<td></td>
<td></td>
<td>–FR = Full Reel Tape &amp; Reel</td>
<td>–FR</td>
</tr>
</tbody>
</table>

View complete specifications at: [samtec.com?LPAM](samtec.com/LPArray)

**MATED HEIGHTS**

<table>
<thead>
<tr>
<th>LPAM Lead Style</th>
<th>LPAF Lead Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>–03.0</td>
<td>–03.5</td>
</tr>
<tr>
<td>–01.0</td>
<td>(4.00) .157</td>
</tr>
<tr>
<td>–01.5</td>
<td>(4.50) .177</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

**Notes:**
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?LPAF](samtec.com/LPAF)
SUPERNOVA™
LOW PROFILE COMPRESSION INTERPOSER

(1.00 mm) .0394" PITCH • GMI SERIES

SPECIFICATIONS
Insulator Material:
Black LCP
Contact Material:
Copper Alloy
Plating:
Au or 50 µ" (1.27 µm) Ni
Current Rating:
.69 A per pin
(10 pins powered)

GMI - POSITIONS PER ROW - STYLE - BOARD SPACING - PLATING OPTION - ROWS
-10, -20, -30 -2 = Dual Compression -1.27 = (1.27 mm), .050" Board Space -G = 10 µ" (0.25 µm) Gold on contact area -10 = Ten Rows

PROCESSING
Lead-Free Solderable:
Yes
SMT Lead Complanarity:
(0.05 mm) .002" (10-20)"*
(0.08 mm) .003" (30)*
*(.004" stencil solution may be available; contact ipg@samtec.com)

GMI Series is an ideal low-cost solution for board stacking, module-to-board or LGA interface

Note:
Some lengths, styles and options are non-standard, non-returnable

samtec.com?GMI

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
JSO SERIES

JSO
Use With:
SEAX, SEAX8, LPAX, LSHM

SPECIFICATIONS
Material: Stainless Steel
Locking Compound: Nylon

<table>
<thead>
<tr>
<th>BOARD STACKER</th>
<th>A</th>
<th>B</th>
<th>BOARD STACK HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>–0415</td>
<td>(4.15)</td>
<td>63</td>
<td>(2.50)</td>
</tr>
<tr>
<td>–0515</td>
<td>(5.15)</td>
<td>203</td>
<td>(3.50)</td>
</tr>
<tr>
<td>–0715</td>
<td>(7.15)</td>
<td>281</td>
<td>(5.50)</td>
</tr>
<tr>
<td>–0815</td>
<td>(8.15)</td>
<td>321</td>
<td>(6.50)</td>
</tr>
<tr>
<td>–1015</td>
<td>(10.15)</td>
<td>400</td>
<td>(8.50)</td>
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<tr>
<td>–1115</td>
<td>(11.15)</td>
<td>439</td>
<td>(9.50)</td>
</tr>
<tr>
<td>–1615</td>
<td>(16.15)</td>
<td>636</td>
<td>(14.50)</td>
</tr>
</tbody>
</table>

ALSO AVAILABLE
MOQ Required
Other heights
Locking compound removed

Note:
Some sizes, styles and options are non-standard, non-returnable.

Components are to be packaged in separate bags unassembled.

APPLICATION
**BOARD-TO-BOARD GUIDE POST STANDOFF**

**GPSO SERIES**

**GPSO**

*Use With: NVAX, APX6, ADX6, UMPX, UDX6*

---

**SPECIFICATIONS**

Locking Compound: Nylon

<table>
<thead>
<tr>
<th>BOARD STACK HEIGHT</th>
<th>A (in.)</th>
<th>B (mm)</th>
<th>C (mm)</th>
</tr>
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<tbody>
<tr>
<td>-0500</td>
<td>0.00</td>
<td>0.477</td>
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<td>0.643</td>
</tr>
<tr>
<td>-0715</td>
<td>0.07</td>
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<td>0.838</td>
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<td>-1115</td>
<td>0.10</td>
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<tr>
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<tr>
<td>-1524</td>
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<td>0.914</td>
<td>0.914</td>
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</tbody>
</table>

**Notes:**

- Standoffs to be used with (1.57 mm) .062” min thick boards.
- Threaded options PCB max thickness of (3.16 mm) .124”.
- Some sizes, styles and options are non-standard, non-returnable.

**APPLICATIONS**

- GPSO mated with ADX6
- GPSO mated with UMPX
- Alignment starts before connectors engage.

**Components are to be packaged in separate bags unassembled. Top and bottom components available for purchase separately, contact Samtec.**

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
HIGH-SPEED MEZZANINE SYSTEMS

25+ Gbps PERFORMANCE • INTEGRAL GROUND PLANE • EDGE RATE® CONTACTS

Q STRIP® INTEGRAL GROUND PLANE INTERCONNECTS
- 0.50 mm (.0197”) Pitch (QTH, QSH)
- 0.80 mm (.0315”) Pitch (QTE, QSE)
- 0.635 mm (.025”) Pitch (QTS, QSS)

Q RATE® SLIM BODY INTEGRAL GROUND PLANE INTERCONNECTS
- 0.80 mm (.0315”) Pitch (QRM8, QRF8)

Q2™ RUGGED INTEGRAL GROUND PLANE INTERCONNECTS
- 0.635 mm (.025”) Pitch (QMS, QFS)
- 0.635 mm (.025”) Pitch Shielded (QMSS, QFSS)

EDGE RATE® RUGGED HIGH-SPEED INTERCONNECTS
- 0.50 mm (.0197”) Pitch (ERM5, ERF5)
- 0.635 mm (.025”) Pitch (ERM6, ERF6)
- 0.80 mm (.0315”) Pitch (ERM8, ERF8)

Q Series® Solutions for Power Applications ................................................................. 43
Q Series® Right-Angle & Edge Mount Systems ............................................................ 44-45
**Q SERIES**

**HIGH-SPEED GROUND PLANE MEZZANINE CONNECTORS**

**FEATURES & BENEFITS**
- Designed for high-speed board-to-board applications where signal integrity is essential
- Q Strip® low profile connectors on 0.50 mm, 0.635 mm and 0.80 mm pitches
- Q Rate® slim connectors with Edge Rate® contacts on 0.80 mm pitch with a 1.20 mm contact wipe
- Q2™ rugged connectors on 0.635 mm pitch with increased insertion depth for rugged applications
- Right-angle, edge mount, EMI shielding and power options
- Differential pair and single-ended routing

**INTEGRAL GROUND / POWER PLANE**
- Surface mount ground plane between two signal rows improves electrical performance
- Significantly reduces row-to-row crosstalk
- Integral metal plane for power to 25 Amps

**Effortless paired**: 25 Gbps & 28 Gbps NRZ

**Extended Life**
10 Year MFG with 30µ" Gold Surface Finish

**Power, Retention & RF Options**
- Precision Board Stacking Standoffs
- Rugged Edge Rate® Contact System
- Differential Pairs Reduce Noise
QTH Board Mates: QSH

QSH Board Mates: QTH

QTH/QSH Cable Mates: HQCD, HQDP

Standoffs: SO

<table>
<thead>
<tr>
<th>QTH LEAD STYLE</th>
<th>A</th>
<th>HEIGHT WITH QSH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(4.27) .168</td>
<td>(5.00) .197</td>
</tr>
<tr>
<td>-02</td>
<td>(7.26) .286</td>
<td>(8.00) .315</td>
</tr>
<tr>
<td>-03</td>
<td>(10.27) .404</td>
<td>(11.00) .433</td>
</tr>
<tr>
<td>-04</td>
<td>(15.25) .600</td>
<td>(16.00) .630</td>
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<tr>
<td>-05</td>
<td>(18.26) .719</td>
<td>(19.00) .748</td>
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<tr>
<td>-06</td>
<td>(24.24) .954</td>
<td>(25.00) .984</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>QTH LEAD STYLE</th>
<th>A</th>
<th>HEIGHT WITH QSH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(4.27) .168</td>
<td>(5.00) .197</td>
</tr>
<tr>
<td>-02</td>
<td>(7.26) .286</td>
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<td>-03</td>
<td>(10.27) .404</td>
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<td>-04</td>
<td>(15.25) .600</td>
<td>(16.00) .630</td>
</tr>
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<td>-05</td>
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<td>(19.00) .748</td>
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<td>-06</td>
<td>(24.24) .954</td>
<td>(25.00) .984</td>
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</table>

<table>
<thead>
<tr>
<th>QTH LEAD STYLE</th>
<th>A</th>
<th>HEIGHT WITH QSH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(4.27) .168</td>
<td>(5.00) .197</td>
</tr>
<tr>
<td>-02</td>
<td>(7.26) .286</td>
<td>(8.00) .315</td>
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<tr>
<td>-03</td>
<td>(10.27) .404</td>
<td>(11.00) .433</td>
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<td>-04</td>
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<td>(16.00) .630</td>
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<tr>
<td>-05</td>
<td>(18.26) .719</td>
<td>(19.00) .748</td>
</tr>
<tr>
<td>-06</td>
<td>(24.24) .954</td>
<td>(25.00) .984</td>
</tr>
</tbody>
</table>

**PROCESSING**

Lead–Free Solderable: Yes

SMT Lead Coplanarity: (0.10 mm) 0.004" max

Contact Material: Phosphor Bronze

Plating: Au or Sn over 50 µ" (1.27 µm) Ni

Current Rating:
- 2 A per pin (2 pins powered)
- 25 A per ground plane

Operating Temp Range:
- -55 °C to +125 °C

Voltage Rating:
- 175 VAC (5 mm Stack Height)

Max Cycles:
- 100

**STANDARDS**

PISMO™ 1: Visit samtec.com/standards for more information.

**Note:** Some lengths, styles and options are non-standard, non-returnable.

**View complete specifications at:** samtec.com/QTH, samtec.com/QSH
QTE Board Mates: QTE
QSE Board Mates: QSE
QTE/QSE Cable Mates: EQCD, EQDP
Standoffs: SO

**SPECIFICATIONS**

- **Insulator Material:** Liquid Crystal Polymer
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating:** Contact: 2 A per pin (2 pins powered), Ground Plane: 23 A per ground plane (1 ground plane powered)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 225 VAC when mated & 5 mm Stack Height
- **Max Cycles:** 100
- **Max Max Cycles:** 100

**PROCESSING**

- **Lead–Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max (020-060)
- **Board Stacking:** For applications requiring more than two connectors contact ipg@samtec.com

View complete specifications at: [samtec.com?QTE](samtec.com?QTE)

---

**QTE PINS PER ROW NO. OF PAIRS**

-020, -040, -060
(40 total pins per bank = –D)

-014, -028, -042
(14 pairs per bank = –D–DP)

**LEAD STYLE**

Specify LEAD STYLE from Chart

**PLATING OPTION**

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **C** = 50 µ" (1.27 µm) Electro-Polished Selective Gold on contact, Matte Tin on tail (passes 10 year MFG testing)

**TYPE**

- **D** = Single-Ended
- **D–DP** = Differential Pair

**OTHER OPTIONS**

- **K** = (7.00 mm) .275” DIA Polyimide Film Pick & Place Pad
- **L** = Latching Option (N/A on –042 & –060 positions)

**“X”R**

Leave blank for Tray Packaging

---

**QSE PINS PER ROW NO. OF PAIRS**

-020, -040, -060
(40 total pins per bank = –D)

-014, -028, -042
(14 pairs per bank = –D–DP)

**LEAD STYLE**

Specify LEAD STYLE from Chart

**PLATING OPTION**

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **C** = 50 µ" (1.27 µm) Electro-Polished Selective Gold on contact, Matte Tin on tail (passes 10 year MFG testing)

**TYPE**

- **D** = Single-Ended
- **D–DP** = Differential Pair

**OTHER OPTIONS**

- **GP** = Guide Post
- **K** = (8.25 mm) .325” DIA Polyimide Film Pick & Place Pad
- **L** = Latching Option (Not available on –042 & –060 positions)

**“X”R**

Leave blank for Tray Packaging

---

Note: Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?QSE](samtec.com?QSE)
QTS Board Mates: QSS
QSS Board Mates: QTS
QTS/QSS Cable Mates: SQCD
Standoffs: SO

SPECIFICATIONS

Insulator Material: Liquid Crystal Polymer
Contact Material: Phosphor Bronze
Plating: Au or Sn over 50 µ" (1.27 µm) Ni
Current Rating: Contact: 1.8 A per pin (2 pins powered)
Ground Plane: 23.1 A per ground plane (1 ground plane powered)
Operating Temp Range: -55 °C to +125 °C
Voltage Rating: 285 VAC
Max Cycles: 100

PROCESSING

Lead–Free Solderable: Yes
QTS SMT Lead Coplanarity: (0.10 mm) .004" max (025-075)
QSS SMT Lead Coplanarity: (0.15 mm) .006" max (075)*
* stencil solution may be available; contact ipg@samtec.com
Board Stacking: For applications requiring more than two connectors contact ipg@samtec.com

View complete specifications at: samtec.com?QTS

View complete specifications at: samtec.com?QSS

Note:
Some lengths, styles and options are non-standard, non-returnable.
### QMS Board Mates:
- **QFS**

### QFS Board Mates:
- **QMS**

### QMS/QFS Cable Mates:
- **6QCD**

### Standoffs:
- **SO, JSOM**

#### SPECIFICATIONS

- **Insulator Material:** Liquid Crystal Polymer
- **Contact & Ground Plane Material:** Phosphor Bronze
- **Plating:** Au over 50 µ" (1.27 µm) Ni (Tin on Ground Plane Tail)
- **Current Rating: Contact:** 2.6 A per pin (2 pins powered)
- **Operating Temp Range:** -25 °C to 125 °C
- **Voltage Rating:** 300 VAC

#### PROCESSING

- **Lead–Free Solderable:** Yes
- **QMS SMT Lead Coplanarity:** (0.10 mm) .004" max
- **QFS SMT Lead Coplanarity:** (0.10 mm) .004" max
- **Board Stacking:** For applications requiring more than two connectors contact ipg@samtec.com

#### STANDARDS

- **SUMIT™ PCI/104-Express™ PCI/104-Express™ OneBank**
- **Visit samtec.com/standards for more information, including mated heights and complete part numbers.**

#### Note:
Some lengths, styles and options are non-standard, non-returnable.

#### MATED HEIGHT*

<table>
<thead>
<tr>
<th>QMS LEAD STYLE</th>
<th>A</th>
<th>QFS LEAD STYLE</th>
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</thead>
<tbody>
<tr>
<td>–05.75</td>
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<tr>
<td>–06.75</td>
<td>3.50</td>
<td>0.250</td>
</tr>
<tr>
<td>–09.75</td>
<td>3.68</td>
<td>0.368</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height. See SO Series for board space tolerances.

**PROCESSING**

**Lead–Free Solderable:** Yes
- **QMS SMT Lead Coplanarity:** (0.10 mm) .004" max
- **QFS SMT Lead Coplanarity:** (0.10 mm) .004" max
- **Board Stacking:** For applications requiring more than two connectors contact ipg@samtec.com

**STANDARDS**

- **SUMIT™ PCI/104-Express™ PCI/104-Express™ OneBank**
- **Visit samtec.com/standards for more information, including mated heights and complete part numbers.**

#### Note:
Some lengths, styles and options are non-standard, non-returnable.

### View complete specifications at: samtec.com/QMS

---

#### View complete specifications at: samtec.com/QFS

---

**Packaging Option**

- **Tape & Reel Options:** (-TR & -FR) available. Visit series web page and view engineering prints for complete specifications.

---

**Packaging Option**

- **Guide Holes:** (-04.25 Lead Style only)

---

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
### QMSS
**Board Mates:**
- QFSS

**QMSS/QFSS**
**Standoffs:**
- SO

### QMSS Specifications

- **Insulator Material:** Liquid Crystal Polymer
- **Terminal, Ground Plane & Shield Material:** Phosphor Bronze
- **Plating:** Au over 50 µ" (1.27 µm) Ni (Tin on Ground Plane Tail)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 300 VAC

### PROCESSING

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) 0.040" max
- **Board Stacking:** For applications requiring more than two connectors contact ipg@samtec.com

### QMSS-PINS PER ROW NO. OF PAIRS:

- **-026, -052, -078**
  - (52 total pins per bank / 40 signals + 12 grounds to shield = -D)
  - **-016, -032, -048**
  - (16 pairs per bank = -D–DP)

### PLATING OPTION

- **-L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail

### TYPE

- **-D**
  - Single-Ended
- **-D–DP**
  - Differential Pair

### OTHER OPTION

- **-K**
  - 5.50 mm (.217") DIA Polyimide film Pick & Place Pad (N/A with -PC4)
- **-PC4**
  - 4 Power Pins/End (N/A with -A)

### PACKAGING OPTION

- **Tape & Reel Options** (-TR & -FR)

**View complete specifications at:** samtec.com/QMSS

### QFSS

**Board Mates:**
- QMSS

### QFSS Specifications

- **Insulator Material:** Liquid Crystal Polymer
- **Terminal, Ground Plane & Shield Material:** Phosphor Bronze
- **Plating:** Au over 50 µ" (1.27 µm) Ni (Tin on Ground Plane Tail)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 300 VAC

### PROCESSING

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max
- **Board Stacking:** For applications requiring more than two connectors contact ipg@samtec.com

### QFSS-PINS PER ROW NO. OF PAIRS:

- **-026, -052, -078**
  - (52 total pins per bank / 40 signals + 12 grounds to shield = -D)
  - **-016, -032, -048**
  - (16 pairs per bank = -D–DP)

### PLATING OPTION

- **-L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail

### TYPE

- **-D**
  - Single-Ended
- **-D–DP**
  - Differential Pair

### OTHER OPTION

- **-PC4**
  - 4 Power Pins/End (N/A with -A)

### PACKAGING OPTION

- **Tape & Reel Options** (-TR & -FR)

**View complete specifications at:** samtec.com/QFSS

---

*Note: Some lengths, styles and options are non-standard, non-returnable.*

Unles otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**QRM8**

Board Mates: QRF8

**QRF8**

Board Mates: QRM8

**QRM8/QRF8**

Cable Mates: EQRD

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Insulator Material:</th>
<th>Black LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRM8 Terminal Material:</td>
<td>Phosphor Bronze</td>
</tr>
<tr>
<td>QRF8 Contact Material:</td>
<td>BeCu</td>
</tr>
<tr>
<td>Ground Plane Material:</td>
<td>Phosphor Bronze</td>
</tr>
</tbody>
</table>

**Plating:**

- Au or Sn over 50 µ" (1.27 µm) Ni
- Current Rating: 2.2 A per pin (2 pins powered)
- Ground Plane: 8.5 A per ground plane (1 ground plane powered)
- Operating Temp Range: -55 °C to +125 °C
- Voltage Rating: 215 VAC
- Max Cycles: 100

---

**PROCESSING**

**Lead-Free Solderable:** Yes

**SMT Lead Coplanarity:** (0.10 mm) .004" max (018-026) (0.15 mm) .006" max (036-078)*

*0.004" stencil solution may be available; contact ipg@samtec.com

**Board Stacking:**

For applications requiring more than two connectors contact ipg@samtec.com

---

**10 YEAR MFG EXTENDED LIFE PRODUCT HIGH MATING CYCLES**

- **(0.20 mm) .008" Normal Wipe**
- **(1.02 mm) .040" Nominal Wipe**

---

**Note:**

Some lengths, styles and options are non-standard, non-returnable.

---

**View complete specifications at:** samtec.com?QRM8

---

**View complete specifications at:** samtec.com?QRF8

---

**MATED HEIGHT**

<table>
<thead>
<tr>
<th>QRF8 LEAD STYLE</th>
<th>QRM8 LEAD STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-02.0</td>
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<tr>
<td>-05.0</td>
<td>-05.0</td>
</tr>
<tr>
<td>-07.0</td>
<td>-07.0</td>
</tr>
</tbody>
</table>

---

*Processing conditions will affect mated height. See SQ series for board space tolerances.*

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Q2™ Rugged Signal/Power

- Integral power/ground plane rated for up to 15.7 Amps
- Optional integral power pins rated at 4 Amps
- Wide variety of standard high-speed mating cable assemblies
- Combination signal/power cable assemblies
- 0.635 mm pitch with choice of stack heights
- Rugged contact system with increased insertion depth
- See QMS/QFS Series

Q Strip® High-Speed Signal/Power

- Integral power/ground plane rated for up to 25 Amps
- Wide variety of standard high-speed mating cables
- Low profile (5 mm) to elevated (25 mm) stack heights
- Choice of pitches: QTH/QSH Series (0.50 mm pitch), QTS/QSS Series (0.635 mm pitch), and QTE/QSE Series (0.80 mm pitch)

Q Rate® Slim Body High-Speed Signal/Power

- Widely accepted industry standard power/ground plane rated for up to 8.5 Amps
- Signal integrity optimized Edge Rate® contact is robust when “zippered” during unmating
- Slim 4.60 mm body width on 0.80 mm pitch
- 7 mm to 14 mm stack heights
- See QRM8/QRF8 Series
RIGHT-ANGLE & EDGE MOUNT HIGH-SPEED GROUND PLANE CONNECTORS

- Right-Angle and Edge Mount designs for coplanar and perpendicular mating
- Q Strip® Right-Angle High-Speed Connectors on 0.50 mm & 0.635 mm pitches
- Q2™ Right-Angle & Edge Mount Rugged High-Speed Connectors on 0.635 mm pitch
- Q Rate® Right-Angle Slim Body High-Speed Connectors on 0.80 mm pitch
- Visit [samtec.com/QSeries](http://samtec.com/QSeries) for complete specifications and ordering information

### Q STRIP® HIGH-SPEED GROUND PLANE CONNECTORS

#### (0.50 mm) .0197” PITCH RIGHT-ANGLE GROUND PLANE HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PINS PER ROW</th>
<th>NO. OF PAIRS</th>
<th>PLATING</th>
<th>TYPE</th>
<th>RA</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>QTH-RA</td>
<td>–030, –060, –090</td>
<td>(60 total pins per bank)</td>
<td>–D = Gold Flash on contact, Matte Tin on tails</td>
<td>–D</td>
<td>–PGP = Plastic Guide Post (QTH only)</td>
<td></td>
</tr>
<tr>
<td>QSH-RA</td>
<td>–020, –040, –060</td>
<td>(20 pairs per bank)</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold contact, Matte Tin on tails</td>
<td>–D–DP = Differential Pair</td>
<td>–GP = Guide Post Holes (QSH only)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com/QTH-RA](http://samtec.com/QTH-RA) or [samtec.com/QSH-RA](http://samtec.com/QSH-RA)

#### (0.635 mm) .025” PITCH RIGHT-ANGLE GROUND PLANE HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>01</th>
<th>PLATING</th>
<th>D</th>
<th>RA</th>
<th>WT</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>QTS-RA</td>
<td>–025, –050, –075</td>
<td>(50 total Positions per bank)</td>
<td>–F = Gold Flash on Signal Pins and Ground Plane, Matte Tin on tails</td>
<td>–F</td>
<td>–SP = Solder Pin (QTS only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QSS-RA</td>
<td>–025, –050, –075</td>
<td>(50 total Positions per bank)</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on Signal Pins and Ground Plane, Matte Tin on tails</td>
<td>–L</td>
<td>–WT = Weld Tab (N/A with -025 Positions)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable Mates: SQCD

View complete specifications at: [samtec.com/QTS-RA](http://samtec.com/QTS-RA) or [samtec.com/QSS-RA](http://samtec.com/QSS-RA)

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### Q2™ HIGH-SPEED GROUND PLANE CONNECTORS

#### (0.635 mm) .025” PITCH RIGHT-ANGLE GROUND PLANE HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PINS PER ROW</th>
<th>NO. OF PAIRS</th>
<th>PLATING</th>
<th>TYPE</th>
<th>RA</th>
<th>MG</th>
<th>OTHER OPTION</th>
<th>PACKAGING</th>
</tr>
</thead>
</table>

**QTH** Header **QFS** Socket

–030, –060, –090

–D = (60 total pins per bank)

–020, –040, –060

–D–DP = (20 pairs per bank)

–F = Gold Flash on contact, Matte Tin on tails

–L = 10 µ” (0.25 µm) Gold contact, Matte Tin on tails

–D = Single-Ended

–D–DP = Differential Pair

–PGP = Plastic Guide Post (QTH only)

–GP = Guide Post (Requires -GP on mating connector)

–K = Polyimide film Pick & Place Pad

Leave blank for Tray Packaging

**Leave blank for Tray Packaging**

–TR = Tape & Reel

–FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

### Q RATE® SLIM BODY HIGH-SPEED GROUND PLANE CONNECTORS

#### (0.635 mm) .025” PITCH EDGE MOUNT GROUND PLANE HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>PLATING</th>
<th>D</th>
<th>EM2</th>
<th>END OPTION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>QMS-EM Board Mates: QFS</td>
<td>QMS Header</td>
<td>01</td>
<td>–026, –052, –078</td>
<td>–SL = 10 µ” (0.25 µm) Gold on Signal Pins and Ground Plane, Matte Tin on tails</td>
<td>–PC4 = 4 Power Pins per end (QMS only)</td>
<td>Leave blank for Tray Packaging</td>
</tr>
<tr>
<td>QFS-EM Board Mates: QMS</td>
<td>QFS Socket</td>
<td>–026, –052, –078</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**QMS** Header **QFS** Socket

–026, –052, –078

–SL = 10 µ” (0.25 µm) Gold on Signal Pins and Ground Plane, Matte Tin on tails

–D–DP = Differential Pair

–PC4 = 4 Power Pins per end (QMS only)

#### (0.80 mm) .0315” PITCH RIGHT-ANGLE SLIM BODY GROUND PLANE HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POSITIONS PER ROW</th>
<th>PLATING</th>
<th>RA</th>
<th>GP</th>
<th>OPTION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRM8-RA Board Mates: QRF8 (-GP Required)</td>
<td>QRM8 Header</td>
<td>01</td>
<td>–026, –052, –078</td>
<td>–L = 10 µ” (0.25 µm) Gold contact, Matte Tin on tails</td>
<td>–GP = Guide Post (QMS only)</td>
<td>Leave blank for Tray Packaging</td>
</tr>
<tr>
<td>QRF8-RA Board Mates: QRM8 (-GP Required)</td>
<td>QRF8 Socket</td>
<td>(52 total positions per bank)</td>
<td>–K = Polyimide film Pick &amp; Place Pad (-052 only)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**QRM8** Header **QRF8** Socket

–026, –052, –078

–L = 10 µ” (0.25 µm) Gold contact, Matte Tin on tails

–GP = Guide Post (QMS only)

–K = Polyimide film Pick & Place Pad

Leave blank for Tray Packaging

–TR = Tape & Reel

–FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

### Note:

Some lengths, styles and options are non-standard, non-returnable.


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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Edge Rate® rugged high-speed connector strips are designed for high-speed, high cycle applications, and enabled by Samtec's signal integrity-optimized Edge Rate® contact system.

- Up to 1.5 mm contact wipe for a reliable connection
- 20 to 200 positions
- Choice of 0.50 mm, 0.635 mm or 0.80 mm pitch
- 0.50 mm pitch system offers up to 40% PCB space savings vs. 0.80 mm pitch
- 0.635 mm pitch system with extremely slim 2.5 mm body width
- Rugged latching, extended guide posts and 360° shielding
- Severe Environment Testing qualified (ERM8/ERF8); aligns with MIL-DTL-55302.

Visit [samtec.com/set](http://samtec.com/set)

### FEATURES & BENEFITS

**RUGGED HIGH-SPEED STRIPS**

- Signal integrity-optimized Edge Rate® contact system reduces broadside coupling
- Rugged 360° shielding reduces EMI

### KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>TERMINAL MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERM5 / ERF5</td>
<td>0.50 mm</td>
<td>Black LCP</td>
<td>Phosphor Bronze or BeCu (ERM5), BeCu (ERF5)</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>1.5 A</td>
<td>190 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>ERM6 / ERF6</td>
<td>0.635 mm</td>
<td></td>
<td>Copper Alloy</td>
<td></td>
<td></td>
<td>1.4 A</td>
<td>155 VAC</td>
<td></td>
</tr>
<tr>
<td>ERM8 / ERF8</td>
<td>0.80 mm</td>
<td></td>
<td>Phosphor Bronze or BeCu (ERM8), BeCu (ERF8)</td>
<td></td>
<td></td>
<td>1.4 A</td>
<td>225 VAC</td>
<td></td>
</tr>
</tbody>
</table>
ERM5 = Header
-010, -020, -030, -040, -050, -060, -070, -075
-02.0
= 2 mm Body Height (ERM5 only)
-04.0
= 4 mm Body Height (ERM5 only)
-05.0
= 5 mm Body Height
-07.0
= 7 mm Body Height (ERM5 only & Available up to 50 Pos. only)

ERF5 = Socket

ERF5-RA = Board Mates: ERM5

Note:
Some lengths, styles and options are non-standard, non-returnable.
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ERM6 - POSITIONS PER ROW - 01.5 - PLATING OPTION - DV - A - OPTION - K - "X"R

-10, -20, -30, -40, -50, -60
(Standard Sizes)

- L = 10 µ" (0.25 µm)
Gold on contact, Matte Tin on tail

(Leave Blank for No Weld Tab)

- TR = Tape & Reel

- WT = Weld Tab

- FR = Full Reel Tape & Reel
(must order maximum quantity per reel; contact Samtec for quantity breaks)

ERM6 Board Mates: ERF6

MATED HEIGHT*

| ERF6 LEAD STYLE | ERM6 LEAD STYLE | "01.5"
|------------------|-----------------|--------
| -03.5            | (0.00), .197    |        

*Processing conditions will affect mated height.

Notes:
Kapton pad and tape & reel packaging are standard.

Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ERM6

ERM6 - POSITIONS PER ROW - 03.5 - PLATING OPTION - DV - A - OPTION - K - "X"R

-10, -20, -30, -40, -50, -60
(Standard Sizes)

- L = 10 µ" (0.25 µm)
Gold on contact, Matte Tin on tail

(Leave Blank for No Weld Tab)

- TR = Tape & Reel

- WT = Weld Tab

- FR = Full Reel Tape & Reel
(must order maximum quantity per reel; contact Samtec for quantity breaks)

ERF6 Board Mates: ERM6

MATED HEIGHT*

| ERF6 LEAD STYLE | ERM6 LEAD STYLE | "03.5"
|------------------|-----------------|--------
| (0.90 mm) .035" Nominal Wipe |        |

*Processing conditions will affect mated height.

View complete specifications at: samtec.com?ERF6

Notes:
Kapton pad and tape & reel packaging are standard.

Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ERM6

samtec.com/EdgeRate
Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.

TYPE — POSITIONS PER ROW
ERM8 = Header
-005, -010, -011, -013, -020, -025, -030, -035, -040, -049, -050, -060, -070, -075, -100
(100 Position Only Available with ERM8–09.0 & ERF8–05.0 Lead Styles; –L or –EGP N/A)

ERF8 = Socket
-05.0, -010, -011, -020, -025, -030, -035, -040, -049, -050, -060, -070, -075, -100

LEAD STYLE
ERM8
–02.0 (5.97) .235
–03.0 (6.97) .274 (1.60) .063
–05.0 (8.91) .351 (1.17) .046
–08.0 (11.91) .469 (1.60) .063
–09.0 (12.91) .508 (1.60) .063

ERF8
–05.0 (5.34) .210 (1.60) .063
–07.0 (7.25) .285 (1.17) .046
–09.0 (9.34) .368 (1.60) .063

PLATING OPTION
–L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
–S = 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail
–DS = Differential Pair (ERM8–05.0 Lead Style with –010, –013, –025, –049 Positions only) (–P not available)
–D = Latching (ERM8 –03.0, –05.0 & –09.0 Lead Styles only & –EGP Option not available) (ERF8–05.0, –07.0 & –09.0 Lead Style only, –L & –EGP Options not available)
–EGP = Extended Guide Post (ERM8–05.0 & ERF8–07.0 Lead Style Only & –L Option not available)
–DSP = Differential Pair with Extended Guide Post (ERM8–05.0 Lead Style with –013 and –025 Positions only)
–K = Polymide Film Pick & Place Pad (–02.0 Lead Style not available)
–P = Pick & Place Pad (ERM8–02.0, –03.0 & –05.0 Lead Styles only) (–DS not available)
–TR = Tape & Reel (100 Positions N/A)
–FR = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (100 Positions N/A)

“X”R

Notes:
Severe Environment Testing qualified, aligns with MIL-DTL-55302. Visit samtec.com/set
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ERM8

View complete specifications at: samtec.com?ERF8

MATED HEIGHT*

ERM8 LEAD STYLE | ERF8 LEAD STYLE
---|---|---
-02.0 (7.00) .276 (9.00) .354 (11.00) .433
-03.0 (8.00) (10.00) (12.00) .472
-05.0 (10.00) .394 (12.00) .551
-08.0 (13.00) .512 (15.00) (17.00) .669
-09.0 (14.00) (16.00) .551 (18.00) .630 .709

*Processing conditions will affect mated height.
**ERM8-RA**

**Board Mates:** ERF8  
**Cable Mates:** ERCD

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>01</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>RA</th>
<th>OPTIONS</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01, -013, -020, -025, -030, -040, -049, -050, -060, -070, -075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact area, Matte Tin on tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-K = (6.00 mm) .236&quot; DIA Polyimide Film Pick &amp; Place Pad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-L = Latching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-DS = Differential Pair (-013, -025 Positions only) (Hot Swap)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-TR = Tape &amp; Reel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-FR = Full Reel Tape &amp; Reel (must order maximum quantity per reel; contact Samtec for quantity breaks)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**No. of Positions x (0.80) .0315 + (13.00) .512**

View complete specifications at: samtec.com?ERM8-RA

---

**ERM8-EM**

**Board Mates:** ERF8  
**Cable Mates:** ERCD

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>01</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>EM2</th>
<th>OPTIONS</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>-010, -013, -020, -025, -030, -040, -049, -050, -060, -070, -075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact area, Matte Tin on tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-L = Latching (Mates to ERF8 Lead Style ~05.0 or ~RA Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-DS = Differential Pair (-013 &amp; -025 Positions only) (Hot Swap)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-EGPS = Extended Guide Post Shield (-010, -020, -025, -030 Positions Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-DSS = Differential Pair + Extended Guide Post Shield (-025 Positions Only) (Hot Swap)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**No. of positions x (0.80) .0315 + (9.00) .354**

View complete specifications at: samtec.com?ERM8-EM

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

samtec.com/EdgeRate

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**ERF8-RA**

- **Board Mates:** ERM8
- **Cable Mates:** ERCD, ERDP

**ERF8-EM**

- **Board Mates:** ERM8

**ERF8**

- **Right-Angle Socket**
- **Positions Per Row:**
  - 01
- **Plating Option:**
  - D
- **Options:**
  - "X"R

**ERF8-RA**

- **Right-Angle Socket**
- **Positions Per Row:**
  - 01
- **Plating Option:**
  - D
- **Options:**
  - "X"R

**ERF8-EM**

- **Edge Mount Socket**
- **Positions Per Row:**
  - 01
- **Plating Option:**
  - D
- **Options:**
  - "X"R

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ERF8-RA

View complete specifications at: samtec.com?ERF8-EM
(0.80 mm) .0315" PITCH • SHIELDED HIGH-SPEED HEADERS & SOCKETS

**TYPE** - **POSITIONS PER ROW** - **LEAD STYLE** - **PLATING OPTION** - **DV** - **OPTIONS** - **"X"R**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>POSITIONS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>DV</th>
<th>OPTIONS</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERM8</td>
<td>-010, -020, -025, -030</td>
<td>-02.0</td>
<td>-L (10 µ&quot;) Gold on contact, Matte Tin on tail</td>
<td></td>
<td>-S</td>
<td>-TR</td>
</tr>
<tr>
<td>ERM8-S</td>
<td></td>
<td>-05.0</td>
<td>-S (5 mm) ERM8 with -S only; ERM8 with -EGPS &amp; -DSS only</td>
<td></td>
<td>-EGPS</td>
<td>-FR</td>
</tr>
<tr>
<td>ERF8</td>
<td></td>
<td>-07.0</td>
<td>-S (7 mm) ERF8 with -EGPS only</td>
<td></td>
<td>-DSS</td>
<td></td>
</tr>
<tr>
<td>ERM8-EGPS</td>
<td></td>
<td>-09.0</td>
<td>-S (9 mm) ERM8 with -EGPS &amp; -DSS only</td>
<td></td>
<td>-K</td>
<td></td>
</tr>
<tr>
<td>ERF8-EGPS</td>
<td></td>
<td></td>
<td>-S (EGPS)</td>
<td></td>
<td>-P</td>
<td></td>
</tr>
<tr>
<td>ERM8-DSS</td>
<td></td>
<td></td>
<td>-K (Differential Pair with Extended Guide Post Shield)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERM8-K</td>
<td></td>
<td></td>
<td>-P (Polyimide Film Pick &amp; Place Pad)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERM8-P</td>
<td></td>
<td></td>
<td>-S (Pick &amp; Place Pad)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERM8-S</td>
<td></td>
<td></td>
<td>-S (Option: -EGPS or -DSS Option)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
Severe Environment Testing qualified, aligns with MIL-DTL-35302.
Visit samtec.com/set
Some lengths, styles and options are non-standard, non-returnable.

**Board Mates:**
See "Mated Height" Chart

(Note: ERM8-S does not mate with ERM8-EGPS)

**Board Mates:**
See "Mated Height" Chart

(Note: ERM8-EGPS does not mate with ERM8-S)

**View complete specifications at:**
 samtec.com/ERM8

**View complete specifications at:**
 samtec.com/ERF8

**MATED HEIGHTS**

<table>
<thead>
<tr>
<th>MATED HEIGHTS</th>
<th>7 mm</th>
<th>9 mm</th>
<th>12 mm</th>
<th>16 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERM8-02.0-S to ERF8-05.0-S</td>
<td>7 mm</td>
<td>9 mm</td>
<td>12 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td>ERM8-02.0-S to ERF8-07.0-EGPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERM8-05.0-EGPS to ERF8-07.0-EGPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERM8-09.0-EGPS to ERF8-07.0-EGPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
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Visit samtec.com/set
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**View complete specifications at:**
 samtec.com/ERM8

**View complete specifications at:**
 samtec.com/ERF8

**LEAD STYLE** - **A** - **B**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-05.0</td>
<td>9.87</td>
<td>10.81</td>
</tr>
<tr>
<td>-09.0</td>
<td>13.87</td>
<td>14.81</td>
</tr>
</tbody>
</table>

**F-224**

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ULTRA MICRO INTERCONNECTS

SPACE SAVING DESIGNS • RUGGED HERMAPHRODITIC • ULTRA FINE PITCH

RAZOR BEAM™

0.50 mm Pitch Hermaphroditic Connectors (LSHM) .................................................. 54-55
0.635 mm Pitch Hermaphroditic Connectors (LSS) ...................................................... 56
0.80 mm Pitch Hermaphroditic Connectors (LSEM) ...................................................... 56

MICRO BLADE & BEAM STRIPS

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0.50 mm Pitch Low Profile Strips (ST5, SS5, SLH, TLH) ............................................. 58-59
RAZOR™ BEAM SYSTEM

FINE PITCH SELF MATING CONNECTORS
(0.50 mm) .0197" PITCH

FEATURES & BENEFITS

• Ten stack height options from 5.00 mm to 12.00 mm
• 0.50 mm, 0.635 mm or 0.80 mm pitches
• Audible click when mated
• Mating and unmating forces approximately 4-6x greater than typical micro pitch connectors
• Self-mating system reduces inventory cost
• Parallel, perpendicular and coplanar systems
• Shielded and lubricated options
• Severe Environment Testing qualified (LSHM); aligns with MIL-DTL-55302. Visit samtec.com/set

SLIM BODY DESIGNS
(40 total positions each)

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>SMT COPLANARITY</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>LSHM: 2.0 A per pin</td>
<td>(0.10 mm) .004&quot; max</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LSS: 1.7 A per pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LSEM: 1.8 A per pin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
LSHM - 1 NO. PINS PER ROW - LEAD STYLE - PLATING OPTION - TAIL OPTION - A - SHIELD OPTION - K - "X"R

<table>
<thead>
<tr>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>TAIL OPTION</th>
<th>A</th>
<th>SHIELD OPTION</th>
<th>K</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>05, 10, 20, 30, 40, 50</td>
<td>(Vertical) Specify LEAD STYLE from chart</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-DV = Vertical</td>
<td>-S = With Shield</td>
<td>-K = (3.50 mm) 138° DIA Polyimide film Pick &amp; Place Pad</td>
<td>-TR = Tape &amp; Reel</td>
<td>-FR = Full Reel Tape &amp; Reel (must order maximum quantity per reel; contact Samtec for quantity breaks)</td>
</tr>
<tr>
<td></td>
<td>(Right-angle)</td>
<td>-01 = Standard (Right-angle)</td>
<td>-L = Lubricated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-10 µ&quot; (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-DV = Vertical (Lead style –01 &amp; –L1 only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-DV = Vertical (Lead style –01 &amp; –L1 only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-DV = Vertical (Lead style –01 &amp; –L1 only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-DV = Vertical (Lead style –01 &amp; –L1 only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LSHM
Board Mates: LSHM
Cable Mates: HLCD

Notes:
Severe Environment Testing qualified; aligns with MIL-DTL-55302. Visit samtec.com/set
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?LSHM

Leonard J. Samuels Ltd. 2014
### LSS - 1

**NO. PINS PER ROW**
- 10, 20, 30, 40, 50

**LEAD STYLE**
Specify LEAD STYLE from chart

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 μ" (0.25 μm) Gold on contact, Matte Tin on tail

**PLATING OPTION**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(4.45) .1752</td>
<td>(1.59) .0628</td>
</tr>
<tr>
<td>-02</td>
<td>(7.45) .2933</td>
<td>(4.59) .1808</td>
</tr>
<tr>
<td>-03</td>
<td>(5.45) .2146</td>
<td>(2.59) .1021</td>
</tr>
</tbody>
</table>

**DV**

- **K** = (3.50 mm) .138" DIA Polymide film Pick & Place Pad
- **TR** = Tape & Reel
- **FR** = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks)

**A**

- **N**

**OPTION**

View complete specifications at: [samtec.com?LSS](http://samtec.com?LSS)

### LSEM - 1

**NO. PINS PER ROW**
- 20, 30, 40, 50

**LEAD STYLE**
Specify LEAD STYLE from chart

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 μ" (0.25 μm) Gold on contact, Matte Tin on tail

**PLATING OPTION**

**T A I L  O P T I O N**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>MATED HEIGHT *</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01 &amp; -01</td>
<td>(6.00) .236</td>
</tr>
<tr>
<td>-01 &amp; -03</td>
<td>(7.00) .276</td>
</tr>
<tr>
<td>-03 &amp; -03</td>
<td>(6.00) .315</td>
</tr>
<tr>
<td>-01 &amp; -02</td>
<td>(9.00) .354</td>
</tr>
<tr>
<td>-02 &amp; -03</td>
<td>(10.00) .394</td>
</tr>
<tr>
<td>-02 &amp; -02</td>
<td>(12.00) .472</td>
</tr>
</tbody>
</table>

**A**

- **N**

**K**

- **X”R**

View complete specifications at: [samtec.com?LSEM](http://samtec.com?LSEM)

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

*Processing conditions will affect mated height.*

---

**LEAD STYLE**

- **-01**
- **-03**
- **-04**
- **-06**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>MATED HEIGHT *</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01 &amp; -01</td>
<td>(6.00) .236</td>
</tr>
<tr>
<td>-03 &amp; -03</td>
<td>(6.00) .315</td>
</tr>
<tr>
<td>-01 &amp; -02</td>
<td>(9.00) .354</td>
</tr>
<tr>
<td>-02 &amp; -03</td>
<td>(10.00) .394</td>
</tr>
<tr>
<td>-02 &amp; -02</td>
<td>(12.00) .472</td>
</tr>
</tbody>
</table>

---

*Processing conditions will affect mated height.*
MICRO BLADE & BEAM SOCKET & HEADER
(0.40 mm) .0158" PITCH • SS4/ST4 SERIES

SS4
Mates: ST4

ST4
Mates: SS4

SPECIFICATIONS

Insulator Material: Black LCP
Contact Material: Phosphor Bronze
Plating: Au or Sn over 50 µ" (1.27 µm) Ni
Operating Temp Range: -55 °C to +125 °C
Current Rating: 1.6 A per pin
(2 pins powered)

PROCESSING

Lead-Free Solderable: Yes
SMT Lead Coplanarity: (0.10 mm).004" max

MATED HEIGHT *

<table>
<thead>
<tr>
<th>ST4 LEAD STYLE</th>
<th>SS4 LEAD STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3.00</td>
<td>-3.50</td>
</tr>
<tr>
<td>-1.00</td>
<td>-1.00</td>
</tr>
<tr>
<td>-1.50</td>
<td>-1.50</td>
</tr>
<tr>
<td>-2.50</td>
<td>-2.50</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

Note:
Some lengths, styles and options are non-standard, non-returnable.

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
MICRO BLADE & BEAM SOCKET & HEADER

(0.50 mm) .0197” PITCH • SS5/ST5 SERIES

SS5
Mates:
ST5

ST5
Mates:
SS5

SPECIFICATIONS

Insulator Material:
Black LCP

Contact Material:
Phosphor Bronze

Plating:
Au or Sn over 50 µ" (1.27 µm) Ni

Operating Temp Range:
-55 °C to +125 °C

Current Rating:
1.5 A per pin (2 pins powered)

PROCESSING

Lead-Free Solderable:
Yes

SMT Lead Coplanarity:
(0.10 mm) .004” max

Note:
Some lengths, styles and options are non-standard, non-returnable.

ALSO AVAILABLE
MOQ Required

Other lead styles

samtec.com?SS5 or samtec.com?ST5

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ULTRA-LOW PROFILE HEADER & SOCKET

(0.50 mm) .0197” PITCH • SLH/TLH SERIES

SLH Mates:
TLH

TLH Mates:
SLH

SPECIFICATIONS

Insulator Material:
Black Liquid Crystal Polymer

Contact Material:
Copper Alloy

Plating:
Au over 50 μ" (1.27 µm) Ni

Current Rating:
2.1 A per pin (2 pins powered)

Operating Temp Range:
-55 °C to +125 °C

PROCESSING

Lead–Free Solderable:
Yes

SMT Lead Coplanarity:
(0.10 mm) .004” max

Board Stacking:
For applications requiring two or more connectors per board, contact ipg@samtec.com

Note:
Some lengths, styles and options are non-standard, non-returnable.

MATED HEIGHT*

SLH LEAD STYLE |
| TLH LEAD STYLE |
| NO. OF POSITIONS |
| LEAD STYLE |
| PLATING OPTION |
| D |
| OPTION |
| OPTION |
| “X”R |

SLH |
| NO. OF POSITIONS |
| LEAD STYLE |
| PLATING OPTION |
| D |
| OPTION |
| OPTION |
| “X”R |

TLH |
| NO. OF POSITIONS |
| LEAD STYLE |
| PLATING OPTION |
| D |
| OPTION |
| OPTION |
| “X”R |

Note:
Some lengths, styles and options are non-standard, non-returnable.

*Processing conditions will affect mated height.
SO BOARD STACKER

LEAD STYLE

Specify BOARD STACKER from chart

-01 = Female Thread/Press-In
(-0515 thru –0865 only)

-02 = Male/Male Thread
(-0515 and –1115 thru –2515 only)

-03 = Male/Female Thread
(-0815 thru –2515 only)

-05 = Female/Female Thread
(-1524 thru –2515 only)

THREAD STYLE

-01 = #4-40 Thread

-02 = M3 x 0.5 Thread

-01 L = –02 & –03 Lead Style thread locking compound
(Leave blank for –01 Lead Style)

SPECIFICATIONS

Material: Aluminum
Locking Compound: Nylon

INDUSTRY STANDARD SOLUTIONS

Requires Standoff
SO-1524-03-01-01-L or
JSOM-1524-02 for 15.24 mm
or SO-2200-03-01-01-L
for 22 mm board spacing.

For more information on the JSOM,
visit samtec.com/JSOM

INDUSTRY STANDARD INTERCONNECTS

<table>
<thead>
<tr>
<th>TERMINAL</th>
<th>SOCKET</th>
<th>BANKS</th>
<th>STACK HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMIT™</td>
<td>ASP-129637-01</td>
<td>ASP-129646-01</td>
<td>1</td>
</tr>
<tr>
<td>PCI/104-Express™</td>
<td>ASP-129637-03</td>
<td>ASP-129646-03</td>
<td>3</td>
</tr>
<tr>
<td>PCI/104-Express™</td>
<td>ASP-129637-13</td>
<td>ASP-129646-22</td>
<td>1</td>
</tr>
<tr>
<td>PCI/104-Express™</td>
<td>ASP-142781-01</td>
<td>ASP-129646-01</td>
<td>1</td>
</tr>
<tr>
<td>PCI/104-Express™</td>
<td>ASP-142781-02</td>
<td>ASP-129646-02</td>
<td>2</td>
</tr>
<tr>
<td>PCI/104-Express™</td>
<td>ASP-142781-03</td>
<td>ASP-129646-03</td>
<td>3</td>
</tr>
</tbody>
</table>

ALSO AVAILABLE

MOQ Required

Other heights
Stainless Steel
Locking compound removed
Other materials and threading
No Hardware

Note:

Some sizes, styles and options are non-standard,
non-returnable.

Components are to be packaged in separate bags unassembled.
HIGH-SPEED EDGE CARD SYSTEMS

SPEEDS TO 56 Gbps • RUGGED EDGE RATE® CONTACTS • VARIETY OF OPTIONS

HIGHSPEED EDGE CARD INTERCONNECTS

0.60 mm Pitch Edge Rate® Socket (HSEC6) ................................................................. 63
0.80 mm Pitch Rugged Edge Card Socket (HTEC8) ...................................................... 64
0.80 mm Pitch Edge Rate® Socket (HSEC8) ................................................................. 65-68
1.00 mm Pitch Edge Rate® Socket (HSEC1) ................................................................. 69

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1.27 mm Pitch Mini Edge Card Socket (MECF) ............................................................ 77
2.00 mm Pitch Mini Edge Card Socket (MEC2) ............................................................ 77

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FEATURES & BENEFITS

- Maximum Design Flexibility
- Up to 64 Gbps PAM4 performance
- PCI Express® 3.0, 4.0, 5.0 and 6.0
- Edge Rate® contacts optimized for signal integrity performance and high-cycle life
- Up to 200 positions available
- Vertical, right-angle, edge mount, pass-through orientations
- Power/signal combo, press-fit tails, rugged weld tabs, locks and latches
- Mating cable assemblies available

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PITCH</th>
<th>TOTAL POSITIONS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSEC6</td>
<td>0.60 mm</td>
<td>56-168</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>-55 °C to +125 °C</td>
<td>1.9 A (2 pins)</td>
<td>240 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>HTEC8</td>
<td>0.80 mm</td>
<td>20-200</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>-55 °C to +125 °C</td>
<td>3.0 A (2 pins)</td>
<td>215 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>HSEC8</td>
<td>0.80 mm</td>
<td>18-200</td>
<td>Black LCP</td>
<td>BeCu</td>
<td>-55 °C to +125 °C</td>
<td>2.8 A (2 pins)</td>
<td>240 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>HSEC1</td>
<td>1.00 mm</td>
<td>20-140</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>-55 °C to +125 °C</td>
<td>2.2 A (2 pins)</td>
<td>215 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Rugged tucked beam technology (HTEC8)
Differential pair for increased speed (HSEC8-DP)
Custom designs allow for misalignment in the X-Y axes (HSEC1)
**HSEC6**

**Card Mates:**
(1.60 mm) .062" card

**Cable Mates:**
GC6

**ALSO AVAILABLE**

0.60 mm Pitch Mating High-Speed Cable Assembly. See GC6 Series.

**STANDARDS**

SFF-TA-1002
Visit www.samtec.com/standards for more information.

**Note:**
Polyimide film pick & place pad is standard.

Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/HSEC6-DV

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
HTEC8 - 1 POSITIONS PER ROW - 01 PLATING OPTION - DV OPTION - OTHER OPTION - "X"R

10, 20, 30, 40, 50, 60, 80, 100

PLATING OPTION

- L = 10 µ" (0.25 µm) Gold on contact area, Matte Tin on tail

- S = 30 µ" (0.76 µm) Gold on contact area, Matte Tin on tail

PLATING OPTION

- DV = Leave blank for no alignment pin

- PA = Alignment Pin

- WT = Weld Tab (-A option required)

OTHER OPTION

- K = (7.00 mm) .276" DIA Polyimide Pick & Place Pad

- TR = Leave blank for Tray Packaging

- TR = Tape & Reel (10 thru 60 positions only)

- FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks (10 thru 60 positions only)

Note:

Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/HTEC8

HTEC8
Card Mates:
(1.60 mm).062" thick card

40, 50, 60, 80 & 100 POSITIONS

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>(36.60)</td>
<td>1.440</td>
<td>(18.90)</td>
<td>.744</td>
<td>(16.80)</td>
</tr>
<tr>
<td>50</td>
<td>(44.60)</td>
<td>1.756</td>
<td>(22.90)</td>
<td>.902</td>
<td>(20.80)</td>
</tr>
<tr>
<td>60</td>
<td>(52.60)</td>
<td>2.071</td>
<td>(26.90)</td>
<td>1.059</td>
<td>(24.80)</td>
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<tr>
<td>80</td>
<td>(68.60)</td>
<td>2.701</td>
<td>(26.90)</td>
<td>1.059</td>
<td>(24.80)</td>
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<tr>
<td>100</td>
<td>(84.60)</td>
<td>3.331</td>
<td>(26.90)</td>
<td>1.059</td>
<td>(24.80)</td>
</tr>
</tbody>
</table>

10, 20 & 30 POSITIONS

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>(9.40)</td>
<td>.370</td>
</tr>
<tr>
<td>20</td>
<td>(17.40)</td>
<td>.685</td>
</tr>
<tr>
<td>30</td>
<td>(25.40)</td>
<td>1.000</td>
</tr>
</tbody>
</table>
HSEC8-DV
Card Mates:
(1.60 mm) .062" card, (2.36 mm) .093" card, HSC8
Cable Mates:
ECDP

OTHER SOLUTIONS
For complete edge card system with cards and sockets, visit samtec.com/RU8
For a card to mate with an HSEC8 socket, visit samtec.com/HSC8

No. of Positions x (0.80) .0315 + (4.60) .181
No. of Positions x (0.80) .0315 + (2.20) .087

09, 10, 13, 20, 25, 30, 37, 40, 49, 50, 60, 70, 80, 100
(13, 25, 49 only available with -L or -L2 latching option; 09 only available with -L option; 37 only available with -L latching option)
### HSEC8-RA

**Card Mates:** (1.60 mm) .062” thick card, HSC8  
**Cable Mates:** ECDP

**Positions per Row:**
- 09, 10, 13, 20, 25, 30, 40, 49, 50, 60

**Card Thickness Option:**
- -01 = (1.60 mm) .062” thick card
- -L = 10 μ” (0.25 μm) Gold on contact area, Matte Tin on tail
- -S = 30 μ” (0.76 μm) Gold on contact area, Matte Tin on tail

**Plating Option:**
- -BL = Board Locks (09, 13, 25, 40, 49, 50, 60 only)
- -L2 = ECDP Latching (09, 13, 25, 49 only)
- -X”R

**Other Options:**
- Leave blank for Tray Packaging
- -TR = Tape & Reel
- -FR = Full Reel Tape & Reel Packaging (must order max. quantity per reel; contact Samtec for quantity breaks)

**Dimensions:**
- 10, 20 & 30 Positions
- 40, 50, & 60 Positions

**View Complete Specifications:**
[Samtec.com?HSEC8-RA](http://samtec.com?HSEC8-RA)

### HSEC8-EM

**Card Mates:** (1.60 mm) .062” thick card, HSC8  
**Cable Mates:** ECDP

**Positions per Row:**
- 09, 10, 13, 20, 25, 30, 40, 49, 50, 60

**Plating Option:**
- -L = 10 μ” (0.25 μm) Gold on contact area, Matte Tin on tail
- -S = 30 μ” (0.76 μm) Gold on contact area, Matte Tin on tail

**Other Options:**
- -EM2 = (1.60 mm) .062” thick PCB

**Dimensions:**
- 10, 20 & 30 Positions
- 40, 50 & 60 Positions

**View Complete Specifications:**
[Samtec.com?HSEC8-EM](http://samtec.com?HSEC8-EM)

---

**Note:** Some sizes, styles and options are non-standard, non-returnable.

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
**HSEC8-DP**

Card Mates:  
(1.60 mm) .062” thick card

---

**NUMBER OF PAIRS** | **A** | **B** | **C** | **D** | **E** | **F** | **G**  
---|---|---|---|---|---|---|---  
08 | (14.20) .560 | (15.00) .591 | (14.20) .559 | (4.34) .171 | (9.14) .360 | (2.40) .094 | (12.00) .472  
12 | (22.20) .874 | (19.80) .780 | (19.00) .746 | (6.74) .265 | (11.54) .454 | (4.80) .189 | (16.80) .661  
16 | (27.00) 1.063 | (24.60) .969 | (23.80) .937 | (9.14) .360 | (13.94) .549 | (7.20) .283 | (21.60) .850  
20 | (31.80) 1.252 | (29.40) 1.157 | (28.60) 1.126 | (11.54) .454 | (16.34) .643 | (9.60) .378 | (26.40) 1.039  
32 | (46.20) 1.819 | (43.80) 1.724 | (43.00) 1.693 | (18.74) .738 | (23.54) .927 | (16.80) .661 | (40.80) 1.606  
56 | (75.00) 2.953 | (72.60) 2.858 | (71.80) 2.827 | (33.14) 1.305 | (37.94) 1.494 | (31.20) 1.228 | (69.60) 2.740

---

**PLATING OPTION** | **DP-A** | **OPTION** | **K** | “X”R
---|---|---|---|---
L = 10 μ" (0.25 μm) Gold on contact area, Matte Tin on tail  
WT = Weld Tab  
K = (6.25 mm) .246" DIA Polyimide Film Pick & Place Pad  
FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

---

**Note:**  
Some sizes, styles and options are non-standard, non-returnable.

---

View complete specifications at: [samtec.com/HSEC8-DP](http://samtec.com/HSEC8-DP)
HSEC1-DV
Card Mates:
(1.60 mm) .062"
vertical edge card

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>A</th>
<th>B</th>
<th>C (with -A)</th>
<th>D (with -WT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-010</td>
<td>(11.30)</td>
<td>.445</td>
<td>N/A</td>
<td>(13.25)</td>
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<td></td>
<td></td>
<td></td>
<td>(13.25)</td>
<td>.522</td>
</tr>
<tr>
<td>-020</td>
<td>(21.30)</td>
<td>.839</td>
<td>N/A</td>
<td>(23.25)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(23.25)</td>
<td>.915</td>
</tr>
<tr>
<td>-030</td>
<td>(31.30)</td>
<td>1.232</td>
<td>N/A</td>
<td>(33.25)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(33.25)</td>
<td>1.309</td>
</tr>
<tr>
<td>-040</td>
<td>(44.30)</td>
<td>1.744</td>
<td>(19.15)</td>
<td>.754</td>
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<td>(54.30)</td>
<td>2.138</td>
<td>(24.15)</td>
<td>.951</td>
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<td>(24.15)</td>
<td>2.215</td>
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<tr>
<td>-060</td>
<td>(64.30)</td>
<td>2.531</td>
<td>(29.15)</td>
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<td>(29.15)</td>
<td>2.608</td>
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<tr>
<td>-070</td>
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<td>2.925</td>
<td>(34.15)</td>
<td>1.344</td>
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<td></td>
<td></td>
<td></td>
<td>(34.15)</td>
<td>3.002</td>
</tr>
</tbody>
</table>

**Note:**
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com/HSEC1-DV](https://samtec.com/EdgeCard/HSEC1-DV)
MICRO EDGE CARD SYSTEMS
0.50 mm, 0.635 mm, 0.80 mm, 1.00 mm, 1.27 mm, 2.00 mm PITCH

FEATURES & BENEFITS
- Up to 56 Gbps PAM4
- PCI Express® 4.0 (MEC5 Series)
- Solutions for (1.60 mm) .062" and (2.36 mm) .093" thick cards
- Choice of pitch: 0.50 mm, 0.635 mm, 0.80 mm, 1.00 mm, 1.27 mm, 2.00 mm
- Vertical, right-angle and edge mount orientations
- Available in surface mount and through-hole

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PITCH</th>
<th>TOTAL POSITIONS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEC5</td>
<td>0.50 mm</td>
<td>60-200</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>-55 ℃ to +125 ℃</td>
<td>1.5 A (2 pins)</td>
<td>125 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MEC6</td>
<td>0.635 mm</td>
<td>20-140</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>-55 ℃ to +125 ℃</td>
<td>2.4 A (2 pins)</td>
<td>185 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MEC8</td>
<td>0.80 mm</td>
<td>20-140</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>-55 ℃ to +125 ℃</td>
<td>2.3 A (2 pins)</td>
<td>180 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MEC1</td>
<td>1.00 mm</td>
<td>20-140</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>-55 ℃ to +125 ℃</td>
<td>2.2 A (2 pins)</td>
<td>250 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MECF</td>
<td>1.27 mm</td>
<td>10-100</td>
<td>Black/Natural LCP</td>
<td>BeCu</td>
<td>-55 ℃ to +125 ℃</td>
<td>3.5 A (2 pins)</td>
<td>280 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MEC2</td>
<td>2.00 mm</td>
<td>10-100</td>
<td>Black/Natural LCP</td>
<td>BeCu</td>
<td>-55 ℃ to +125 ℃</td>
<td>3.5 A (2 pins)</td>
<td>235 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>
MEC5 - POSITIONS PER ROW - 01 - PLATING OPTION - TAIL OPTION - WELD TAB OPTION - OTHER OPTION - "X" R

-030, -040, -050, -060, -070, -080
   (RA & -DV)
-090, -100
   (-DV only)

PLATING OPTION
-01 - "L" = 10 µ" (0.25 µm)
Gold on contact, Matte Tin on tail

TAIL OPTION
-02 - "DV" = Weld Tab
Through-hole
(Required for -DV option)
-03 - "RA" = Right-angle

WELD TAB OPTION
-04 - "W1" = Weld Tab
Surface Mount
(Not available for -DV)

OTHER OPTION
-05 - "K" = Polyimide Pick & Place Pad
(Required for -DV)
(Not available in -RA)
-06 - "X"R

MEC5-DV
Card Mates:
(1.60 mm) .062" thick card with standard board tolerance

MEC5-RA
Card Mates:
(1.60 mm) .062" thick card with standard board tolerance

POSITIONS PER ROW

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30</td>
<td>(23.38)</td>
<td>(17.10)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>.920</td>
<td>.673</td>
<td>18.16</td>
</tr>
<tr>
<td>-40</td>
<td>(28.38)</td>
<td>(22.10)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1.117</td>
<td>.870</td>
<td>23.16</td>
</tr>
<tr>
<td>-50</td>
<td>(35.88)</td>
<td>(29.60)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1.413</td>
<td>1.165</td>
<td>30.66</td>
</tr>
<tr>
<td>-60</td>
<td>(40.88)</td>
<td>(34.60)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1.609</td>
<td>1.362</td>
<td>36.60</td>
</tr>
<tr>
<td>-70</td>
<td>(45.88)</td>
<td>(39.60)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>1.806</td>
<td>1.559</td>
<td>40.66</td>
</tr>
<tr>
<td>-80</td>
<td>(50.88)</td>
<td>(44.60)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>2.003</td>
<td>1.756</td>
<td>45.66</td>
</tr>
</tbody>
</table>

Note: Some sizes, styles and options are non-standard, non-returnable.

Note: Polarization rib is not present on -030 & -040 positions

View complete specifications at: samtec.com?MEC5-DV

View complete specifications at: samtec.com?MEC5-RA

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
MEC6 - 1

POsITIONS PER ROW - 02

PLATING OPTION - DV - A - OPTION - “X”R

10, 20, 30, 40, 50, 60, 70

L = 10 µ" (0.25 µm)
Gold on contact, Matte Tin on tail

DV = (5.50 mm) 2.17” Dia
Polyimide Pick & Place Pad

PLATING OPTION

MEC6-DV

Card Mates:
(1.60 mm) .062” thick card

MEC6-RA

Card Mates:
(1.60 mm) .062” thick card

Note:
Some sizes, styles and options are non-standard, non-returnable.
MEC8-DV
Card Mates:
(1.60 mm) .062” thick card

Position

<table>
<thead>
<tr>
<th>Positions</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>(18.90)</td>
<td>.744</td>
</tr>
<tr>
<td>50</td>
<td>(22.90)</td>
<td>.902</td>
</tr>
<tr>
<td>60</td>
<td>(26.90)</td>
<td>1.059</td>
</tr>
<tr>
<td>70</td>
<td>(30.90)</td>
<td>1.217</td>
</tr>
</tbody>
</table>

No. of Positions x (0.80) .0315 + (7.80) .307

10, 20, & 30 Positions

MEC8-VP
Card Mates:
(1.60 mm) .062” thick card

Position

No. of Positions x (0.80) .0315 + (4.60) .181

10, 20, & 30 Positions

Note:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?MEC8-DV

View complete specifications at: samtec.com?MEC8-VP
### MEC8-EM

**Card Mates:**
(1.60 mm) .062" thick card

<table>
<thead>
<tr>
<th>Positions per Row</th>
<th>PLating Option</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10, 20, 30, 40, 50, 60, 70</td>
<td>02</td>
<td>D</td>
</tr>
</tbody>
</table>

- **D** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail

```
<table>
<thead>
<tr>
<th>Positions per Row</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>(18.90)</td>
<td>.744</td>
</tr>
<tr>
<td>20</td>
<td>(26.90)</td>
<td>1.059</td>
</tr>
<tr>
<td>30</td>
<td>(34.90)</td>
<td>1.346</td>
</tr>
<tr>
<td>40</td>
<td>(43.90)</td>
<td>1.724</td>
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<td>(52.90)</td>
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<td>2.386</td>
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<tr>
<td>70</td>
<td>(69.00)</td>
<td>2.686</td>
</tr>
</tbody>
</table>
```

View complete specifications at: samtec.com?MEC8-EM

---

### MEC8-RA

**Card Mates:**
(1.60 mm) .062" thick card

```
<table>
<thead>
<tr>
<th>Positions per Row</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>(18.10)</td>
<td>.713</td>
</tr>
<tr>
<td>20</td>
<td>(24.10)</td>
<td>1.086</td>
</tr>
<tr>
<td>30</td>
<td>(30.10)</td>
<td>1.441</td>
</tr>
<tr>
<td>40</td>
<td>(36.10)</td>
<td>1.792</td>
</tr>
</tbody>
</table>
```

View complete specifications at: samtec.com?MEC8-RA

---

Note:
Some sizes, styles and options are non-standard, non-returnable.
MEC1 - 1

Positions Per Row - 02 - Plating Option - D - NP - Other Options - "X"R

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **NP** = No Polarization
- **A** = Alignment Pin metal or plastic at Samtec discretion
- **K** = (7.87 mm) .310" DIA Polyimide film Pick & Place Pad
- Leave blank for polarization
- Leave blank for Tube Packaging
- **TR** = Tape & Reel (05-60 only)
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks) (05-60 only)

**MEC1**

Card Mates: (1.60 mm) .062" thick card

View complete specifications at: samtec.com/MEC1

Gbps 14

Note:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/MEC1

samtec.com/EdgeCard

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
(1.00 mm) .0394” PITCH • RIGHT-ANGLE/EDGE MOUNT EDGE CARD SOCKET

MEC1 - 1 POSITIONS PER ROW - 02 PLATING OPTION - D - RA1 - NP - SL - “X”R

- F = Gold Flash on contact, Matte Tin on tail
- L = 10 μ” (0.25 μm) Gold on contact, Matte Tin on tail

MEC1-RA
Card Mates:
(1.60 mm) .062” thick card

MEC1-EM
Card Mates:
(1.60 mm) .062” thick card

Note:
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?MEC1-RA

View complete specifications at: samtec.com?MEC1-EM

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
MECF

Card Mates:
- (1.60 mm) .062” thick card
- (2.36 mm) .093” thick card

MEC2-DV

Card Mates:
- (1.60 mm) .062” thick card
- (2.36 mm) .093” thick card

MEC2-TH

Card Mates:
- (1.60 mm) .062” thick card

Note: Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtecs.com?MEC2-DV & samtecs.com?MEC2-TH

View complete specifications at: samtecs.com?MECF-DV

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FEATURES & BENEFITS

• 1.00 mm pitch
• Supports 1, 4, 8 and 16 PCI Express® links
• PCIE® 3.0 Solution (PCIE)
• PCIE® 4.0 Solution with low profile design for space savings (PCIE-LP)
• PCIE® 4.0 with slim body design (PCIE-G4)
• PCIE® 5.0 Solution with differential pair signaling (PCIE-G5)
• Vertical, right-angle and edge mount
• Mates with .062” (1.60 mm) thick cards
• Alignment pin and weld tab options

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>TOTAL PINS (LANES)</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>PCIE® COMPATIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIE</td>
<td>36 (x1), 64 (x4), 98 (x8), 164 (x16) -TH = Black Nylon -EMS2 &amp; -TH = LCP</td>
<td>Phosphor Bronze</td>
<td>-55 °C to +125 °C</td>
<td>2.4 A (2 pins)</td>
<td>215 VAC</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>PCIE-LP</td>
<td>36 (x1), 64 (x4), 98 (x8), 164 (x16)</td>
<td>LCP</td>
<td>Phosphor Bronze</td>
<td>-55 °C to +125 °C</td>
<td>2.1 A (2 pins)</td>
<td>215 VAC</td>
<td>4.0</td>
</tr>
<tr>
<td>PCIE-G4</td>
<td>36 (x1), 64 (x4), 98 (x8), 164 (x16)</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>-55 °C to +125 °C</td>
<td>2.2 A (2 pins)</td>
<td>300 VAC</td>
<td>4.0</td>
</tr>
<tr>
<td>PCIE-G5</td>
<td>36 (x1), 64 (x4), 98 (x8), 164 (x16)</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>-55 °C to +125 °C</td>
<td>3.2 A (2 pins)</td>
<td>235 VAC</td>
<td>5.0</td>
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</tbody>
</table>
PCIE-LP

**Card Mates:**
(1.60 mm)
.062" card

**Cable Mates:**
PCIEC

**PCIE-LP**

<table>
<thead>
<tr>
<th>NUMBER OF LANES</th>
<th>01</th>
<th>PLATING OPTION</th>
<th>DV</th>
<th>A</th>
<th>OPTION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>–01, –04, –08, –16</td>
<td></td>
<td>–F = Gold Flash on contact, Matte Tin on tail</td>
<td></td>
<td></td>
<td>–WT = Weld Tab</td>
<td>(For -16 lanes only leave blank for Tray Packaging)</td>
</tr>
<tr>
<td>–01</td>
<td>(26.60) 1.047</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>–04</td>
<td>(40.60) 1.598</td>
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<td></td>
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<tr>
<td>–08</td>
<td>(57.60) 2.268</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>–16</td>
<td>(90.60) 3.567</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**View complete specifications at:** samtec.com?PCIE-LP

---

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(1.00 mm) .0394" PITCH • PCI EXPRESS® 4.0 SOCKET

PCIE - G4

- Number of Lanes
- 01 - Plating Option
- DV
- Option 1
- Option 2
- Packaging

---
- 01, -04, -08, -16
- F = Gold flash on contact, Matte Tin on tail
- S = 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail
- A = Alignment Pin (Not available with -WT)
- K = (7.00 mm) .275" DIA Polyimide Pick & Place Pad
- WT = Weld Tab (Not available with -A)

PCIE-G4
Card Mates:
(1.60 mm)
.062" card

(1.00 mm) .0394" PITCH • PCI EXPRESS® 5.0 SOCKET

PCIE - G5

- Number of Lanes
- 01 - Plating Option
- Type
- Option
- Packaging

---
- 01, -04, -08, -16
- F = Gold flash on contact, Matte Tin on tail
- S = 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail
- DP-A = Vertical
- EM = Edge Mount
- WT = Weld Tab

PCIE-G5
Card Mates:
(1.60 mm)
.062" card

View complete specifications at: samtec.com?PCIE-G4

View complete specifications at: samtec.com?PCIE-G5

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Note:
Some lengths, styles and options are non-standard, non-returnable.

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HIGH-SPEED BACKPLANE SYSTEMS

HIGH-DENSITY • DESIGN FLEXIBILITY • HIGH RELIABILITY

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- Ultra-high density with up to 128 DPs in a single connector
- Designed for blind mate applications
- Surface mount for better density and performance
- Innovative wafer design eliminates intra-pair skew
- Configurable signal banks for design flexibility
- Offset footprint for optimal signal integrity performance
- Large continuous ground blades between and surrounding the differential pairs eliminates resonances
- Optional guidance and keying
- Standard weld tabs for a secure connection to the board

IN DEVELOPMENT:
Flyover® cable assembly for extended signal reach

KEY SPECIFICATIONS (NVBM/NVBF)

<table>
<thead>
<tr>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
</tr>
</tbody>
</table>

samtec.com/NovaRay

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
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**0.80 mm x 1.80 mm PITCH • MICRO RUGGED BACKPLANE HEADER & SOCKET**

**SERIES**
- **NVBF**
  - Socket
- **NVBM**
  - Terminal

**STYLE**
- DP = 4 Pairs per wafer

**NO. OF COLUMNS**
- 32

**ORIENTATION**
- VT = Vertical (NVBF)
- RA = Right-Angle (NVBM)

**PLATING OPTION**
- S = 30 µ" (0.76 µm) Gold on contact area, Matte Tin on solder tail

**SOLDER TYPE**
- 2 = Lead-Free Solder Charge

**GUIDANCE**
- L = Left Guidance
- R = Right Guidance
- B = Both

**KEYING**
- N = No Key
- TR = Tape & Reel

**“X”R**
- A thru –H = Position of flat on Key (See Table) (Only available with Guidance)

**NO. OF COLUMNS**
- 32

**KEYING (-VT)**

<table>
<thead>
<tr>
<th>-L / -R / -B</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>-A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**KEYING (-RA)**

<table>
<thead>
<tr>
<th>-L / -R / -B</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-H</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- Some sizes, styles and options are non-standard, non-returnable

View complete specifications at: samtec.com/NVBF

**NVBF-VT**
Board Mates:
- NVBM-RA

**NVBM-RA**
Board Mates:
- NVBF-VT

View complete specifications at: samtec.com/NVBM
High-Speed Backplane Connector & Cable Systems
(2.00 mm) .0787" Pitch

Features & Benefits
ExaMAX® High-Speed Backplane System
- Meets a variety of industry specifications
- Exceeds OIF CEI-28G-LR specification for 28 Gbps standards
- 24 - 72 pair designs (4 and 6 pairs; 6, 8, 10 and 12 columns)
- Wafer design includes one sideband signal per column
- Press-fit tails provide a reliable electrical connection
- PCIe® 6.0/CXL™ 3.1 capable

ExaMAX® High-Speed Backplane Cable Assemblies
- 30 & 34 AWG Eye Speed® Ultra Low Skew Twinax Cable offers improved signal integrity, increased flexibility and routability
- Highly customizable with modular flexibility
- Reduce costs due to lower layer counts
- PCIe® 6.0/CXL™ 3.1 capable
- Eye Speed® Thinax™ ultra performance twinax cable version in development

Key Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Insulator Material</th>
<th>Contact Material</th>
<th>Plating</th>
<th>Operating Temp Range</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Lead-Free Solderable</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBTM/EBTF/EBDM</td>
<td>Liquid Crystal Polymer</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C</td>
<td>4 A per pin</td>
<td>150 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>EPTT/EPTS</td>
<td>High Temperature Thermoplastic</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C</td>
<td>14.1 A per pin</td>
<td>150 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>EBCM/EBCF</td>
<td>Liquid Crystal Polymer</td>
<td>Copper Alloy</td>
<td>Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-40 °C to +105 °C</td>
<td>3.6 A per pin</td>
<td>125 VAC</td>
<td>N/A</td>
</tr>
</tbody>
</table>

F-224 (Rev 20DEC23) samtec.com/ExaMAX

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**ExaMAX® (2.00 mm) .0787” PITCH • VERTICAL & RIGHT-ANGLE HEADERS**

**EBTM**

- **NO. OF PAIRS PER COLUMN**
  - –4 = 4 Pairs
  - –6 = 6 Pairs
- **COLUMNS**
  - –06, –08, –10, –12 (-12 column only available in -6 pairs)
- **COLUMN PITCH**
  - –2.0 = (2.0 mm) .0787”
- **PLATING**
  - –S = 30 µm (0.76 µm) Gold on contact area, Matte Tin on tail
- **ORIENTATION**
  - –VT = Vertical
  - –RA = Right-Angle
- **1**
  - (Leave Blank for no Guidance)
- **GUIDANCE**
  - –L = Left Guidance
  - –R = Right Guidance
- **KEYING**
  - (Only available with –L or –R Guidance)
  - –A thru –H = Position of flat on Key (See Table)

**EBTM-VT Board Mates:**
- EBTF-RA

**Cable Mates:**
- EBCF

**EBTM-RA Board Mates:**
- EBTF-RA

**Cable Mates:**
- EBCF

**KEYING (-VT)**

- **-L / -R**

**KEYING (-RA)**

- **-L / -R**

**Notes:**
Some lengths, styles and options are non-standard, non-returnable.

ExaMAX® is a registered trademark of AFCI.

View complete specifications at: samtec.com/ExaMAX

---

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ExaMAX® is a registered trademark of AFCI.

View complete specifications at: samtec.com/ExaMAX
**EBDM**

- **PAIRS**: -6 = 6 Pairs, -06, -08, -10, -12 (-12 column only available in -6 pairs)
- **COLUMN PITCH**: -2.0 = (2.0 mm) .0787" (12.90)
- **PLATING**: -S = 30 µ" (0.76 µm) Gold on contact area, Matte Tin on tails
- **RA**: 1
- **GUIDANCE**: (Leave Blank for no Guidance)
  - **G** = Guide Pin
- **KEYING**: (Only with –L or –R Guidance; Leave Blank for no Keying)
  - **–L** = Left Guidance
  - **–R** = Right Guidance

**EBTF-RA**
- **Board Mates**: EBTM, EBDM-RA
- **Cable Mates**: EBCM

**EBDM-RA**
- **Board Mates**: EBTF-RA
- **Cable Mates**: EBCF

**Notes:**
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ExaMAX® is a registered trademark of AFCI.

View complete specifications at: samtec.com/ExaMAX

**Keying**

- **-L / -R**

**View complete specifications at:** samtec.com?EBTF-RA

**Board Mates:**
EBTF-RA

**Cable Mates:**
EBCM

**Keying (-RA)**

- **NO. OF PAIRS PER COLUMN**
  - **-06**: (12.90) .508 (18.85) .742
  - **-08**: (16.90) .665 (22.85) .900
  - **-10**: (20.90) .823 (26.85) 1.057
  - **-12**: (24.90) .980 (30.85) 1.215

**Columns**

- **COLUMN A**
  - **COLUMNS**
  - **-06**: (12.90) .508 (18.85) .742
  - **-08**: (16.90) .665 (22.85) .900
  - **-10**: (20.90) .823 (26.85) 1.057
  - **-12**: (24.90) .980 (30.85) 1.215

**View complete specifications at:** samtec.com?EBDM-RA

**Notes:**
Some lengths, styles and options are non-standard, non-returnable.
### ExaMAX® POWER MODULES

#### (2.00 mm) .0787" PITCH TERMINAL POWER MODULES

<table>
<thead>
<tr>
<th>EPTT</th>
<th>POSITIONS PER ROW</th>
<th>PLATING</th>
<th>HEIGHT</th>
<th>D</th>
<th>ORIENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mates with:</td>
<td>-2</td>
<td>-P (4 Positions)</td>
<td>-11.5</td>
<td>-RA</td>
<td>Right-Angle</td>
</tr>
<tr>
<td>EPTS</td>
<td></td>
<td>Palladium with flash Gold on</td>
<td>(11.50 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>contacts, Matte Tin on tails</td>
<td>.453&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### ExaMAX® GUIDE MODULES

#### TERMINAL GUIDE MODULES

<table>
<thead>
<tr>
<th>EGBM</th>
<th>ORIENTATION</th>
<th>THREADING</th>
<th>LENGTH</th>
<th>CARD SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mates with:</td>
<td>-VT (Vertical)</td>
<td>Leave Blank for -RA</td>
<td>-18.3</td>
<td>-20 = 20 mm (.787&quot;)</td>
</tr>
<tr>
<td>EGBF</td>
<td>-RA (Right-Angle)</td>
<td>External</td>
<td>18.30 mm (.720&quot;)</td>
<td></td>
</tr>
<tr>
<td>Insulator Material: Zinc Alloy</td>
<td>-2 (Internal (25.3 Length only)</td>
<td>Leave Blank for -RA</td>
<td>25.3 = 25.30 mm (.996&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

#### SOCKET GUIDE MODULES

<table>
<thead>
<tr>
<th>EGBF</th>
<th>ORIENTATION</th>
<th>CARD SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mates with:</td>
<td>-RA (Right-Angle)</td>
<td>-20 = 20 mm (.787&quot;)</td>
</tr>
<tr>
<td>EGBM</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Insulator Material: Zinc Alloy</td>
<td>-2 (Internal (25.3 Length only)</td>
<td></td>
</tr>
</tbody>
</table>


---

**Notes:**
Some lengths, styles and options are non-standard, non-returnable.
ExaMAX® is a registered trademark of AFCI.
**EBCM**

Mates with: EBCF, EBTF

Retention Bracket: EBCB

### Cable Header
- **-1**: 34 AWG/Tx to Rx Sig. Map
- **-2**: 30 AWG/Tx to Rx Sig. Map
- **-3**: 34 AWG/1:1 Sig. Map
- **-4**: 30 AWG/1:1 Sig. Map

### Cable Socket
- **-1**: 34 AWG/Tx to Rx Sig. Map
- **-2**: 30 AWG/Tx to Rx Sig. Map
- **-3**: 34 AWG/1:1 Sig. Map
- **-4**: 30 AWG/1:1 Sig. Map

---

### EBCF

Mates with: EBCM, EBTM

Latching Shroud: EBCL

**Notes:**
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View complete specifications at: [samtec.com/EBCF](http://samtec.com/EBCF)

---

**END 1: --G SHOWN**

**END 2**

View complete specifications at: [samtec.com/EBCM](http://samtec.com/EBCM)

---

**END 1: –V SHOWN**

**END 2: –L–G SHOWN**

View complete specifications at: [samtec.com/EBCF](http://samtec.com/EBCF)

---

**Keying**

- **-L**: Male, Left Guidance
- **-R**: Male, Right Guidance
- **-FL**: Female, Right-angle Left Guidance (-3 & -4 Signal Map only)
- **-FR**: Female, Right-angle Right Guidance (-3 & -4 Signal Map only)
- **-FV**: Female, Vertical (-3 & -4 Signal Map only)
- **-A thru**: Position of Flat on Key
- **-H**: Position of Flat on Key (See Table)

---

**End 1 Guide**

- **-A thru**: Length in Inches 0° (152.4 mm) minimum
- **-H**: Position of Flat on Key (See Table)

---

**End 2 Guide**

- **-L**: Male, Left Guidance
- **-R**: Male, Right Guidance
- **-FV**: Female, Vertical
- **-FL**: Female, Right-angle Left Guidance (-3 & -4 Signal Map only)
- **-FR**: Female, Right-angle Right Guidance (-3 & -4 Signal Map only)
- **-H**: Position of Flat on Key (See Table)

---

**End 2**

- **-1**: Male, Left Guidance
- **-R**: Male, Right Guidance
- **-FL**: Female, Right-angle Left Guidance (-3 & -4 Signal Map only)
- **-FR**: Female, Right-angle Right Guidance (-3 & -4 Signal Map only)
- **-FV**: Female, Vertical (-3 & -4 Signal Map only)
- **-A thru**: Position of Flat on Key
- **-H**: Position of Flat on Key (See Table)

---

**Guidance**

- **-V**: Vertical Latch
- **-A thru**: Vertical Latch
- **-N**: No Key
- **-H**: No Key

---

**Cable Length**

- **-1**: Standard
- **-1**: Standard
- **-1**: Standard

---

**Cable Per Column**

- **-4**: (24.80) (.976)
- **-6**: (32.00) (1.260)

---

**Cable Length**

- **-4**: (19.80) (0.783)
- **-6**: (29.10) (1.147)

---

**Cable Length Designation**

- **-1**: (14.60) (.575)
- **-1**: (29.45) (1.159)

---

**Column**

- **-04**: (10.60) (.417)
- **-06**: (14.60) (.575)

---

**Pair Per Column**

- **-4**: (23.00) (.920)
- **-6**: (24.80) (.976)

---

**Parts Per Column**

- **-4**: (17.45) (.687)
- **-6**: (25.45) (1.002)

---

**Samtec**

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## Panel Retention Brackets & Latching Shrouds

### EBCB

- **Use with:** EBCF, EBCM, EBTF-RA

<table>
<thead>
<tr>
<th>No. of Pairs</th>
<th>-4</th>
<th>-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Columns</td>
<td>-04, -06, -08, -10, -12, -14, -16</td>
<td>-1, -2, -4</td>
</tr>
</tbody>
</table>

- (-04, -06 only available with -1–5)
- (-2 & -4 banks available with -08, -10, -12, -14, -16 columns only)

<table>
<thead>
<tr>
<th>MOUNTING OPTION</th>
<th>-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Leave Blank for Standard)</td>
<td>- Side Lugs (–1 Bank Only)</td>
</tr>
</tbody>
</table>

### EBCM

- **Use with:** EBCF, EBCM, EBTF-RA

<table>
<thead>
<tr>
<th>No. of Pairs</th>
<th>-4</th>
<th>-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Columns</td>
<td>-04, -06, -08, -10, -12, -14, -16</td>
<td></td>
</tr>
</tbody>
</table>

- (-12 column only available in -6 pairs)

### EBCB–X–XX–4 SHOWN

View complete specifications at: samtec.com?EBCB

### EBCB–X–XX–1 SHOWN

View complete specifications at: samtec.com?EBCL

### EBCM Cable Assembly Locks into EBCB Retention Bracket

### View complete specifications at: samtec.com?EBCM

### Notes:
Some lengths, styles and options are non-standard, non-returnable.

ExaMAX® is a registered trademark of AFCI.

---

**EBCL**

- **Vertical Latching Shroud**

<table>
<thead>
<tr>
<th>No. of Pairs</th>
<th>-4, -6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Columns</td>
<td>-06, -08, -10, -12</td>
</tr>
</tbody>
</table>

(-12 column only available in -6 pairs)

### EBCL–X–XX–4 SHOWN

View complete specifications at: samtec.com?EBCL

### Use with:** EBCF, EBTF-RA

### EBCL

- **Use with:** EBCF, EBTF-RA

<table>
<thead>
<tr>
<th>No. of Pairs</th>
<th>-4, -6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Columns</td>
<td>-04, -06, -08, -10, -12, -14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MOUNTING OPTION</th>
<th>-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Leave Blank for Standard)</td>
<td>- Side Lugs (–1 Bank Only)</td>
</tr>
</tbody>
</table>

---

**Notes:**
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ExaMAX® is a registered trademark of AFCI.
FEATURES & BENEFITS

- Small form factor and modular design provides significant space-savings and flexibility
- High-performance system
- Up to 84 differential pairs per linear inch
- 3, 4 and 6-pair designs on 4, 6 and 8 columns
- Integrated power, guidance, keying and side walls available
- 85 Ω and 100 Ω options
- Combine any configuration of modules to create one integrated receptacle (BSP Series); corresponding terminal modules are individually mounted to the backplane.
- Visit samtec.com/BSP or contact HSBP@samtec.com
- Press-fit extraction and insertion tool options; please visit samtec.com/tooling for details

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDTM/HDTF</td>
<td>LCP</td>
<td>Phosphor Bronze (HDTM)</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-40 °C to + 105 °C</td>
<td>1.5 A per contact</td>
<td>48 VAC</td>
</tr>
<tr>
<td>HPTS/HPTT</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-40 °C to + 105 °C</td>
<td>10 A per blade</td>
<td>48 VAC</td>
</tr>
</tbody>
</table>

HIGH-DENSITY, SMALL FORM FACTOR

XCede® HD
Up to 84 pairs per linear inch

Traditional Backplane
Up to 76 pairs per linear inch

(Both shown with six 4-pair, 8 column receptacles)
### NO. OF COLUMNS

<table>
<thead>
<tr>
<th>A</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Walls</td>
<td>4 or -5 Polarizing Only; Leave Blank for No Guidance</td>
</tr>
<tr>
<td>Left Wall</td>
<td>3 mm Wipe Signal / 4 mm Wipe Ground</td>
</tr>
<tr>
<td>Right Wall</td>
<td>2 mm Wipe Signal / 3 mm Wipe Ground</td>
</tr>
</tbody>
</table>

### PAIRS PER COLUMN

<table>
<thead>
<tr>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Wall</td>
<td>(1.80) .071</td>
</tr>
<tr>
<td>-03</td>
<td>(15.10) .594</td>
</tr>
<tr>
<td>-04</td>
<td>(18.70) .736</td>
</tr>
<tr>
<td>-06</td>
<td>(25.90) 1.020</td>
</tr>
</tbody>
</table>

### KEYING

- **L** = Left Polarizing with left guidance (-4 Pairs N/A)
- **R** = Right Polarizing with right guidance (-4 Pairs N/A)
- **A** thru **H** = Position of Flat on Key (See Table)

### Notes:
Some lengths, styles and options are non-standard, non-returnable. Xcede® is a registered trademark of Amphenol.
**HDTF**

**Board Mates:**
- HDTM

**Body Height:**

<table>
<thead>
<tr>
<th>NO. OF COLUMNS</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>–3</td>
<td>30 µm (0.76 µm) Gold on Contact Area, Matte Tin on Tail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–4</td>
<td>45 µm (1.15 µm) Gold on Contact Area, Matte Tin on Tail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–6</td>
<td>60 µm (1.52 µm) Gold on Contact Area, Matte Tin on Tail</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Plating:**

- RA = Right-angle
- VT = Vertical

**Impedance:**

- LC = Standard
- HS = High-Speed

**Notes:**
- Some lengths, styles and options are non-standard, non-returnable. XCede® is a registered trademark of Amphenol.

---

**HPTT**

**Body Height:**

<table>
<thead>
<tr>
<th>BODY HEIGHT</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>–3</td>
<td>11.8 (0.47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–4</td>
<td>17.4 (0.69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–6</td>
<td>24.6 (1.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Plating:**

- Contact Wipe Column A & B
- Contact Wipe Column A & B
- Contact Wipe Column A & B

**Orientation:**

- RA = Right-angle

**Notes:**
- Some lengths, styles and options are non-standard, non-returnable. XCede® is a registered trademark of Amphenol.

---

**HPTS**

**Body Height:**

<table>
<thead>
<tr>
<th>BODY HEIGHT</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>–3</td>
<td>11.8 (0.47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–4</td>
<td>17.4 (0.69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–6</td>
<td>24.6 (1.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Plating:**

- Standard Gold on Contact Area, Matte Tin on Tail

**Orientation:**

- VT = Vertical

**Notes:**
- Some lengths, styles and options are non-standard, non-returnable. XCede® is a registered trademark of Amphenol.
HIGH-SPEED CABLE PANEL ASSEMBLIES

FLYOVER® TECHNOLOGY • UP TO 112 Gbps PAM4 PER CHANNEL • VARIETY OF END OPTIONS

96-99  FLYOVER® QSFP CABLE SYSTEMS (FQSFP-D8, FQSFP-DD, FQSFP)

100-103  NOVARAY® I/O EXTREME PERFORMANCE SYSTEMS (NVACP, NVC, NVACE, NVA3E, NVA3P)

104-105  EXAMAX® I/O SHIELDED CABLE SYSTEM (EBTC, EBCE)
FLYOVER® TECHNOLOGY

Samtec Flyover® technology breaks the constraints of traditional signaling substrate and hardware offerings by routing signals via ultra low skew twinax cable versus through lossy PCB.

The result is a cost-effective, high-performance and heat efficient answer to the challenges of 56 Gbps bandwidths and beyond.

EYE SPEED® TWINAX CABLE TECHNOLOGY

- Ideal for 28 – 112+ Gbps applications
- Tight coupling between signal conductors
- Ultra low skew twinax < 3.5 ps/meter (intra-pair)
- Improved signal integrity and eye pattern opening
- Increased bandwidth and reach
- 40% smaller cross-sectional area (Thinax™)
- In Development: Eye Speed® AIR™ foamed twinax for significantly improved signal integrity and even lower intra-pair skew

THERMAL IMPROVEMENT

PERFORMANCE & COST ADVANTAGES

- 28 - 56 Gbps NRZ and beyond
- Simplified board layout
- Less expensive PCB materials, fewer PCB layers
- Eliminates expensive re-timers

SUPPORT

Fully integrated technology teams for full system optimization from Silicon-to-Silicon, including Samtec’s High-Speed Cable Plants.

ExaMAX®
(See pages 84-89)

NovaRay®
(See pages 108-109)

AcceleRate®
(See pages 112-113)

EYE SPEED® TWINAX CABLE TECHNOLOGY

INDUSTRY CABLE

SAMTEC CABLE

X Bad design coupling with individually extruded conductors & drain wire

✓ Good design coupling with Samtec’s co-extruded ultra low skew twinax

THERMAL IMPROVEMENT

Standard Network Switch vs. Samtec Flyover® Technology

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
CABLE SPECIFICATIONS

ULTRA LOW SKEW TWINAX CABLE

Samtec’s proprietary co-extruded Eye Speed® twinax cable technology eliminates the performance limitations and inconsistencies of individually extruded dielectric twinax cabling, improving signal integrity, bandwidth and reach for high-performance system architectures.

- Micro cellular dielectric extrusion
- Critical dimensions measured at every dielectric spool
- Inline laser and CAPAC devices for capacitance monitoring and diameter control
- In-process stats summary sheet for Cpk acceptance

<table>
<thead>
<tr>
<th>NOMINAL PERFORMANCE SPECIFICATIONS</th>
<th>28 AWG</th>
<th>30 AWG</th>
<th>32 AWG</th>
<th>34 AWG</th>
<th>36 AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 GHz (28G NRZ/56G PAM4) 0.25 m IL (dB)</td>
<td>-1.0</td>
<td>-1.2</td>
<td>-1.5</td>
<td>-1.8</td>
<td>-2.2</td>
</tr>
<tr>
<td>1.00 m</td>
<td>-4.1</td>
<td>-4.7</td>
<td>-5.9</td>
<td>-7.5</td>
<td>-8.9</td>
</tr>
<tr>
<td>28 GHz (56G NRZ/112G PAM4) 0.25 m</td>
<td>-1.5</td>
<td>-1.8</td>
<td>-2.2</td>
<td>-2.7</td>
<td>-3.2</td>
</tr>
<tr>
<td>1.00 m</td>
<td>-6.1</td>
<td>-7.1</td>
<td>-8.7</td>
<td>-10.9</td>
<td>-13.0</td>
</tr>
</tbody>
</table>

Density/Flexibility
- Good
- Good
- Better
- Best
- Best

* Eye Speed® Ultra Low Skew Twinax Cable is available in engineered impedance configurations of 85 Ω, 92 Ω and 100 Ω.

THINAX™ ULTRA PERFORMANCE TWINAX CABLE

- 40% smaller cross-sectional area
- 112 Gbps PAM4 performance
- Taped jacket miniaturizes the cable to match smaller, more dense connectors
- Allows for a smaller pitch within a row
- Achieving a smaller row-to-row pitch is dependent upon stack-up and BOR; customizable per application needs

MICRO COAX CABLE

- Foaming introduces air voids for signal to travel faster
- Solid extrusion of foamed dielectric provides a constant and more durable construction
- Lighter weight and smaller size with higher bandwidth capabilities at longer lengths
- 26 - 38 AWG cable available
- Choice of signal conductor, shield and FEP dielectric to meet performance and cost specifications

samtec.com/Flyover

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
QSFP, QSFP-DD and QSFP-D8 systems utilize Samtec Flyover® technology to route data above lossy PCB, simplifying board layout and extending signal reach. The modular design enables optimized systems that improve heat management, increase signal integrity performance, build in scalability for future upgrades and reduce costs by creating a multifunction board.

**FEATURES & BENEFITS**

QSFP, QSFP-DD and QSFP-D8 systems utilize Samtec Flyover® technology to route data above lossy PCB, simplifying board layout and extending signal reach. The modular design enables optimized systems that improve heat management, increase signal integrity performance, build in scalability for future upgrades and reduce costs by creating a multifunction board.

**FLYOVER® QSFP SYSTEM**
- 4 Channels (x4 bidirectional, 8 differential pairs)
- Up to 400 Gbps aggregate (112 Gbps PAM4)
- Compatible with all MSA QSFP pluggables
- Multiple heat sink options available for optimal dissipation
- Eye Speed® 30 or 34 AWG twinax cable
- Multiple end 2 options for design flexibility
- Evaluation Kits available (REF-205303-X.XX-XX), visit samtec.com/kits

**FLYOVER® QSFP DOUBLE DENSITY**
- 8 Channels (x8 bidirectional, 16 differential pairs)
- Up to 400 Gbps aggregate (56 Gbps PAM4)
- Belly-to-belly mating for maximum density
- Backward compatible with QSFP modules
- Multiple heat sink options available for optimal dissipation
- Variety of end 2 options
- Evaluation Kits available (REF-205605-X.XX-XX and REF-203424-X.XX-XX), visit samtec.com/kits

**800G FLYOVER® DOUBLE DENSITY**
- 8 Channels (x8 bidirectional, 16 differential pairs)
- Up to 800 Gbps aggregate (112 Gbps PAM4)
- Belly-to-belly mating for maximum density
- Backward compatible with QSFP & QSFP-DD modules
- Multiple heat sink options available for optimal dissipation
- Variety of end 2 options

Localized press-fit control and power contacts eliminate the need for a secondary cable and connector

High-speed contacts directly soldered to Eye Speed® ultra low skew twinax
**800G FLYOVER® QSFP DOUBLE DENSITY CABLE ASSEMBLY**

### FQSFP-D8

**CABLE TYPE**
- **03** = 34 AWG, 92 Ω ultra low skew twinax cable, 16 pairs

**FOOTPRINT**
- **A** = Primary
- **B** = Secondary (Belly-to-Belly only)

**CABLE LENGTH**
- **“XX.X”** = Length in inches

**END 2 OPTION**
- **1** = ARC6-16
- **2** = NVAC 2x2
- **3** = CPX

---

#### QSFPC-D8

**STACK**
- **1** = Single Stack

**NO. OF PORTS**
- **2** = Two Ports

**OPTION**
- **S** = Spring Fingers
- **F** = Flyover

---

#### HS-QSFPC-D8

**HEAT SINK HEIGHT**
- **1** = (6.20 mm) .244" height
- **2** = (12.00 mm) .472" height

---

#### HS-QSFP-D8

**HEAT SINK HEIGHT**
- **A**

---

**Note:** Some sizes, styles and options are non-standard, non-returnable.
### FLYOVER® QSFP DOUBLE DENSITY CABLE ASSEMBLY

<table>
<thead>
<tr>
<th>FQSFP</th>
<th>DD</th>
<th>LEAD STYLE</th>
<th>FOOTPRINT</th>
<th>CABLE LENGTH</th>
<th>END 2 OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td></td>
<td>= 20 Low-Speed, 16 Pairs High-Speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-A</td>
<td>= Primary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-B</td>
<td>= Secondary (Belly-to-Belly only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-“XX.X”</td>
<td>= Length in inches 04.0” (101.6 mm) minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-3</td>
<td>= ARC6-16 Additional end options such as NovaRay® available; contact <a href="mailto:HDR@samtec.com">HDR@samtec.com</a></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### FQSFP-DD

![Image of FQSFP-DD](image1)

Note: Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?FQSFP-DD](samtec.com/FQSFP-DD)

#### PRESS-FIT TOOLING

CAT-PF-QSFP-DD-01-01 (1 Port)
CAT-PF-QSFP-DD-01-02 (2 Port)
CAT-PF-QSFP-DD-01-03 (3 Port)
For more information, visit [www.samtec.com/tooling](www.samtec.com/tooling)

<table>
<thead>
<tr>
<th>QSFP</th>
<th>DD</th>
<th>STACK</th>
<th>NUMBER OF PORTS</th>
<th>EMI PANEL OPTION</th>
<th>FLYOVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td></td>
<td>Single Stack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td></td>
<td>One Port</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-3</td>
<td></td>
<td>Two Ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-4</td>
<td></td>
<td>Three Ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(18.52) .728</td>
<td>(18.52) .728</td>
<td>(18.52) .728</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAL = CABLE LENGTH + (17.27) .68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### HS-QSFP

<table>
<thead>
<tr>
<th>HS-QSFP</th>
<th>DD</th>
<th>HEAT SINK STYLE</th>
<th>HEAT SINK HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-P1</td>
<td></td>
<td>Pin (Aluminum)</td>
<td>(4.20 mm) .165” height</td>
</tr>
<tr>
<td>-2</td>
<td></td>
<td></td>
<td>(6.50 mm) .256” height</td>
</tr>
<tr>
<td>-3</td>
<td></td>
<td></td>
<td>(13.50 mm) .531” height</td>
</tr>
</tbody>
</table>

#### HS-QSFP-DD

![Image of HS-QSFP-DD](image2)

Note: Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?HS-QSFP-DD](samtec.com/HS-QSFP-DD)

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FLYOVER® QSFP CABLE ASSEMBLY

- **FQSFP**
  - LEAD STYLE: 01
    - 01 = 10 Low-Speed, 8 Pairs High-Speed
  - CABLE LENGTH: ”XX.X”
    - ”XX.X” = Length in inches
    - 04.0” (101.6 mm) minimum
  - PLATING: -L
    - L = 10 µ” (0.25 µm)
      - Gold over
      - 50 µ” (1.27 µm) Ni on contact area,
      - Matte Tin on tail
  - CONTACT TYPE: -PF
    - PF = Press-fit
  - END OPTION: -3, -4
    - 3 = ECUE
    - 4 = ARC6-8

- **QSFPC**
  - CAGE OPTION: -1
    - 1 = Single Stack
  - NUMBER OF PORTS: -1, -2, -4
    - 1 = One Port
    - 2 = Two Ports
    - 4 = Four Ports
  - EMI PANEL OPTION: -S
    - S = Spring Fingers
  - OPTION: -LP, -F
    - LP = Light Pipe
      - (1 & 4 ports only)
    - F = Flyover
  - FLYOVER: -N
    - N = No heat sink closed top
      - (Not available with -LP)

- **PRESS-FIT TOOLING**
  - CAT-PT-FQSFP-01
    - For more information, visit www.samtec.com/tooling
  - CAT-PT-QSFPC-03–XX
    - For more information, visit www.samtec.com/tooling

- **HEAT SINKS**
  - PART NUMBER | HEAT SINK HEIGHT
  - HS-QSFPC-P1-01 | (20.62) .812
  - HS-QSFPC-P1-02 | (39.62) 1.560
  - HS-QSFPC-P1-03 | (77.62) 3.056
  - HS-QSFPC-P1-04 | (18.20) .717

- **LIGHT PIPES**
  - PART NUMBER | NO. OF PORTS
  - LP-FQSFP-01 | 1 pipe
  - LP-FQSFP-02 | 2 pipes
  - LP-FQSFP-04 | 4 pipes

Notes:
- Some sizes, styles and options are non-standard, non-returnable.

For Light Pipe, add -LP to the end of part number.

View complete specifications at samtec.com/QSFP & samtec.com?QSFPC
TARGETED CONFIGURATIONS

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Aggregate Data Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Pair (In Development)</td>
<td>896 Gbps</td>
</tr>
<tr>
<td>16 Pair</td>
<td>1792 Gbps</td>
</tr>
<tr>
<td>32 Pair</td>
<td>3584 Gbps</td>
</tr>
<tr>
<td>x4 (8 Pair + PCIe® Sidebands)</td>
<td>512 Gbps</td>
</tr>
<tr>
<td>x8 (16 Pair + PCIe® Sidebands)</td>
<td>1024 Gbps</td>
</tr>
</tbody>
</table>

FEATURIES & BENEFITS

• 16 & 32 differential pair configurations – Accommodates x4 or x8 plus sidebands
• Cable-to-Cable bulkhead panel connection using Flyover® Cable Technology
• External Cable: 28 or 34 AWG twinax
• Internal Cable: 34 AWG twinax
• Single-Ended coax options also available
• Full external EMI shielding
• Multiple end 2 high-speed connector options on internal cable
• Available in a rugged 38999 shell for salt fog resistance to 48 hours and IP67 rated for dust and water applications

VARIOUS END 2 OPTIONS AVAILABLE

Si-Fly™
NovaRay®
AcceleRate®
**NVACP**

**SIGNAL TYPE**
- **DP** = Differential (twinax pairs only)
- **SE** = Single ended (coax signals only)

**CABLE STYLE**
- **34 AWG** = 100 Ω ultra low skew twinax
- **4** = 4 rows

**CABLE LENGTH**
- **XX.X** = Length in inches 06.0” (152.4 mm) minimum

**END 2**
- **A** = 1 ARC6
- **B** = 1 NVAC

**PIN OUT**
- **1** = Pin A01 to Pin A01 (Differential twinax pairs only)
- **4** = Pin A01 to Pin AN (N equals last position)

**SPEED**
- **1** = 56G PAM4
- **2** = 112G PAM4

Notes:
- Cable lengths longer than 40.00” (1 meter) are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

**DIE CAST PANEL CAGE**

**NVC**

**NO. OF PORTS**
- **1** = 1 Port
- **2** = 2 Ports (8 row only)
- **4** = 4 Ports (8 row only)

**ROWS**
- **04** = 4 rows
- **08** = 8 rows

**PACKAGING**
- **TY** = Trays

Notes:
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?NVACP

---

**NVACP**

**Cable Mates:**
- NVACE

**Panel Cage:**
- NVC

---

**NVC**

**Use with:**
- NVACP, NVACE

---

View complete specifications at: samtec.com?NVC

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**NVACE**

**Cable Mates:**
NVACP
Panel Cage:
NVC

**Notes:**
- Cable lengths longer than 3 meters (118") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?NVACE](samtec.com/NVACE)
**RUGGED 38999 I/O CABLE**

**NVA3E**
- **Signal Type (SIGNAL TYPE)**: DP = Differential (twinax pairs only)
- **Cable Type (CABLE TYPE)**: -1 = 34 AWG, 100 Ω ultra low skew twinax, -5 = 28 AWG, 100 Ω ultra low skew twinax
- **Shell Size (SHELL SIZE)**: -19 = 4 rows
- **Cable Length (CABLE LENGTH)**: (Standard lengths in meters)
  - -0.5 = (0.5 m) 19.69" Cable
  - -1.0 = (1.0 m) 39.37" Cable
  - -2.0 = (2.0 m) 78.74" Cable
  - -3.0 = (3.0 m) 118.11" Cable
- **End 2 (END 2)**: -A = NVA3E
- **Pin Out (PIN OUT)**: -1 = Pin A01 to Pin A01
- **Speed (SPEED)**: -1 = 56G PAM4
- **Finish (FINISH)**: -Z = Black Zinc Nickel
- **IP Sealing (IP SEALING)**: -S = Sealed

**NVA3P**
- **Signal Type (SIGNAL TYPE)**: DP = Differential (twinax pairs only)
- **Cable Type (CABLE TYPE)**: -1 = 34 AWG, 100 Ω ultra low skew twinax
- **Shell Size (SHELL SIZE)**: -19 = 4 rows
- **Cable Length (CABLE LENGTH)**: (Standard lengths in meters)
  - -06.0 = (152.4 mm) 6.0" Cable
  - -10.0 = (254.0 mm) 10.0" Cable
  - -12.0 = (304.8 mm) 12.0" Cable
  - -20.0 = (508.0 mm) 20.0" Cable
- **End 2 (END 2)**: -A = ARC6
- **Pin Out (PIN OUT)**: -B = NVAC
- **Speed (SPEED)**: -4 = Pin A01 to Pin AN (N equals last position)
- **Finish (FINISH)**: -1 = 56G PAM4
- **IP Sealing (IP SEALING)**: -Z = Black Zinc Nickel

**Notes:**
- Cable lengths longer than 3 meter (118.00") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?NVA3E](samtec.com?NVA3E)

**RUGGED 38999 PANEL MOUNT CABLE**

**NVA3P**
- **Signal Type (SIGNAL TYPE)**: DP = Differential (twinax pairs only)
- **Cable Type (CABLE TYPE)**: -1 = 34 AWG, 100 Ω ultra low skew twinax
- **Shell Size (SHELL SIZE)**: -19 = 4 rows
- **Cable Length (CABLE LENGTH)**: (Standard lengths in inches)
  - -06.0 = (152.4 mm) 6.0" Cable
  - -10.0 = (254.0 mm) 10.0" Cable
  - -12.0 = (304.8 mm) 12.0" Cable
  - -20.0 = (508.0 mm) 20.0" Cable
- **End 2 (END 2)**: -A = NVA3E
- **Pin Out (PIN OUT)**: -1 = Pin A01 to Pin A01
- **Speed (SPEED)**: -1 = 56G PAM4
- **Finish (FINISH)**: -Z = Black Zinc Nickel
- **IP Sealing (IP SEALING)**: -S = Sealed

**NVA3P**
- **Signal Type (SIGNAL TYPE)**: DP = Differential (twinax pairs only)
- **Cable Type (CABLE TYPE)**: -1 = 34 AWG, 100 Ω ultra low skew twinax
- **Shell Size (SHELL SIZE)**: -19 = 4 rows
- **Cable Length (CABLE LENGTH)**: (Standard lengths in inches)
  - -06.0 = (152.4 mm) 6.0" Cable
  - -10.0 = (254.0 mm) 10.0" Cable
  - -12.0 = (304.8 mm) 12.0" Cable
  - -20.0 = (508.0 mm) 20.0" Cable
- **End 2 (END 2)**: -A = NVA3E
- **Pin Out (PIN OUT)**: -1 = Pin A01 to Pin A01
- **Speed (SPEED)**: -1 = 56G PAM4
- **Finish (FINISH)**: -Z = Black Zinc Nickel
- **IP Sealing (IP SEALING)**: -S = Sealed

**Notes:**
- Cable lengths longer than 1 meter (40.00") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?NVA3P](samtec.com?NVA3P)

samtec.com/NOVARAY-IO

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**KEY SPECIFICATIONS (EBCE/EBTC)**

<table>
<thead>
<tr>
<th>CABLE</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 &amp; 34 AWG ultra low skew twinax</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
</tr>
</tbody>
</table>

**FEATURES & BENEFITS**

- Fully shielded external cable and cage for EMI protection
- Supports 64 Gbps PAM4 (32 Gbps NRZ) applications
- PCIe® 6.0/CXL™ 3.1 capable
- Rugged pull latch for mating/unmating
- Single port cage designed for use with ExaMAX® right-angle board connector (EBTM-RA)
- 30 and 34 AWG ultra low skew twinax
- 24 to 72 pairs (4 and 6 pairs; 6, 8, 10 and 12 columns)
- In Development: Cable-to-cable bulkhead panel connection for increased performance to 112 Gbps PAM4

---

**STUBILIZED, HIGH-DENSITY I/O CABLE SYSTEM**

(2.00 mm) .0787” PITCH

---

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
**ExaMAX®**

(2.00 mm) .0787” PITCH • SHIELDED PANEL MOUNT CABLE

---

**EBCE**

- **GAUGE/SIGNAL MAP**
  - -1 = 34 AWG 100 Ω, Tx to Rx Signal Map
  - -2 = 30 AWG 100 Ω, Tx to Rx Signal Map
  - -3 = 34 AWG 100 Ω, 1:1 Signal Map

- **PAIRS PER COLUMN**
  - -4 = 4 Pairs
  - -6 = 6 Pairs

- **COLUMNS**
  - -06, -08, -10, -12 = 6 Pairs only

- **END 1 PIN**
  - -1 = Standard

- **CABLE LENGTH**
  - "XX" = Length in Inches

- **END 2 PIN**
  - -1 = Standard

---

Notes:

- Cable lengths longer than 40.00" (1 meter) are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

---

**DIE CAST PANEL CAGE**

---

**EBTC**

- **PAIRS PER COLUMN**
  - -4 = 4 Pairs
  - -6 = 6 Pairs

- **COLUMNS**
  - -06, -08, -10, -12 = 6 Pairs only

- **PORT SIZE**
  - -1

---

Notes:

- Some sizes, styles and options are non-standard, non-returnable.

---

**Mates With:**

EBTM-RA/EBTC

---

**Use With:**

EBTM-RA, EBCE

---

**View complete specifications at:** samtec.com?EBCE

---

**View complete specifications at:** samtec.com?EBTC

---

**PRELIMINARY**

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
IN DEVELOPMENT: FLYOVER® PANEL ASSEMBLIES

112 GBPS PAM4 FLYOVER® SFP & OSFP CABLE SYSTEMS

Next gen panel assemblies utilize Samtec’s Flyover® technology to route critical high-speed signals through Eye Speed® ultra low skew twinax and Thinax™ ultra performance twinax cable, simplifying board layout and extending signal reach. Contact HDR@samtec.com for more information.

FLYOVER® SFP112
- 112 Gbps per channel performance
- Ideal for next gen higher speed applications including DataCom, Medical, Industrial and Instrumentation
- Optimized cage and heatsink design for excellent thermal and signal integrity performance
- Accepts all MSA compliant SFP pluggable modules
- Press-fit tails
- Light pipes available for front panel indication of operational status
- Single and multi-port cage options
- Multiple end 2 ASIC adjacent connectors for maximum design flexibility: AcceleRate®, Si-Fly™, NovaRay®, AcceleRate® HP, FireFly™, Generate™ (GC6), AcceleRate® Mini

FLYOVER® OSFP 112 Gbps PAM4
- 112 Gbps per channel performance
- 8 channels (x8 bidirectional, 16 differential pairs)
- Optimized cage and heatsink design for excellent thermal and signal integrity performance
- Direct attach contacts soldered to Thinax™ ultra performance twinax cable eliminates long signal traces in transition board, improving signal integrity
- Sideband signaling via press-fit contacts for increased airflow
- Multiple end 2 options: AcceleRate®, Si-Fly™, NovaRay®, AcceleRate® HP, FireFly™, Generate™ (GC6), FireFly™, AcceleRate® Mini
- 224 Gbps solution in development (FOSFP2)
HIGH-SPEED CABLE MID-BOARD SYSTEMS

FLYOVER® TECHNOLOGY • UP TO 112 Gbps PAM4 PER CHANNEL • VARIETY OF END OPTIONS

108-109 NOVARAY® EXTREME DENSITY & PERFORMANCE SYSTEM (NVAC, NVAM-CT)

110-111 ACCELERATE® HP HIGH-PERFORMANCE CABLE SYSTEM (ARP6, APF6-L)

112-113 ACCELERATE® SLIM CABLE SYSTEM (ARC6, ARF6)

114-115 ACCELERATE® MINI EXTREME PERFORMANCE MINI FORM FACTOR (ARM6, AMF6)

116-117 SI-FLY™ LOW PROFILE, HIGH-DENSITY CABLE SYSTEM (CPC, CPI)

118 GENERATE™ HIGH-SPEED EDGE CARD SYSTEM (GC6)
FEATURES & BENEFITS

- 112 Gbps PAM4 per channel
- 4.0 Tbps aggregate data rate - 9 IEEE 400G channels
- PCIe® 6.0/CXL™ 3.1 capable
- Innovative, fully shielded differential pair design enables extremely low crosstalk (beyond 40 GHz) and tight impedance control
- 48 differential pairs per square inch
- Industry leading aggregate data rate density - 2x the data rate in 60% of the space
- 8 to 32 differential pairs; up to 72+ pairs in development
- Panel I/O solution available with extended EMI shielding (NVACE/NVACP) or rugged 38999 shell (NVA3E/NVA3P); see page 100-103
- Eye Speed® Thinax™ ultra performance twinax cable version in development

KEY SPECIFICATIONS (NVAC/NVAM-CT)

<table>
<thead>
<tr>
<th>CABLE</th>
<th>SIGNAL ROUTING</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 AWG ultra low skew twinax</td>
<td>92 Ω &amp; 100 Ω</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>Au over 50 µ&quot; (1.27 µm) Ni</td>
<td>-40 ºC to +125 ºC</td>
</tr>
</tbody>
</table>

**Aggregate Data Rate (NRZ)**

<table>
<thead>
<tr>
<th></th>
<th>448 Gbps</th>
<th>672 Gbps</th>
<th>896 Gbps</th>
<th>1344 Gbps</th>
<th>1792 Gbps</th>
<th>4032 Gbps*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Bank*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Row</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Row*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72 Pairs*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*In development

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### NVAC

**Board Mates:** NVAM-CT

<table>
<thead>
<tr>
<th>NVAC</th>
<th>STYLE</th>
<th>CABLE STYLE</th>
<th>NO. OF ROWS</th>
<th>NO. OF BANKS</th>
<th>CABLE LENGTH</th>
<th>01</th>
<th>PIN OUT</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–DP</td>
<td></td>
<td>–1</td>
<td>–1</td>
<td>–1”XX.X”</td>
<td></td>
<td></td>
<td>–L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>–2</td>
<td></td>
<td>–1</td>
<td>–1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–2</td>
<td>–1</td>
<td>Pin A01 to Pin AN (N equals last position)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **–DP** = 4 pairs per wafer
- **–3** = 34 AWG, 92 Ω ultra low skew twinax
- **–1** = 34 AWG, 100 Ω ultra low skew twinax

**Notes:**
- Cable lengths longer than 40.00” (1 meter) are not supported with S.I. test data.
- View complete specifications at: [samtec.com?NVAC](samtec.com?NVAC)

### NVAM

**Board Mates:** NVAM-CT

<table>
<thead>
<tr>
<th>NVAM</th>
<th>STYLE</th>
<th>NO. OF ROWS</th>
<th>NO. OF BANKS</th>
<th>02.0</th>
<th>PLATING OPTIONS</th>
<th>SOLDER TYPE</th>
<th>CT</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–DP</td>
<td>–02</td>
<td>–1</td>
<td>–1</td>
<td>–S = 30 µ&quot; (0.76 µm) Gold on contact area, Matte Tin on solder tail</td>
<td>–2 = Lead-Free Solder Charge</td>
<td>–TR = Tape &amp; Reel</td>
<td>–FR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–03</td>
<td>–2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>–04</td>
<td>–3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **–DP** = 4 pairs per wafer
- **–02** = 2 Rows
- **–03** = 3 Rows
- **–04** = 4 Rows
- **–2** = 2 Banks

**Notes:**
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com?NVAM-CT](samtec.com?NVAM-CT)
FEATURES & BENEFITS

- Industry’s highest density 112G PAM4 cable system
- BGA solder ball attach for simplified board processing
- 0.635 mm contact pitch; 2.20 x 2.40 mm row-to-row pitch
- 4 to 6 rows (8 rows in development); 8 or 12 pairs per row
- Up to 96 twinax cables in development
- Single-ended micro coax configuration
  - 34 AWG ThinSE™ coax
  - 12 or 18 coax per row
  - Dedicated G-S-G-S-G layout for reduced crosstalk
- Right-angle mating connector in development
- 112 Gbps PAM4 Gen 2 on-package system with up to 144 differential pairs and Eye Speed® Thinax™ ultra performance twinax cable (ART6/ATF6); contact HDR@samtec.com for information

KEY SPECIFICATIONS (ARP6/ARF6-L)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>CABLE</th>
<th>SIGNAL ROUTING</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0.635 mm) .025&quot;</td>
<td>34 AWG ultra low skew twinax</td>
<td>92 Ω Differential</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-40 °C to +125 °C</td>
</tr>
</tbody>
</table>

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
(0.635 mm) .025” • HIGH-DENSITY/PERFORMANCE CABLE

**arp6**

- **dp** = 92 Ω
- **se** = 50 Ω
- **ds** = Mixed
- **dp** & **se**

**Note:** Some sizes, styles and options are non-standard, non-returnable.

**APF6-L/ APF6-T**

**Cable Mates:**

**APR6**

**No. of Positions** - **No. of Rows**

<table>
<thead>
<tr>
<th>No. of Positions Per Row</th>
<th>A</th>
<th>No. of Rows</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-025</td>
<td>(20.34)</td>
<td>(12.54)</td>
<td>.801</td>
<td>.944</td>
</tr>
<tr>
<td>-037</td>
<td>(27.96)</td>
<td>(17.14)</td>
<td>1.101</td>
<td>1.675</td>
</tr>
</tbody>
</table>

**APF6 -L/ APF6-T**

**No. of Positions** - **Lead Style** - **Plating** - **Row** - **Solder Type** - **Option** - **“X”R**

<table>
<thead>
<tr>
<th>No. of Positions (Per Row)</th>
<th>-025, -037</th>
<th>-03.5 (3.5 mm)</th>
<th>.138”</th>
</tr>
</thead>
<tbody>
<tr>
<td>-L</td>
<td>-04</td>
<td>Four Rows</td>
<td>2</td>
</tr>
<tr>
<td>-S</td>
<td>-06</td>
<td>Six Rows</td>
<td>3</td>
</tr>
<tr>
<td>-L</td>
<td>-S</td>
<td>Gold on contact area, Matte Tin on tail</td>
<td>2</td>
</tr>
<tr>
<td>-L</td>
<td>-L</td>
<td>Gold on contact area, Matte Tin on tail</td>
<td>2</td>
</tr>
<tr>
<td>-L</td>
<td>-T</td>
<td>Squeeze Latch</td>
<td>-TR</td>
</tr>
<tr>
<td>-L</td>
<td>-T</td>
<td>Locking Tool</td>
<td>-FR</td>
</tr>
</tbody>
</table>

**APF6-025-03.5-X-04-2-L-L SHOWN**

**APF6-025-03.5-X-04-2-L-L SHOWN**

View complete specifications at: samtec.com?APF6-L & samtec.com?APF6-T

View complete specifications at: samtec.com?ARP6

samtec.com/AcceleRateHP-Cable

**F-224 (Rev 08NOV23)***

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ACCELERATE®

SLIM, DIRECT ATTACH CABLE ASSEMBLIES
(0.635 mm) .025" PITCH

FEATURES & BENEFITS

• Slimmest cable assembly in the industry - 7.6 mm width
• High-density 2-row design
• 8, 16 and 24 differential pair configurations
• 34 AWG, 100 Ω Eye Speed® ultra low skew twinax cable
• Multiple wiring options including reverse polarity
• Mating board level socket (ARF6 Series) features standard rugged weld tabs for increased stability on the PCB
• Rugged metal latching and shielding
• Supports 64 Gbps PAM4 (32 Gbps NRZ) applications
• PCIe® 6.0/CXL™ 3.1 capable
• Utilizes Samtec’s Flyover® Technology to simplify board layout and extend signal reach

KEY SPECIFICATIONS (ARC6/ARF6)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>CABLE</th>
<th>SIGNAL ROUTING</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0.635 mm)</td>
<td>34 AWG Eye Speed® ultra low skew twinax</td>
<td>100 Ω Differential</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au over 50 µ&quot; (1.27 µm) Ni</td>
<td>-40 °C to +125 °C</td>
</tr>
</tbody>
</table>

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
### ARC6

<table>
<thead>
<tr>
<th>NO. OF PAIRS</th>
<th>CABLE LENGTH</th>
<th>END 1</th>
<th>END 2</th>
<th>WIRING OPTION</th>
<th>CABLE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>–08</td>
<td>“XX.X”</td>
<td>-LU</td>
<td>-LU</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>–16</td>
<td>= Length in Inches 03.0” (76.2 mm) minimum</td>
<td>= Latch Up</td>
<td>= Latch Up</td>
<td>= Pin 1 to Pin 2 (End 2 -LD option only)</td>
<td>= 34 AWG 100 Ω Eye Speed® Ultra low skew twinax</td>
</tr>
<tr>
<td>–24</td>
<td></td>
<td></td>
<td></td>
<td>–3</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Cable lengths longer than 40.00” (1 meter) are not supported with S.I. test data.

#### Board Mates:
- ARF6

#### Wiring Option Details:
- **-2**: Pin 1 to Pin 2 (End 2 -LD option only)
- **-3**: Pin 1 to Pin N-1 (End 2 -LU option only)
- **-2R**: Pin 1 to Pin 2 Reversed Polarity (End 2 -LD option only) 06.0” (152.4 mm) min. cable length
- **-3R**: Pin 1 to Pin N-1 Reversed Polarity (End 2 -LU option only) 06.0” (152.4 mm) min. cable length

### ARF6

<table>
<thead>
<tr>
<th>NO. OF PAIRS</th>
<th>PLATING</th>
<th>ROW</th>
<th>A</th>
<th>K</th>
<th>“X”R</th>
</tr>
</thead>
<tbody>
<tr>
<td>–08</td>
<td>-S</td>
<td>-D</td>
<td>-A</td>
<td>-K</td>
<td>-TR</td>
</tr>
<tr>
<td>–16</td>
<td>= 30 μ” (0.76 μm) Gold on contact area, Matte Tin on tail</td>
<td>= Double Row</td>
<td>= Alignment Pin</td>
<td>= Polyimide film Pick &amp; Place Pad</td>
<td>= Tape &amp; Reel</td>
</tr>
<tr>
<td>–24</td>
<td>-STL</td>
<td></td>
<td></td>
<td></td>
<td>-FR</td>
</tr>
<tr>
<td></td>
<td>= 30 μ” (0.76 μm) Gold on contact area, Matte Tin/Lead on tail</td>
<td></td>
<td></td>
<td></td>
<td>= Full Reel Tape &amp; Reel (must order maximum quantity per reel; contact Samtec for quantity breaks)</td>
</tr>
</tbody>
</table>

**Notes:**
- Tape & Reel packaging and K-Dot are standard.
- Some sizes, styles and options are non-standard, non-returnable.

#### Cable Mates:
- ARC6

#### Wiring Option Details:
- **-S**: 30 μ” (0.76 μm) Gold on contact area

**Notes:**
- View complete specifications at: samtec.com?ARC6

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#### ARF6

<table>
<thead>
<tr>
<th>NO. OF PAIRS</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>–08</td>
<td>(12.46)</td>
<td>.491</td>
<td>(9.59)</td>
</tr>
<tr>
<td>–16</td>
<td>(20.08)</td>
<td>(15.24)</td>
<td>(17.21)</td>
</tr>
<tr>
<td>–24</td>
<td>(27.70)</td>
<td>(22.84)</td>
<td>(24.83)</td>
</tr>
</tbody>
</table>

**Notes:**
- View complete specifications at: samtec.com?ARF6

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**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
ACCELERATE® mini

EXTREME PERFORMANCE, MINI FORM FACTOR CABLE
(0.635 mm) .025" PITCH

FEATURES & BENEFITS

- 112 Gbps PAM4 performance
- Eye Speed® 34 AWG, 92 Ω Thinax™ ultra performance twinax cable
- One or two differential pairs
- Vertical and right-angle mating board connector
- Design flexibility as an End 2 option for Flyover® assemblies
- Friction retention latching
- Standard alignment pins

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>CABLE</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 AWG, 92 Ω Thinax™ ultra performance twinax</td>
<td>LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
<td>Testing Now!</td>
</tr>
</tbody>
</table>

VARIous END OPTIONS AVAILABLE

- 800G Flyover® QSFP Double Density
- Si-Fly™ HD
- AcceleRate® HP Gen 2

samtec.com/AcceleRateMini

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### ARM6

<table>
<thead>
<tr>
<th>NO. OF PAIRS</th>
<th>CABLE LENGTH</th>
<th>END 1</th>
<th>END 2</th>
<th>WIRING OPTION</th>
<th>CABLE STYLE</th>
</tr>
</thead>
</table>
| -01, -02     | “XX.X”
|              | = Length in Inches 03.0” (76.2 mm) minimum | -LU = Latch up | -LU = Latch up | -1 = Pin 1 to Pin 1 (End 2 -LD only) | –01 = 34 AWG 92 Ω Eye Speed® Thinax® |
|              | –03.0” (76.2 mm) minimum | –LD = Latch down | –4 = Pin 1 to Pin N (End 2 -LU only) |

**Note:**
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ARM6

### AMF6

<table>
<thead>
<tr>
<th>NO. OF PAIRS</th>
<th>PLATING</th>
<th>ROW OPTION</th>
<th>OPTION</th>
<th>“X”R</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01, -02</td>
<td>-S</td>
<td>-RA</td>
<td>-TR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 30 µ” (0.76 µm) Gold on contact area, Matte Tin on tail</td>
<td>= Right-angle</td>
<td>= Tape &amp; Reel</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?AMF6

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Si-FLY™ LP

112 Gbps PAM4, LOW PROFILE HIGH-DENSITY CABLE SYSTEM

FEATURES & BENEFITS

- Ultra low profile interconnect for placement adjacent to the IC package, under heat sinks or other cooling hardware
- Up to 16 pairs in an incredibly low 4 mm profile
- 112 Gbps PAM4 per lane enabling 25.6 TB aggregate with a path to 51.2 TB
- Si-Fly™ HD is the highest density on-package system with 224 Gbps PAM4 performance, routing signals from the silicon package through Eye Speed® AIR™ ultra performance twinax cable (HPC/HPI). Contact HDR@samtec.com for additional information.
- PCIe® 6.0/CXL™ 3.1 capable

Si-Fly™ HD features 64 pairs in an incredibly small 14 mm x 14 mm footprint

In development: Rugged latching configuration provides a secure connection directly adjacent to the IC package for increased signal integrity performance

KEY SPECIFICATIONS (CPC/CPI)

<table>
<thead>
<tr>
<th>CABLE</th>
<th>SIGNAL ROUTING</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 AWG ultra low skew twinax</td>
<td>92 Ω &amp; 100 Ω</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au over 50 µ&quot; (1.27 µm) Ni</td>
</tr>
</tbody>
</table>

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
### 0.6 mm LOW PROFILE CABLE & INTERCONNECT

<table>
<thead>
<tr>
<th>CPC</th>
<th>NO. OF PAIRS</th>
<th>CABLE STYLE</th>
<th>CABLE LENGTH</th>
<th>ROW</th>
<th>END 2</th>
<th>L</th>
<th>WIRING OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-08, -16</td>
<td>-1</td>
<td>92 Ω 34 AWG ultra low skew twinax cable</td>
<td>“XX.X”</td>
<td>-1</td>
<td>1 Row (-08 pairs only)</td>
<td>-02</td>
<td>CPC</td>
</tr>
<tr>
<td></td>
<td>-2</td>
<td>100 Ω 34 AWG ultra low skew twinax cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CPC Board Mates:**
- CPI

**Note:**
Cable lengths longer than 40.00” (1 meter) are not supported with S.I. test data.

**View complete specifications at:** samtec.com?CPC

### PRELIMINARY

<table>
<thead>
<tr>
<th>CPI</th>
<th>NO. OF PAIRS</th>
<th>LEAD STYLE</th>
<th>ROW</th>
<th>PLATING OPTION</th>
<th>RA</th>
<th>SOLDER TYPE</th>
<th>L</th>
<th>“X”R</th>
</tr>
</thead>
<tbody>
<tr>
<td>-08, -16</td>
<td>-01</td>
<td>Surface Mount</td>
<td>-1</td>
<td>1 Row, 8 Pairs</td>
<td>-S</td>
<td>30 µ” (0.76 µm) Gold on contact area, Tin on tail</td>
<td>-2</td>
<td>Lead-Free Solder Ball</td>
</tr>
<tr>
<td></td>
<td>-2</td>
<td>2 Row, 16 Pairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CPI Cable Mates:**
- CPC

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

**View complete specifications at:** samtec.com?CPI

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**EDGE CARD CABLE ASSEMBLIES**

(0.60 mm) .024" PITCH • GC6 SERIES

---

**GC6**

Mates:
- HSEC6-DV
- (Shield (-S) option required for mating)

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Cable:</th>
<th>34 AWG Eye Speed® ultra low skew twinax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Routing:</td>
<td>100 Ω Differential</td>
</tr>
<tr>
<td>Plating:</td>
<td>Au over 50 μ” (1.27 μm) Nickel</td>
</tr>
<tr>
<td>Operating Temp Range:</td>
<td>Testing Now!</td>
</tr>
<tr>
<td>Current Rating:</td>
<td>Testing Now!</td>
</tr>
<tr>
<td>Protocols:</td>
<td>SFF-TA-1002 Compatible</td>
</tr>
</tbody>
</table>

**GC6**

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>WIRE LENGTH</th>
<th>END NO. 1</th>
<th>END NO. 2</th>
<th>WIRE MAPPING</th>
<th>CABLE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-028 (28 positions) = 28 positions (IC)</td>
<td>-XX.X” = Wire Length in Inches 06.0” (152.4 mm) minimum</td>
<td>-SU = Straight, Latch Up</td>
<td>-SD = Straight, Latch Down</td>
<td>-1 = Pin A1 to Pin A1</td>
<td>-2 = 34 AWG 100 Ω ultra low skew twinax cable</td>
</tr>
<tr>
<td>-042 (42 positions) = 42 positions (2C)</td>
<td></td>
<td>-RU = Right-angle, Latch Up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-070 (70 positions) = 70 positions (4C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Cable lengths longer than 40.00” (1 meter) are not supported with S.I. test data.
- Design your full cable assembly with Samtec's High-Speed Cable Solutionator® at www.samtec.com/cablebuilder
- Some lengths, styles and options are non-standard, non-returnable.

---

**END 1**

**END 2**

**END 1**

**END 2**

---

**samtec.com?GC6**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
HIGH-SPEED CABLE ASSEMBLIES

MIX-AND-MATCH FLEXIBILITY • MICRO COAX & TWINAX CABLE • PCI EXPRESS® 2.0/3.0/4.0/5.0

122-123 SEARAY™ HIGH-SPEED, HIGH-DENSITY CABLE SYSTEM (SEAC)

124 COPPER FIREFLY™ MICRO FLYOVER SYSTEM™ (ECUE, PCUE)

125 PCI EXPRESS® EDGE CARD SYSTEMS (PCIEC-G4, PCIEC-G5)

126 PCI EXPRESS® HIGH-SPEED TEST CABLES (PCRF-G4, PCRF-G5)

127 GENERATE™ HIGH-SPEED TEST CABLE (GC6-RF)

128 ADDITIONAL HIGH-SPEED CABLE SOLUTIONS
HIGH-SPEED CABLE ASSEMBLIES
MICRO COAX & TWINAX ASSEMBLIES • EYE SPEED® CABLE TECHNOLOGY • DESIGN FLEXIBILITY
EASY CUSTOMS & EXPRESS MODIFICATIONS • WILLINGNESS, SUPPORT & EXPERTISE

MICRO COAX & TWINAX CABLE ASSEMBLIES

• Ability to mix-and-match end options for application-specific requirements with extensive customizing capabilities
• Single-ended 50 Ω & differential 100 Ω standards
• Rugged features and options including strain relief, plastic housings, screw downs, latches, locks, etc.
• Many non-cataloged standards available including 75 Ω micro coax and high-density twinax solutions

EYE SPEED® CABLE TECHNOLOGY

• Samtec’s Eye Speed® cable supports a wide variety of assemblies and applications
• Excellent signal integrity performance with individual copper serve or copper tape shielding
• Stranded conductor for small bend radii and dynamic high flexing cycle applications
• Cost-effective ribbonizing eliminates discrete wires
• 26 – 38 AWG coax and twinax construction; 20 Ω, 50 Ω, 85 Ω & 100 Ω

HIGH-SPEED CABLE SOLUTIONATOR® ONLINE DESIGN TOOL

Quickly design full cable assemblies using a wide variety of user-defined search parameters and filters, view models and specifications, request samples and pricing, or place an order – all in Samtec’s Solutionator® online design tool.

Visit samtec.com/cablebuilder to get started!
Samtec is able to support new and custom designs, as well as simple modifications to cable assemblies and board-to-board products – often with low or no NRE charges, short lead times, quick-turn samples, and low or no MOQ’s. Visit samtec.com/customs for additional details.

- Wiring
- Molding
- Plating
- Polarization
- Contacts
- Bodies
- Stamping
- Ruggedizing features
- Packaging
- Labeling
- Ink printing
- Shielding modifications

WILLINGNESS, SUPPORT & EXPERTISE

- Engineering, design and prototype support
- Design simulation and processing assistance
- Global Operations, including multiple cable fabrication/assembly facilities
- Quotes and samples turned around in 24 hours
- Flexible, quick-turn manufacturing
- Dedicated Application Specific Product engineers and technicians

Please note: Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
HIGH-SPEED, HIGH-DENSITY CABLE ASSEMBLY
(1.27 mm) .050" PITCH

FEATURES & BENEFITS
• 14 Gbps performance
• Up to 240 I/Os (1/2 of pins are dedicated to ground)
• 4, 6, 8 and 10 row designs
• Choice of Eye Speed® 36 AWG 50 Ω micro coax or 32 AWG 100 Ω twinax cable
• Positive latching when mated to SEAFC with latching post option
• Supports PCIe® 2.0 and 3.0 protocols

KEY SPECIFICATIONS (SEAC)

<table>
<thead>
<tr>
<th>CABLE</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 AWG 50 Ω micro coax</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-40 °C to +125 °C (coax) -25 °C to +105 °C (twinax)</td>
<td>0.4 A Specified Cable Rating</td>
<td>120 VAC</td>
</tr>
<tr>
<td>or 32 AWG 100 Ω twinax cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## SEAC

**Mates:**

SEAF·C

### SIGNAL ROUTING

Product has some lines dedicated to ground.

For single-ended and differential pair signal/ground assignments see signal routing information on the assembly print at www.samtec.com/seac

Design your High-Speed Cable with Samtec's High-Speed Cable Solutionator® at www.samtec.com/cablebuilder

### OTHER SOLUTIONS

Other end options
Mixed SEAC end types
300 positions or greater

**Notes:**

Mixed latch styles not available

Cable lengths longer than 40.00" (1 meter) are not supported with S.I. test data.

PCIe® 2.0 & 3.0 capable

PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.

Some lengths, styles and options are non-standard, non-returnable.

<table>
<thead>
<tr>
<th>SEAC</th>
<th>NO. OF POSITIONS PER ROW</th>
<th>NO. OF ROWS</th>
<th>CABLE LENGTH</th>
<th>TU</th>
<th>TU</th>
<th>CABLE TYPE</th>
<th>LATCH OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>–020</td>
<td>~04, ~06, ~08, ~10</td>
<td>~04, ~06, ~08 &amp; ~10 row only</td>
<td>–&quot;XX.X&quot; = Cable Length in Inches (101.6 mm) 04.0&quot; minimum</td>
<td>Leave Blank for 36 AWG 50 Ω coax</td>
<td>–2 = 32 AWG 100 Ω twinax</td>
<td>Leave Blank for latch post</td>
<td>–N = No Latch</td>
</tr>
<tr>
<td>–030</td>
<td>(~04, ~06 &amp; ~08 row only)</td>
<td>(~04 &amp; ~06 row only)</td>
<td>(~04 row only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>–040</td>
<td>(~04 &amp; ~06 row only)</td>
<td>(~04 row only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>–050</td>
<td>(~04 row only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ASSEMBLY LENGTH

**ASSEMBLY LENGTH =**

CABLE LENGTH XX.X + (16.2) .638

- **A**
  - (~020) (30.38) 1.196
  - (~030) (43.08) 1.696
  - (~040) (55.78) 2.196
  - (~050) (68.48) 2.696

- **B**
  - (~020) (33.53) 1.320
  - (~030) (46.23) 1.820
  - (~040) (58.93) 2.320
  - (~050) (71.63) 2.820

- **C**
  - (~020) (48.26) 1.900
  - (~030) (60.96) 2.400
  - (~040) (73.66) 2.900
  - (~050) (86.36) 3.400

### SEARAY™ 0.80 mm CABLE ASSEMBLY

(0.80 mm) .0315" pitch High-Speed Cable in 8 to 10 rows that mates with the SEAMB/SEAF8 Series.

For more information on the ESCA Series, visit samtec.com/ESCA
COPPER MICRO FLYOVER SYSTEM™

**ECUE/PCUE SERIES**

**ECUE**

Mates: UEC5, UCC8

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO OF PAIRS</th>
<th>ASSEMBLY LENGTH</th>
<th>CABLE TYPE</th>
<th>END 2 OPTION</th>
<th>WIRING OPTION</th>
<th>DATA RATE</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECUE</td>
<td>–08</td>
<td>“XXX” Assembly Length in Centimeters (007 cm to 999 cm)</td>
<td>T1</td>
<td>FF (Mates with UEC5/UC8)</td>
<td>–01</td>
<td>–1</td>
<td>Leave blank for standard FireFly™</td>
</tr>
<tr>
<td></td>
<td>–12</td>
<td></td>
<td>T2</td>
<td>–02</td>
<td>–2</td>
<td></td>
<td>–D1 Decoupling Capacitors (only available with –02 &amp; –B4 wire options)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T3</td>
<td>–B4</td>
<td>–1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- All FireFly™ designs, specifications and components are subject to change without notice.
- Cable lengths longer than 150 cm (59.06") are not supported with S.I. test data.

**PCUE**

Mates: UEC5, UCC8

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>DATA RATE</th>
<th>NO. OF CHANNELS</th>
<th>ASSEMBLY LENGTH</th>
<th>END 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCUE</td>
<td>–G4</td>
<td>–04</td>
<td>“XXX” Assembly Length in Centimeters (010 cm to 999 cm)</td>
<td>FF (Mates with UEC5/UC8)</td>
</tr>
</tbody>
</table>

Notes:
- Supports PCIe® sideband signals
- Decoupling capacitors in-line with signals on PCB.
- PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
- Some sizes, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ECUE

View complete specifications at: samtec.com?PCUE
PCI EXPRESS® CABLE ASSEMBLY
(1.00 mm) .0394" PITCH • PCIEC-G4/PCIEC-G5 SERIES

**SPECIFICATIONS**

**PCIEC-G4**
- **Mates:** PCIE-G4

**PCIEC-G5**
- **Mates:** PCIE-G5

**Notes:**
Cable lengths longer than 1015 millimeters are not supported with S.I. test data.
Design your full cable assembly with Samtec's High-Speed Cable Solutionator at www.samtec.com/cablebuilder

**Cable:**
- Eye Speed® 34 AWG Twinax; 30 AWG insulated ribbon

**Operating Temp:**
-25 °C to +105 °C

**Contact:**
Copper Alloy

**Plating:**
Au or Sn over 50 μ" Ni

**Performance:**
Supports PCIe® 4.0 & 5.0

**Bend Radius:**
(3.18 mm) .125"

---

**Also Available**
For speeds of PCIe® 2.0 & 3.0, visit www.samtec.com?PCIEC

---

**End to End L**

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>X</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>–036 (x1)</td>
<td>18</td>
<td>(20.30)</td>
<td>(28.69)</td>
</tr>
<tr>
<td>–064 (x4)</td>
<td>32</td>
<td>(34.30)</td>
<td>(42.69)</td>
</tr>
<tr>
<td>–098 (x8)</td>
<td>49</td>
<td>(51.30)</td>
<td>(59.69)</td>
</tr>
<tr>
<td>–164 (x16)</td>
<td>82</td>
<td>(84.30)</td>
<td>(92.69)</td>
</tr>
</tbody>
</table>

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SPECIFICATIONS**

**PCRF Mates:**
- PCIE-G4, PCIE-G5, 292

**Card:**
- Conductor: 1/2 oz. Copper
- Insulator: Megtron 6
- Type: Low Loss Microwave Coax
- Gauge: 29 AWG Silver Plated Copper
- Overall Shield Diameter: (1.17 mm) .046" DIA
- Jacket Material: FEP
- Impedance: 50 Ω
- Bend Radius: 10.0 Min
- Capacitance: 29 pF/foot
- Operating Temp: -65 ºC to 150 ºC
- Frequency Range: DC to 110 GHz

**Cable:**
- Type: PCIe® 4.0 & 5.0
- “XXXX” = Wire Length in millimeters
- “-036” = PCIe® 4.0
- “-064” = PCIe® 5.0
- “-098” = PCIe® 5.0 (Per Row)
- “-164” = PCIe® 5.0 (Per Row)
- “-292” = 2.92 mm Connector

**Notes:**
- Cable lengths longer than 40.00" (1 meter) are not supported with S.I. test data.
- Design your full cable assembly with Samtec’s High-Speed Cable Solutionator® at www.samtec.com/cablebuilder
- PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG
- This Series is non-standard, non-returnable.

**ALSO AVAILABLE**
- PCI Express® cable with SMAs for debug; visit samtec.com?PCRF

---

**PCRF-G4/PCRF-G5 SERIES**

**NO. OF POSITIONS**

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>A</th>
<th>B</th>
<th>N</th>
<th>NO. OF COAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>-036</td>
<td>(20.30)</td>
<td>(35.54)</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>-064</td>
<td>(34.33)</td>
<td>(49.54)</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>-098</td>
<td>(51.33)</td>
<td>(66.54)</td>
<td>49</td>
<td>34</td>
</tr>
<tr>
<td>-164</td>
<td>(84.33)</td>
<td>(99.54)</td>
<td>82</td>
<td>66</td>
</tr>
</tbody>
</table>

**OAL = WIRE LENGTH + (10.4) 0.41**

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.

samtec.com?PCRF-G4 or samtec.com?PCRF-G5
**SPECIFICATIONS**

**Card:**
- Conductor: 1/2 oz. Copper
- Insulator: Megtron 6

**Cable:**
- Type: Low Loss Microwave Coax
- Gauge: 29 AWG Silver Plated Copper
- Signal Conductor: (.287) .0113" DIA
- Overall Shield Diameter: (1.17 mm) .046" DIA
- Jacket Material: FEP

**Impedance:** 50 Ω

**Bend Radius:**
- 10.0 Min

**Capacitance:** 29 pF/foot

**Operating Temp:**
- -65 ºC to 150 ºC

**Frequency Range:**
- DC to 110 GHz

**Notes:**
- Cable lengths longer than 40.00" (1 meter) are not supported with S.I. test data.
- Design your full cable assembly with Samtec’s High-Speed Cable Solutionator™ at www.samtec.com/cablebuilder
- This Series is non-standard, non-returnable.

---

**GC6**

<table>
<thead>
<tr>
<th>GC6</th>
<th>RF</th>
<th>NO. OF POSITIONS</th>
<th>WIRE LENGTH</th>
<th>END OPTION</th>
<th>RF CONNECTOR</th>
<th>RF GENDER</th>
<th>COAX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>–028 (1C), –042 (2C), –070 (4C)</td>
<td>–“XXXX” = Wire Length in millimeters 0152 mm (06.0&quot;) MIN 1000 mm (39.4&quot;) MAX</td>
<td>–EC = Edge Card</td>
<td>–292 = 2.92 mm Connector</td>
<td>–P = Plug</td>
<td>–J = Jack</td>
</tr>
</tbody>
</table>

- **-028**
  - A: 18.48
  - B: .728
  - N: 28
  - NO. OF COAX: 20

- **-042**
  - A: 30.17
  - B: 1.19
  - N: 42
  - NO. OF COAX: 36

- **-070**
  - A: 51.28
  - B: 2.02
  - N: 70
  - NO. OF COAX: 68

**Notes:**
- Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.

---

**GENERATE™**

**HIGH-SPEED TEST CABLE**

**GC6-RF SERIES**

**GC6 Mates:**
- HSEC6-DV, 292

**OAL = WIRE LENGTH + (10.40) 0.41**

**PRELIMINARY**

**samtec.com?GC6-RF**
ADDITIONAL HIGH-SPEED CABLE ASSEMBLIES

Ground Plane Assemblies
- Integral power/ground plane
- 34 and 38 AWG coax; 30 and 32 AWG twinax
- 0.50 mm pitch (HQCD/HQDP) and 0.80 mm pitch (EQCD/EQDP) assemblies with rugged screw mount or retention pin options
- 0.80 mm pitch (EQRD) assembly with Edge Rate® contacts for reduced broadside coupling
- Mates with Q Series® and Q Rate® connectors

Edge Card Assemblies
- 30 AWG twinax (ECDP); mates with Generate™ 0.80 mm pitch edge cards (HSEC8)
- Available without housing for cost savings
- 34 AWG ultra low skew twinax (FEDP); mates with 0.50 mm pitch edge card (FCDP)
- 16 Gbps NRZ performance, to 56 Gbps PAM4 when paired with FQSFP Series or FQSFP-DD Series

High-Speed Assemblies
- Ultra–micro hermaphroditic Razor Beam™ coax assemblies with rugged shielding (HLCD)
- Mates with 0.50 mm pitch Razor Beam™ connectors
- 0.80 mm pitch Edge Rate® coax and twinax assemblies (ERCD, ERDP)
- Low-cost 0.80 mm pitch coax cable system in a compact form factor (FCF8/FCS8)
- 38 AWG coax & 30 AWG twinax assemblies

View complete specifications at:
- samtec.com/HQCD
- samtec.com/HQDP
- samtec.com/EQCD
- samtec.com/EQDP
- samtec.com/EQRD

- samtec.com/ECDP
- samtec.com/FEDP

- samtec.com/HLCD
- samtec.com/ERCD
- samtec.com/ERDP
- samtec.com/FCF8
- samtec.com/FCS8
OPTICS
FUTURE PROOF • HIGH PERFORMANCE • PCI EXPRESS® • END OPTION FLEXIBILITY

130-133  FIREFLY™ MICRO FLYOVER SYSTEM™ (ECUO, ETUO, ETMO)
134  PCI EXPRESS®-OVER-FIBER FIREFLY™ SYSTEM (PCUO, PTUO)
136  PCI EXPRESS®-OVER-FIBER FIREFLY™ ADAPTOR CARD (PCOA)
137  OPTICAL PATCH CABLE & ADAPTOR (FOPC, OPA)
138  FIREHAWK™ RUGGEDIZED OPTICAL TRANSCEIVERS (RVCN, CSPO, CSSO)
139  HALO™ NEXT GEN OPTICAL (HALO)
FEATURES & BENEFITS

- Data connection taken “off board” simplifies board layout
- Industry leading miniature footprint allows for higher density close to data source
- Performance up to 28 Gbps per lane with a path to 112 Gbps PAM4 via optical cable for greater reach
- Simple assembly process with easy insertion/removal and trace routing, no through-holes
- Interchangeability of copper and optical cable using the same two-piece surface mount connector
- PCIe®-Over-Fiber (PCUO/PTUO) supports PCIe® protocol for low latency, power savings and guaranteed transmission; 3.0 and 4.0 solutions
- -40 ºC to +85 ºC extended temperature system (ETUO) for military, aerospace and industrial applications
- Extreme Environment FireFly™ sealed and parylene-coated for exposed applications (ETMO)
- Multiple end options available: MTP®, MCX®, MT, VITA 66.X and other common interfaces
- Variety of integral heat sinks for conduction and convection cooling

PRODUCT ROADMAP

**Advanced Optics**
Samtec is focused on bringing to market 112 Gbps PAM4 solutions that are scalable, manufacturable and cost-efficient.

**Immersion Cooling**
Capable of immersion for liquid cooled systems.

**Direct Connect™**
On-package interconnect enables 56 Gbps PAM4 performance, eliminates distortion through the BGA region and improves density.
OPTICAL MICRO FLYOVER SYSTEM™

ECUO - WIDTH - DATA RATE - CABLE LENGTH - 0 - HEAT SINK - 1 - FIBER TYPE - END 2 OPTIONS

- B04 = 4 Tx + 4 Rx
  -14 = 14 Gbps per lane
  = Overall Length in Centimeters
- T12 = 12 Tx
  -16 = 16.1 Gbps per lane (N/A – B04)
- R12 = 12 Rx
  -25 = 25.7 Gbps per lane
- Y12 = 12 Tx + 12 Rx
  -28 = 28.1 Gbps per lane (-B04 only)
- U12 = 12 Channel AOC (Unidirectional)

FEATURES

- Supports data center and HPC protocols, including: Ethernet, InfiniBand®, Fibre Channel
- Customizable optical connectors
- Integrated coupling capacitors
- Standard temperature range 0 °C to +70 °C
- Evaluation & Development boards available

CLASS 1 LASER PRODUCT per IEC 60825-1 Ed. 3 (2014)

Applies to all end 2 options except MXC®

TOOLING

Insertion Tool: CAT-IN-ECUO-02

Notes:

MTP® is a registered trademark of US Conec Ltd.
PCI-SIG®, PCI Express® and PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
All FireFly™ designs, specifications and components are preliminary and subject to change without notice.

Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ECUO

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**EXTENDED TEMP OPTICAL MICRO FLYOVER SYSTEM™**

**ETUO**
- **WIDTH**
  - -B04 = 4 Tx + 4 Rx
  - -T12 = 12 Tx
  - -R12 = 12 Rx
  - -Y12 = 12 Tx + 12 Rx
  - -U12 = 12 Channel AOC (Unidirectional)
- **DATA RATE**
  - -10 = 10.3125 Gbps
  - -25 = 25.7 Gbps (-B04 only)
- **CABLE LENGTH**
  - “XXX” = Overall Length in Centimeters
  - -1 = 1.75 cm tall Pin-fin (-B04 only)
- **HEAT SINK**
  - -1 = Flat
  - -2 = Pin-fin
  - -3 = Flat with groove
  - -4 = PCIe® Pin-fin (-10 only)
- **FIBER TYPE**
  - -5 = Jacketed ribbon
    - with boot
  - -6 = Jacketed ribbon
  - -7 = Black loose tube
    - with boot
  - -8 = Black loose tube
  - (Leave blank for -U12)
- **END 2 OPTIONS**
  - -Y12 requires -2X end option

**FEATURES**
- Optimized for SwaP
- Extended temperature range from -40 °C to +85 °C
- Demonstrated error free transmission during applied external vibrations and shock test, to methods specified in MIL-STD-810G
- Micro rugged board level connector system with positive latching, weld tabs and loading guides for secure connection
- Pigtailed cable for maximum link budget
- Customizable optical connectors
- Integrated coupling capacitors
- Integral heat sink provides optimal cooling for thermal operating conditions
- Evaluation and Development boards available

**Notes:**
- MTP® is a registered trademark of US Conec Ltd.
- PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
- All FireFly™ designs, specifications and components are preliminary and subject to change without notice.
- Some lengths, styles and options are non-standard, non-returnable.

**CLASS 1 LASER PRODUCT**
per IEC 60825-1 Ed. 3 (2014)
Applies to all end 2 options except MXC®

**CLASS 3R LASER PRODUCT**
Laser Radiation. Avoid Direct Eye Exposure.
Applies to MXC® end option only.

View complete specifications at: samtec.com/ETUO

F-224

samtec.com/FireFly

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EXTREME ENVIRONMENT OPTICAL MICRO FLYOVER SYSTEM™

ETMO – B04 – DATA RATE – CABLE LENGTH – 0 – HEAT SINK – FIRMWARE – FIBER TYPE – END 2 OPTIONS

<table>
<thead>
<tr>
<th>ETMO</th>
<th>B04</th>
<th>DATA RATE</th>
<th>CABLE LENGTH</th>
<th>0</th>
<th>HEAT SINK</th>
<th>FIRMWARE</th>
<th>FIBER TYPE</th>
<th>END 2 OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>–10</td>
<td>10.3125 Gbps</td>
<td>–“XXX” = Overall Length in Centimeters</td>
<td>–1</td>
<td>Flat</td>
<td>–1</td>
<td>Standard</td>
<td>–5</td>
<td>(Leave blank for AOC)</td>
</tr>
<tr>
<td>–25</td>
<td>25.7 Gbps</td>
<td>–“XXX” = Overall Length in Centimeters</td>
<td>–2</td>
<td>Pin-fin</td>
<td>–3</td>
<td>Dual Power</td>
<td>–01</td>
<td>= MTP® Male</td>
</tr>
<tr>
<td>–3</td>
<td>Flat with groove</td>
<td>–4</td>
<td>PCIe® Pin-fin</td>
<td>–6</td>
<td>= Black Jacketed ribbon with boot</td>
<td>–02</td>
<td>= MTP® Female</td>
<td></td>
</tr>
<tr>
<td>–07*</td>
<td>= Overall Length in Centimeters</td>
<td>–7</td>
<td>Black loose tube with boot</td>
<td>–07*</td>
<td>= MXC® Internal Plug</td>
<td>–0A</td>
<td>= VITA 66.1/66.4 READY</td>
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<tr>
<td>–0C</td>
<td>= Overall Length in Centimeters</td>
<td>–8</td>
<td>Black loose tube</td>
<td>–0C</td>
<td>= MT38999 Male</td>
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<td></td>
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</tbody>
</table>

Notes:
MT Elite®, MTP Elite®, and MXC® are registered trademarks of US Connec Ltd.
PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
All FireFly™ designs, specifications and components are preliminary and subject to change without notice.
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/ETMO

ETMO
Mates with:
UECS, UCC8, OPA

FEATURES

- Dual power mode for interoperability with legacy optical modules
- Extended temp range of -40 ºC to +85 ºC
- Micro rugged board level connector system with positive latching, weld tabs and loading guides for a secure connection
- Customizable optical end connectors including MT Elite®, MTP Elite®, and low loss MXC®
- Integral heat sink provides optimal cooling for thermal operating conditions
- Sealed and parylene-coated for exposed military, aerospace and submersible applications
- Ruggedized for tin whisker mitigation and fungal resistance; operates in harsh environments including salt fog, blowing sand and dust, jet fuel exposure, altitudes up to 65,000 feet

CLASS 1 LASER PRODUCT
per IEC 60825-1 Ed. 3 (2014)
Applies to all end 2 options except MXC®

CLASS 3R LASER PRODUCT
Laser Radiation. Avoid Direct Eye Exposure.
Applies to MXC® end option only.

CLASS 1 LASER PRODUCT
per IEC 60825-1 Ed. 3 (2014)
Applies to all end 2 options except MXC®

<CAUTION
LASER 3R
Applies to MXC® end option only.

samtec.com/FireFly

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### PCIe®-OVER-FIBER FLYOVER®

#### FEATURES
- PCIe® 4.0 x4, scalable to x8 and x16 widths
- Duplex auxiliary signals allow both transparent and non-transparent bridging
- High-performance signal quality with BER better than 1E-12
- Enables links up to 100 m
- Allows nontraditional FPGA/ASIC end points
- Standard temperature range 0 °C to +70 °C

**View complete specifications at:** samtec.com?PCUO

### EXTENDED TEMP PCIe®-OVER-FIBER

#### FEATURES
- Extended temperature range from -40 °C to +85 °C
- PCIe® 3.0 x4, scalable to x8 and x16 widths
- Duplex auxiliary signals allow both transparent and non-transparent bridging
- High-performance signal quality with BER better than 1E-12
- Enables links up to 100 m
- Allows nontraditional FPGA/ASIC end points
- Additional heat sink and end options available
- PCIe® 4.0 version in development

**View complete specifications at:** samtec.com?PTUO

---

**Note:**
Some lengths, styles and options are non-standard, non-returnable.
### RUGGED MICRO FLYOVER® SOCKET SYSTEM

#### UEC5

**NO. OF POSITIONS**  
UEC5-019 (Per Row)

**DATA RATE**  
-1 = Up to 16 Gbps  
-2 = 28 Gbps+

**PLATING OPTION**  
-1 = Through-hole

**WELD TAB**  
-1 = Alignment Pin (Available with Data Rate –1 only)

**OPTION**  
-2 = Surface Mount (Data Rate –1 only)

**PACKAGING**  
Leave blank for Tape & Reel

**Cable Mates:**  
ECUE, ECUO, PCUO, PTUO, PCUE, ETUO, ETMO

**Notes:**  
Some sizes, styles and options are non-standard, non-returnable.

**Specifications:**
- **Insulator Material:** Black LCP
- **Contact Material:** BeCu
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +125 °C

**Processing:**
- **SMT Lead Coplanarity:** (0.10 mm) .004" max.

**View complete specifications at:** samtec.com?UEC5-1 & samtec.com?UEC5-2

### UCC8

**NO. OF POSITIONS**  
UEC8-010

**PLATING OPTION**  
-1 = Through-hole

**WELD TAB**  
-1 = Alignment Pin (Available with Data Rate –1 only)

**OPTION**  
-2 = Surface Mount (Data Rate –1 only)

**PACKAGING**  
Leave blank for Tape & Reel

**Cable Mates:**  
ECUE, ECUO, PCUO, PTUO, PCUE, ETUO, ETMO

**Notes:**  
Some sizes, styles and options are non-standard, non-returnable.

**Specifications:**
- **Insulator Material:** Black LCP
- **Contact Material:** BeCu
- **Weld Tab:** Copper Alloy
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +125 °C

**Processing:**
- **SMT Lead Coplanarity:** (0.10 mm) .004" max.

**View complete specifications at:** samtec.com?UCC8

---

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PCoA–G4–D8–0A SHOWN

Notes:
Some lengths, styles and options are non-standard, non-returnable.
PCI-SIG®, PCI Express® and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.

View complete specifications at: samtec.com?PCOA
OPTICAL PATCH CABLE AND ADAPTOR

**FOPC** - **END 1** - **END 2** - **CABLE LENGTH** - **FIBERS** - **CONSTRUCTION**

<table>
<thead>
<tr>
<th>FOPC</th>
<th>END 1</th>
<th>END 2</th>
<th>CABLE LENGTH</th>
<th>FIBERS</th>
<th>CONSTRUCTION</th>
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<tbody>
<tr>
<td>–01</td>
<td>MTP® Male</td>
<td>MTP® Male</td>
<td>–003</td>
<td>–12, –24</td>
<td>–01</td>
</tr>
<tr>
<td>–02</td>
<td>MTP® Female</td>
<td>MTP® Female</td>
<td>–010</td>
<td>–003</td>
<td>–02</td>
</tr>
<tr>
<td>–003</td>
<td>3 Meters</td>
<td>3 Meters</td>
<td>–100</td>
<td>–01</td>
<td>–12, –24</td>
</tr>
<tr>
<td>–010</td>
<td>10 Meters</td>
<td>10 Meters</td>
<td>–003</td>
<td>–3</td>
<td>–010</td>
</tr>
<tr>
<td>–100</td>
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<td>100 Meters</td>
<td>–003</td>
<td>–3</td>
<td>–100</td>
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<tr>
<td>–030</td>
<td>30 Meters</td>
<td>30 Meters</td>
<td>–003</td>
<td>–3</td>
<td>–030</td>
</tr>
<tr>
<td>–040</td>
<td>40 Meters</td>
<td>40 Meters</td>
<td>–003</td>
<td>–3</td>
<td>–040</td>
</tr>
</tbody>
</table>

**OVERALL LENGTH = CABLE LENGTH ±5%**

**SPECIFICATIONS**

Compliant Specifications:
- TIA-604-S-D (FOCIS S)
- TIA-568-C.3
- IEC-61754-7-1

View complete specifications at: samtec.com?FOPC

**OPA** - **PORTS** - **KEY** - **FLANGE**

<table>
<thead>
<tr>
<th>OPA</th>
<th>PORTS</th>
<th>KEY</th>
<th>FLANGE</th>
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<tbody>
<tr>
<td>–S</td>
<td>Single</td>
<td>–1</td>
<td>–F</td>
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<tr>
<td>–D</td>
<td>Double</td>
<td>–2</td>
<td></td>
</tr>
<tr>
<td>–F</td>
<td>Full</td>
<td>–3</td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

Compliant Specifications:
- TIA-604-S-D (FOCIS S)
- IEC-61754-7

Recommended Panel Thickness: (1.75 mm) .069”
(The OPA can be installed with any panel thickness but mounting hardware is needed for any thickness that is not (1.75 mm) .069”. Contact the Optics Group at FireFly@samtec.com for questions about panel thickness and mounting hardware.)

Notes:
- MTP® is a registered trademark of US Connec Ltd.
- Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?OPA

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FEATURES & BENEFITS

• Chip Scale Package (CSP) with the industry’s smallest footprint and lowest profile, weighing less than 0.4 grams
• RVCON® optical cables are removable and replaceable for repair or reconfiguration
• FireHawk™ for Mil/Aero with an integrated microcontroller to automate key functions (CSPO)
• FireHawk™ for Space designed to withstand the impacts of radiation without the need for a microcontroller (CSSO)
• Extreme performance with up to 40 Gbps transfer rate (10G x 4)
• Rugged BGA board attach withstands high shock and vibration with the shortest possible thermal path
• Development Kit available, visit samtec.com/kits

FIREHAWK™ RVCON® OPTICAL CABLES

-1 = 1 RVCON®
-3 = MT Ferrule
-MM = Multi Mode
-2 = Jacketed Ribbon
-XXXX = Total length in millimeters (mm)

RVCON® connector transfers the vertical output from the transceiver into optical fibers
Attaches to the CSP after surface mount processing of the PCB board
Designed for harsh environments and wide temperature ranges
Design flexibility: ribbon, tubed and breakout fiber options; MUX/DMUX input and output configurations; CSP to multiple ends; single input to multiple CSPs (1:1, 1:2, 1:3)
Variety of end 2 options including standard and mil/aero connectors, pins and shells
FIREHAWK™ CSPO FOR MIL/AERO APPLICATIONS

<table>
<thead>
<tr>
<th>CSPO</th>
<th>WIDTH</th>
<th>DATA RATE</th>
<th>ENVIRONMENT TYPE</th>
<th>0</th>
<th>FIRMWARE</th>
<th>1</th>
<th>BALL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-B04</td>
<td>-10G</td>
<td>-3</td>
<td>-1</td>
<td>-2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Integrated microcontroller automates key functions: calibration, temperature compensation, register configuration, converts analog BIT into calibrated digital
- 10G x 4 data rate (10 Mbps to 10 Gbps per channel)
- -40 ºC to +85 ºC temperature range (+95 ºC available)
- 3.3 V supply voltage; 1.2 W (total power 4 Tx and 4 Rx active)
- Roadmap: 25G x 4 system (up to 25 Gbps per channel) in the same 10G connector footprint

FIREHAWK™ CSSO FOR SPACE APPLICATIONS

<table>
<thead>
<tr>
<th>CSSO</th>
<th>WIDTH</th>
<th>DATA RATE</th>
<th>ENVIRONMENT TYPE</th>
<th>0</th>
<th>0</th>
<th>1</th>
<th>BALL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-B04</td>
<td>-10G</td>
<td>-4</td>
<td>-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 0.4 grams total weight for optimal SWaP (Size, Weight and Power)
- No microcontroller needed
- Radiation tolerant circuitry
- Optical cabling reduces weight and size for longer connections in satellites
- Module management, controls and diagnostics through a Serial Peripheral Interface (SPI)
- Robust performing ASIC for use in radiation environments

HALO™ NEXT GEN OPTICAL

- Capable of up to 112 Gbps PAM4 per lane
- Up to 16 channels (8 channel bidirectional)
- Low 6.5 mm profile with a 2-piece contact system
- Designed to withstand high shock and vibration
- Features a low center of gravity for a stable connection to the board
- Optically pluggable for easy replacement and increased uptime

HALO

<table>
<thead>
<tr>
<th>HALO</th>
<th>ENVIRONMENTAL</th>
<th>WIDTH</th>
<th>DATA RATE</th>
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<th>1</th>
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<tbody>
<tr>
<td>-C</td>
<td>-B08</td>
<td>-3</td>
<td>-56 Gbps</td>
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<td></td>
</tr>
</tbody>
</table>

PAM4

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
From concept and prototype to development and production, Samtec-designed and Partner-designed kits and boards featuring FireFly™ Micro Flyover System™ simplify design and reduce time to market. For more information, please visit samtec.com/kits or contact KitsAndBoards@samtec.com.

**28 Gbps FireFly™ Evaluation Kit**
Samtec’s 28 Gbps FireFly™ Evaluation Kit offers an easy-to-use platform for testing and real-time evaluation of the FireFly™ Micro Flyover System™. The kit supports copper or optical FireFly™ in x4 or x12 configurations. (Samtec P/N: REF-209623-01)

**14 Gbps FireFly™ FMC Development Kit**
Samtec’s 14 Gbps FireFly™ FMC Development Kit is VITA 57.1 electrically compliant and provides up to 140 Gbps full-duplex bandwidth over 10 channels from an FPGA to an industry-standard multi-mode fiber optic cable. (Samtec P/N: REF-193429-01)

**25/28 Gbps FireFly™ FMC+ Development Kit**
Samtec’s 25/28 Gbps FireFly™ FMC+ Module is VITA 57.4 electrically compliant and provides up to 400/448 Gbps full-duplex bandwidth over 16 channels from an FPGA to an industry-standard multi-mode fiber optic cable. (Samtec P/N: REF-200772-XXX-XX-01)

**10 Gbps FireHawk™ Evaluation Kits**
Samtec’s FireHawk™ Evaluation Kits offer real-time evaluation of FireHawk™ rugged optical transceivers in a lab or benchtop setting. Rated to 10 Gbps per lane in a x4 configuration, the transceivers combine extreme density with extreme performance to meet the harshest environments.

<table>
<thead>
<tr>
<th>KIT NAME</th>
<th>SAMTEC KIT PN</th>
<th>ULTRA COMMUNICATIONS KIT PN</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FireHawk™ CSSO 10 Gbps Evaluation Kit</td>
<td>REF-230448-01</td>
<td>X805-0103-EVK-003</td>
<td>Space</td>
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<tr>
<td>FireHawk™ CSPO 10 Gbps Evaluation Kit</td>
<td>REF-230449-01</td>
<td>X805C-0102-EVK-003</td>
<td>Mil/Aero</td>
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</tbody>
</table>

samtec.com/optics-fpga

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
RF/PRECISION RF
CABLE ASSEMBLIES • CONNECTORS • ORIGINAL SOLUTIONS • TECHNICAL SUPPORT

CABLE ASSEMBLIES

144-167
Precision RF 50 Ω
(18 GHz to 110 GHz)

168-181
Standard RF 50 Ω & 75 Ω
(5 GHz to 122 GHz & 12G-SDI)

148-161
Precision RF 50 Ω
(18 GHz to 110 GHz)

170-180
Standard RF 50 Ω & 75 Ω
(5 GHz to 122 GHz & 12G-SDI)

BOARD CONNECTORS

148-161
Precision RF 50 Ω
(18 GHz to 110 GHz)

170-181
Standard RF 50 Ω & 75 Ω
(5 GHz to 122 GHz & 12G-SDI)

ADAPTORS

162-163
Precision RF 50 Ω
(In-Series & Between-Series)

ORIGINAL RF SOLUTIONS

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Precision RF

181
Low Frequency

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Flexible Waveguide Technology for Frequencies up to 90 GHz (E-band) .................................................................................. 167
Customs & Tech Support ...................................................................................................................................................... 182
COMPLETE RF INTERCONNECT SOLUTIONS

PRECISION 50 Ω (18 to 110 GHz) • STANDARD 50 Ω & 75 Ω (SUB-6 GHz & 12G-SDI) • TECH SUPPORT

Samtec offers complete RF interconnect solutions supporting traditional sub-6 GHz frequencies to 110 GHz microwave/mmWave frequencies (sub-Terahertz spectrum). Products include end-to-end RF cable assemblies, board connectors, cable connectors, adaptors and Samtec Original RF solutions.

Technical Support

High-level design and development of advanced interconnect systems, along with industry leading expertise, allows us to offer effective strategies and support for optimizing the entire signal channel.

RF technical support includes launch optimization, simulation and testing. Customization of products, both quick-turn modifications or new designs, is also available.

Applications

• Test and Measurement
• Military, Aerospace, Satellite, Radar
• 5G/6G, Low Latency Wireless Communications
• Automotive, Telematics
• Broadcast & 12G-SDI
• Industrial, Monitoring, Instrumentation

IEEE FREQUENCY BANDS

<table>
<thead>
<tr>
<th>Frequency Band</th>
<th>1 MHz</th>
<th>10 MHz</th>
<th>100 MHz</th>
<th>1 GHz</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PRECISION RF, 50 Ω

<table>
<thead>
<tr>
<th>Interface</th>
<th>1.00 mm</th>
<th>1.35 mm</th>
<th>1.85 mm</th>
<th>2.40 mm</th>
<th>2.92 mm</th>
<th>3.50 mm</th>
<th>SSMA</th>
<th>SMA</th>
<th>Ganged SMPM</th>
<th>SMPM</th>
<th>SMP</th>
<th>N Type</th>
<th>TNCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>110 GHz</td>
<td>90 GHz</td>
<td>65 GHz</td>
<td>50 GHz</td>
<td>40 GHz</td>
<td>34 GHz</td>
<td>34 GHz</td>
<td></td>
<td>18/26.5 GHz</td>
<td>65 GHz</td>
<td>65 GHz</td>
<td>40 GHz</td>
<td>18 GHz</td>
</tr>
</tbody>
</table>

STANDARD RF, 50 Ω & 75 Ω

<table>
<thead>
<tr>
<th>Interface</th>
<th>MHF</th>
<th>SMA</th>
<th>MCX</th>
<th>MMCX</th>
<th>TNC</th>
<th>BNC (50 Ω)</th>
<th>SMB (50 &amp; 75 Ω)</th>
<th>Ganged (50 &amp; 75 Ω)</th>
<th>BNC (75 Ω)</th>
<th>HD BNC (75Ω)</th>
<th>DIN 1.0/2.3 (75 Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6 GHz</td>
<td>6 GHz</td>
<td>6 GHz</td>
<td>6 GHz</td>
<td>4 GHz</td>
<td>4 GHz</td>
<td>5 GHz</td>
<td>12 GHz</td>
<td>12 GHz</td>
<td>12 GHz</td>
<td></td>
</tr>
</tbody>
</table>

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
CABLE ASSEMBLIES

- Precision, high frequency or standard, low frequency
- Assemblies available with the following cable types:
  - Low-loss microwave/millimeter wave from .047 to .277, semi-flexible
  - Orange Cable! Phase and insertion loss stable, high-performance cable assemblies optimized for next gen frequency targets
  - RG type (316, 174, 178, 58, 179, 6)
  - 12G-SDI optimized
  - 0.81 mm and 1.13 mm Micro High Frequency (MHF)
- Discrete and ganged solutions
- Cable lengths standard up to 10 meters (> 10 meters as custom RSP)
- Phase matching in pairs down to 1 ps
- Cable management available
- Mix & Match Solutions for Any Application:
  Samtec offers a variety of end options for each product series; this blends application-specific customization with the simplicity and lead-time efficiencies of an off-the-shelf assembly

BOARDS CONNECTORS, CABLE CONNECTORS & ADAPTORS

- Precision, high frequency or standard, low frequency solutions
- Board-to-board or cable-to-board applications
- Threaded, bulkhead, push-on or bayonet coupling
- Solderless compression mount: vertical & edge launch
- Soldered: through-hole, surface mount, edge mount or mixed technology
- Balanced connectors for high-volume pick-and-place automation
- 12G-SDI optimized broadcast video solutions (BNC, high-density BNC, DIN 1.0/2.3)
- Cable connectors for use with industry standard cables: offer the flexibility to terminate to an industry-standard cable specified for your application
- Adaptors for 50 Ω precision RF applications: in-series and between-series

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
The Samtec RF product line includes 18 to 110 GHz High Frequency, Precision RF solutions for microwave and mmWave applications, including full cable assemblies, cable connectors and board level interconnects. Our focus is on delivering high-quality RF products that meet precision and performance expectations, blended with industry-leading system-level signal integrity expertise.

**Vertical Integration = Full System Support**

**CABLES**
- Design & Fabrication of Raw Cable
- Cable Assemblies

**CONNECTORS**
- Design & Fabrication
- Cable Connectors
- Board Connectors

**TECH SUPPORT**
- Launch Optimization
- Simulation & Testing
- Full System Optimization

samtec.com/PrecisionRF

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ORANGE IS THE NEW CABLE!

PHASE & INSERTION LOSS STABLE HIGH FREQUENCY CABLE ASSEMBLIES

Samtec’s next generation of RF coaxial cable offers improved stability with temperature and flexure over time. The coaxial structure—with an outer jacket colored in distinctive Samtec orange—is designed to meet increased demands placed on the aerospace, defense, datacom, computer/semiconductor and instrumentation markets. Performance is optimized at frequencies that go beyond traditional industry targets to support emerging applications.

LOW-LOSS CABLE CONSTRUCTION (VS. TYPICAL PTFE CABLES)

<table>
<thead>
<tr>
<th>Series</th>
<th>LL018</th>
<th>LL030</th>
<th>LL043</th>
<th>LL071</th>
<th>LL095</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance (Ω)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Max Frequency (GHz)</td>
<td>18</td>
<td>30</td>
<td>43.5</td>
<td>71</td>
<td>95</td>
</tr>
<tr>
<td>Outer Dia. (inches)</td>
<td>0.306</td>
<td>0.192</td>
<td>0.143</td>
<td>0.096</td>
<td>0.078</td>
</tr>
<tr>
<td>Min Static Bend Radius</td>
<td>1.25</td>
<td>0.375</td>
<td>0.25</td>
<td>0.25</td>
<td>0.125</td>
</tr>
<tr>
<td>(to inside of cable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Velocity of Propagation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Min Shielding Effectiveness (dB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-90</td>
</tr>
<tr>
<td>Temp Range (˚C)</td>
<td>-65</td>
<td>0˚C</td>
<td>65 ˚C</td>
<td></td>
<td>+125 ˚C</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>See Chart Below</td>
</tr>
</tbody>
</table>

FREQUENCY FOR EMERGING APPLICATIONS

18 GHz, 30 GHz, 43.5 GHz, 71 GHz, 95 GHz
### ELECTRICAL

<table>
<thead>
<tr>
<th>Max. Frequency (GHz)</th>
<th>1 GHz</th>
<th>26 GHz</th>
<th>40 GHz</th>
<th>50 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Insertion Loss (dB/m)</td>
<td>1.21</td>
<td>3.80@20GHz</td>
<td>5.59</td>
<td>6.47</td>
</tr>
<tr>
<td></td>
<td>0.79</td>
<td>4.26@20GHz</td>
<td>5.06</td>
<td>5.81</td>
</tr>
<tr>
<td></td>
<td>0.72</td>
<td>4.28</td>
<td>5.59</td>
<td>6.46</td>
</tr>
<tr>
<td></td>
<td>0.69</td>
<td>3.90</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>0.65</td>
<td>4.27</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>0.68</td>
<td>3.71@20GHz</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>0.72</td>
<td>2.30@20GHz</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>0.72</td>
<td>1.23@18GHz</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>0.17</td>
<td>0.79@18GHz</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### CONSTRUCTION

#### Center Conductor

<table>
<thead>
<tr>
<th>Material</th>
<th>PFA</th>
<th>Solid FEP</th>
<th>PTFE</th>
<th>Solid PTFE</th>
<th>Foam FEP</th>
<th>Solid FEP</th>
<th>PTFE</th>
<th>PTFE Tape</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG (mm/in.)</td>
<td>29 (.2870/.0113)</td>
<td>25 (.4570/.0180)</td>
<td>24 (.5100/.0200)</td>
<td>23 (.5740/.0226)</td>
<td>19 (.9200/.0362)</td>
<td>16 (1.3000/.0512)</td>
<td>11 (2.2600/.0899)</td>
<td></td>
</tr>
</tbody>
</table>

#### Dielectric

<table>
<thead>
<tr>
<th>Material</th>
<th>PFA</th>
<th>Solid FEP</th>
<th>PTFE</th>
<th>Solid PTFE</th>
<th>Foam FEP</th>
<th>Solid FEP</th>
<th>PTFE</th>
<th>PTFE Tape</th>
</tr>
</thead>
</table>

#### Shield

<table>
<thead>
<tr>
<th>Material</th>
<th>1) Ag Plated Cu</th>
<th>2) Ag Plated Cu</th>
<th>Tinned Cu</th>
<th>Spiral Strip Ag Plated Cu</th>
<th>1) Ag Plated Cu</th>
<th>2) Ag Plated Cu</th>
<th>1) Ag Plated Cu</th>
<th>2) Ag Plated Cu</th>
<th>Tinned Cu</th>
</tr>
</thead>
</table>

#### Outer Braid

<table>
<thead>
<tr>
<th>Material</th>
<th>FEP</th>
<th>–</th>
<th>FEP</th>
<th>–</th>
<th>FEP</th>
</tr>
</thead>
</table>

#### Jacket

<table>
<thead>
<tr>
<th>Material</th>
<th>FEP</th>
<th>–</th>
<th>FEP</th>
<th>–</th>
<th>FEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dia. (mm/in.)</td>
<td>1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm, SMA, SMP, SMPM, Ganged SMPM (Magnum RF™)</td>
<td>2.92 mm, 2.40 mm</td>
<td>1.85 mm, 2.40 mm, 2.92 mm, SMA, SMP, SMPM, Ganged SMPM (Magnum RF™)</td>
<td>2.40 mm, 2.92 mm, SMA, SMP, SMPM, Ganged SMPM (Magnum RF™)</td>
<td>3.50 mm</td>
</tr>
</tbody>
</table>

### MECHANICAL

<table>
<thead>
<tr>
<th>Operating Temp</th>
<th>-65˚C to 125˚C</th>
<th>-40˚C to 200˚C</th>
<th>-40˚C to 125˚C</th>
<th>-65˚C to 125˚C</th>
<th>-65˚C to 150˚C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. Bend Radius</td>
<td>5.00 mm</td>
<td>9.00 mm</td>
<td>6.35 mm</td>
<td>13.20 mm</td>
<td>8.90 mm</td>
</tr>
<tr>
<td>Connector Options</td>
<td>SMA, SMP</td>
<td>2.92 mm, 2.40 mm</td>
<td>1.85 mm, 2.40 mm, 2.92 mm, SMA, SMP, SMPM, Ganged SMPM (Magnum RF™)</td>
<td>2.40 mm, 2.92 mm, SMA, SMP, SMPM, Ganged SMPM (Magnum RF™)</td>
<td>3.50 mm</td>
</tr>
</tbody>
</table>

For complete specifications, visit samtec.com or contact RFGroup@samtec.com
ORIGINAL SOLUTIONS
PRECISION RF

PRECISION ALIGNMENT FEATURES
• Eliminates misalignment that can occur during board assembly
• Ensures repeatable peak connector performance
• Available on 135, 185, 240, 292 & GPPC Series

DIFFERENTIAL PAIR TEST & MEASUREMENT
• Two-port SMPM ganged solution (GPPC Series)
• Solderless compression mount design
• Saves board real estate (2x the spacing savings)
• Cable-to-board or board-to-board

RIGHT-ANGLE, LOW PROFILE, GANGED SMPM
• Extremely low profile, high-density, right-angle connector (GPPC Series, -RA-SM option)
• Belly-to-belly, surface mount PCB connection for maximum density
• Body height: 3.94 mm (.155")

COUNTERWEIGHT SOLUTIONS
• Enables efficient board assembly (eliminates hand soldering)
• Balanced for automated, high-volume pick-and-place automation
• Edge mount SMA (26.5 GHz) or 2.92 mm (40 GHz)

ANALOG OVER ARRAY™ CONNECTORS
• Enhanced open-pin-field arrays simultaneously run analog, digital, and power signals
• Reference designs and evaluation kits
• Industry-leading crosstalk and return loss performance
1.00 mm TO 110 GHz

1.00 mm Cable Assemblies
RF047-A

- RF047-A = (1.2 mm) .047" overs%haDIA
  29 AWG millimeter wave cable

-10BJ = 1.00 mm Bulkhead Straight Jack
-10SP = 1.00 mm Straight Plug

OVERALL LENGTH
-”XXXX” = Overall Length in millimeters
-0100 (100 mm) 3.94" minimum

ALSO AVAILABLE
1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm,
SMPM, SMP, SMA = RF047-A

VSWR
1.40 max. (DC to 90 GHz)
1.50 max. (90 GHz to 110 GHz)

1.00 mm Cable Connectors
PRF10

CONNECTORS FOR INDUSTRY STANDARD CABLES
<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF10-J-C-VP-047D-SS</td>
<td>.047 Semi-Rigid</td>
</tr>
<tr>
<td>PRF10-P-C-VP-047D-SS</td>
<td>.047 Semi-Rigid</td>
</tr>
</tbody>
</table>

For a complete list of 1.00 mm cable connectors, visit www.samtec.com/PRF10

J-C = Cable Jack
P-C = Cable Plug
VP = Plating (75 µ" Gold center contact, passivated outer contact)
SS = Straight, Solder Clamp

INTERFACE STANDARD
1.35 mm TO 90 GHz

1.35 mm Cable Assemblies
RF047-A

SERIES
RF047-A = (1.2 mm) .047" overshield DIA
29 AWG millimeter wave cable

END 1 CONNECTOR
-13BJ = 1.35 mm Bulkhead Straight Jack
-13SP = 1.35 mm Straight Plug

OVERALL LENGTH
-“XXXX” = Overall Length in millimeters
-0100 (100 mm) 3.94" minimum

ALSO AVAILABLE
1.00 mm, 1.85 mm, 2.40 mm, 2.92 mm,
SMPM, SMP, SMA = RF047-A

VSWR
RF047-A: 1.40 max.

1.35 mm Board Connectors
135

Cable Mates:
RF047-A

CONNECTORS FOR INDUSTRY STANDARD CABLES

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
<th>INTERFACE STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF13-P.C-VP-047A-SS</td>
<td></td>
</tr>
<tr>
<td>PRF13-J.C-VP-047A-BS</td>
<td></td>
</tr>
</tbody>
</table>

For a complete list of 1.35 mm cable connectors, visit www.samtec.com/PRF13
P.C. = Cable Plug
J.C. = Cable Jack
VP = Plating (75 µ" Gold center contact, passivated outer contact)
ST = Straight
CM = Compression Mount Stripline
ST = Straight
CM = Compression Mount Microstrip

1.35 mm Cable Connectors
PRF13

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
1.85 mm TO 65 GHz

1.85 mm Cable Assemblies
RF047-A, RF086

- **SERIES**
  - RF047-A = (1.2 mm), 0.047" overshield DIA 29 AWG millimeter wave cable
  - RF086 = (2.18 mm), 0.086" overshield DIA 23 AWG millimeter wave cable

- **END 1 CONNECTOR**
  - -18SJ = 1.85 mm Straight Jack

- **END 2 CONNECTOR**
  - -18SP = 1.85 mm Straight Plug

- **OVERALL LENGTH**
  - “XXXX” = Overall Length in millimeters
    - -0100 (100 mm) 3.94” minimum

**ALSO AVAILABLE**
1.00 mm, 1.35 mm, 2.40 mm, 2.92 mm, SMPM, SMP, SMA = RF047-A
2.40 mm, 2.92 mm, SMPM, SMP, SMA = RF086

**VSWR**
RF047-A: 1.40 max.
RF086: 1.40 max.

1.85 mm Board Connectors
185

**Cable Mates:**
RF047-A, RF086

**CONNECTORS FOR INDUSTRY STANDARD CABLES**

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>INDUSTRY STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF18-J.C-EP-085-BS</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRF18-P.C-EP-085-SS</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRF18-P.C-EE-085-SD</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRF18-J.C-EP-086-SS</td>
<td>Temp-Flex 1001935086</td>
</tr>
<tr>
<td>PRF18-J.C-EP-047A-SS</td>
<td>Temp-Flex 1000671047</td>
</tr>
<tr>
<td>PRF18-P.C-EP-047A-SS</td>
<td>Temp-Flex 1000671047</td>
</tr>
<tr>
<td>PRF18-P.C-EE-047D-SD</td>
<td>.047 Semi-Rigid</td>
</tr>
<tr>
<td>PRF18-P.C-EE-047H-SD</td>
<td>EZ-47-LA Semi-Rigid</td>
</tr>
<tr>
<td>PRF18-P.C-EP-070-SD</td>
<td>EZ-70-LA Semi-Rigid</td>
</tr>
<tr>
<td>PRF18-J.C-EP-405-SD</td>
<td>RG 405 Semi-Rigid</td>
</tr>
<tr>
<td>PRF18-P.C-EE-405-SD</td>
<td>RG 405 Semi-Rigid</td>
</tr>
<tr>
<td>PRF18-P.C-EP-086E-SS</td>
<td>Dynawave DF165</td>
</tr>
</tbody>
</table>

**INTERFACE STANDARD**

**1.85 mm Cable Connectors**
PRF18

**185 GENDER - TYPE - PLATING - ORIENTATION - TERMINATION - OPTION - PACKAGING**

- **185 = Jack**
- **P = PCB Mount**
- **EP = 50 µ” (1.27 µm) Gold center contact, Passivated outer contact**
- **ST = Straight**
- **CM = Compression Mount Stripline**
- **CMM = Compression Mount Microstrip**
- **EL = Edge Launch**
- **1 = Without Screws (CM & CMM only)**
- **2 = With Screws (CM & CMM only)**
- **01 = .040” to .100” PCB thickness (EL only)**

Leave blank for individually bagged. **B = Bulk packaged.**

**VSWR**
RF047-A: 1.40 max.
RF086: 1.40 max.

1.85 mm Cable Connectors PRF18

For a complete list of 1.85 mm cable connectors, visit www.samtec.com/PRF18

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
2.40 mm TO 50 GHz

2.40 mm Cable Assemblies
RF047-A, RF085, RF086, RF23C

SERIES
- RF047-A = (1.2 mm) .047" overshield DIA 29 AWG millimeter wave cable
- RF086 = (2.18 mm) .086" overshield DIA 23 AWG millimeter wave cable
- RF085 = (2.16 mm) .085" overshield DIA 24 AWG millimeter wave cable
- RF23C = MWC-2350CU-01 millimeter wave cable with copper foil shield

VSIR
RF047-A: 1.35 max.
RF086: 1.40 max.
RF085: 1.40 max.
RF23C: 1.40 max.

VSWR
RF047-A: 1.35 max.
RF086: 1.40 max.
RF085: 1.40 max.
RF23C: 1.40 max.

2.40 mm Board Connectors
240

2.40 mm Cable Connectors
PRF24

CONNECTORS FOR INDUSTRY STANDARD CABLES
<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF24-J-C-EP-085-SS</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRF24-J-C-EP-085-BS</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRF24-J-C-EP-120A-SS</td>
<td>Semflex HP120</td>
</tr>
<tr>
<td>PRF24-J-C-EP-140B-SS</td>
<td>IW 1401</td>
</tr>
<tr>
<td>PRF24-J-C-EP-150B-SS</td>
<td>IW 1501</td>
</tr>
<tr>
<td>PRF24-J-C-EP-140-SS</td>
<td>Dynawave DF150</td>
</tr>
<tr>
<td>PRF24-J-C-EP-085-SS</td>
<td>Temp-Flex 1001935085</td>
</tr>
<tr>
<td>PRF24-J-C-EP-086-SS</td>
<td>Temp-Flex 1001935086</td>
</tr>
</tbody>
</table>

For a complete list of 2.40 mm cable connectors, visit www.samtec.com/PRF24

2.40 mm Cable Assemblies
RF047-A, RF086, RF085, RF23C

END 1 CONNECTOR - END 2 CONNECTOR - OVERALL LENGTH
- 24SJ = 2.40 mm Straight Jack
- 24SP = 2.40 mm Straight Plug
- ”XXXX” = Overall Length in millimeters
- 0100 (100 mm)
- 3.94" minimum (RF047-A, RF085, RF086)
- 0152 (152 mm)
- 5.984" minimum (RF23C)

ALSO AVAILABLE
1.00 mm, 1.35 mm, 1.85 mm,
2.92 mm, SMPM, SMP, SMA = RF047-A
1.85 mm, 2.92 mm, SMPM, SMP, SMA = RF086
2.92 mm = RF085
2.92 mm = RF085

ALSO AVAILABLE
1.00 mm, 1.35 mm, 1.85 mm,
2.92 mm, SMPM, SMP, SMA = RF047-A
1.85 mm, 2.92 mm, SMPM, SMP, SMA = RF086
2.92 mm = RF085
2.92 mm = RF085

2.40 mm Cable Connectors
PRF24

INTERFACE STANDARD

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
2.92 mm TO 40 GHz

2.92 mm Cable Assemblies
RF047-A, RF086, RF085, RF23C

SERIES
- RF047-A = (1.2 mm) .047" overshield DIA
  29 AWG millimeter wave cable
- RF086 = (2.18 mm) .086" overshield DIA
  23 AWG millimeter wave cable
- RF085 = (2.16 mm) .085" overshield DIA
  24 AWG millimeter wave cable
- RF23C = MWC-2350CU-01 millimeter wave cable with copper foil shield

VSWR
- RF047-A: 1.35 max.
- RF086: 1.40 max.
- RF085: 1.40 max.
- RF23C: 1.40 max.

OVERALL LENGTH
- "XXXX" = Overall Length in millimeters
  -92SJ = 2.92 mm Straight Jack
  -92SP = 2.92 mm Straight Plug

ALSO AVAILABLE
- 1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm, SMPM, SMP, SMA = RF047-A
- 1.85 mm, 2.40 mm, SMPM, SMP, SMA = RF086
- 2.40 mm = RF085
- 2.40 mm, SMPM, SMP, SMA = RF23C

2.92 mm Board Connectors
292

Cable Mates: RF047-A, RF085, RF086, RF23C

2.92 mm Cable Connectors
PRF92

CONNECTORS FOR INDUSTRY STANDARD CABLES
- P = Cable Plug
- J = Cable Jack
- EP = Plating (50 µ" Gold center contact & outer contact)
- EE = Plating (50 µ" Gold center contact & outer contact)
- CM = Compression Mount Stripline
- CMM = Compression Mount Microstrip
- ST = Straight
- EL = Edge Launch
- CM = Compression Mount Microstrip

INTERFACE STANDARD
- P = Cable Plug
- J = Cable Jack
- EE = Plating (50 µ" Gold center contact & outer contact)
- EP = Plating (50 µ" Gold center contact, passivated outer contact)
- SS = Straight, Solder Clamp
- SD = Straight, Direct Solder
- BS = Bulkhead, Solder Clamp
- 4S = 4-hole flange, Solder Clamp

More information can be found on the Samtec website: www.samtec.com/292
### 3.50 mm TO 34 GHz

**3.50 mm Cable Assemblies**
RF23S

- **RF23S**
  - = MWC-2350-01 microwave cable with 23 AWG solid FEP Dielectric
  - = 3.50 mm Straight Jack
  - = 3.50 mm Straight Plug

**VSWR**
RF23S: 1.30 max

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<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
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<td>PRF35-P.C-EP-405-SS</td>
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For a complete list of 3.50 mm cable connectors, visit [www.samtec.com?PRF35](http://www.samtec.com?PRF35)

**INTERFACE STANDARD**

| (4.6279) | 1.820 |
| (4.5974) | 1.810 |
| (5.3848) | .212 |
| (5.2835) | .208 |
| (3.3875) | .135 |
| (3.3622) | .135 |
| (2.4638) | .097 |
| (2.3622) | .097 |
| (6.7310) | .265 |
| (6.4770) | .255 |
| (4.5722) | .179 |
| (4.5486) | .179 |
| (3.6310) | .135 |
| (3.5660) | .135 |
| (2.6630) | .061 |
| (2.5113) | .061 |
| (3.5077) | .138 |
| (3.4925) | .138 |
| (3.5750) | .140 |
| (3.4566) | .140 |
| (2.5832) | .097 |
| (2.4638) | .097 |
| (3.5077) | .138 |
| (3.4925) | .138 |
| (3.5077) | .138 |
| (3.4925) | .138 |

**END 1 CONNECTOR**

**END 2 CONNECTOR**

**OVERALL LENGTH**

= Overall Length in millimeters

= 0100 (100 mm) 3.94" min.

### SSMA TO 34 GHz

**SSMA Cable Connectors**
PRFS1

- **PRFS1-J.C-EE-405-BD**
  - = RG 405, Semi-Rigid
- **PRFS1-P.C-EE-405-SD**
  - = RG 405, Semi-Rigid
- **PRFS1-P.C-EP-141A-SS**
  - = Harbour SS402

For a complete list of SSMA cable connectors, visit [www.samtec.com?PRFS1](http://www.samtec.com?PRFS1)

**INTERFACE STANDARD**

| (3.76) | 148 |
| (3.94) | 155 |
| (3.23) | .1272 |
| (3.30) | .130 |
| (1.91) | .075 |
| (1.96) | .077 |
| (4.98) | 196 |
| (5.13) | 202 |
| (0.465) | .018 |
| (0.528) | .020 |
| (0.85) | .0335 |
| (0.88) | .0346 |
| (1.40) | .055 |
| (1.45) | .065 |
| (1.27) | .055 |
| (1.51) | .065 |
| (2.67) | .105 |
| (3.17) | .125 |

*Cable Assemblies RF235*

*Cable Connectors PRF35*

*Cable Connectors PRFS1*

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</tbody>
</table>
### SMA Cable Assemblies

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF047-A</td>
<td>= (1.2 mm) .047” overshield DIA 29 AWG millimeter wave cable</td>
<td>-01SP1* = SMA Straight Plug</td>
<td>= Overall Length in millimeters</td>
</tr>
<tr>
<td>RF086</td>
<td>= (2.18 mm) .086” overshield DIA 23 AWG millimeter wave cable</td>
<td>-01RP1* = SMA Right-angle Plug (RF047-A, RF086, RF23C &amp; RF25S not available)</td>
<td></td>
</tr>
<tr>
<td>RF23C</td>
<td>= MCW-2350CU-01 millimeter wave cable with copper foil shield</td>
<td>-01BJ1* = SMA Bulkhead Jack (RF047-A, RF086 &amp; RF23C not available)</td>
<td></td>
</tr>
<tr>
<td>RF25S</td>
<td>= MWC-2550-01 millimeter wave cable with 25 AWG solid FEP dielectric</td>
<td>-01SB = Straight Bulkhead Jack, Sealed (RF047-A, RF086 &amp; RF23C only)</td>
<td></td>
</tr>
<tr>
<td>RF402</td>
<td>= RG 402 (.141”) 19 AWG semi-flexible microwave cable</td>
<td>*Remove last “1” from end connector when specifying RF047-A, RF086, RF23C &amp; RF25S.</td>
<td></td>
</tr>
<tr>
<td>RF405</td>
<td>= RG 405 (.080”) 24 AWG semi-flexible microwave cable</td>
<td><strong>“XXXX”</strong> = Overall Length in millimeters</td>
<td></td>
</tr>
<tr>
<td>RF180</td>
<td>= (4.52 mm) .178” overshield DIA, 16 AWG microwave cable</td>
<td>–0100 (100 mm) 3.94” minimum (RF047-A, RF086, RF23C, RF402, &amp; RF405)</td>
<td></td>
</tr>
<tr>
<td>RF280</td>
<td>= (7 mm) .277” overshield DIA, 11 AWG microwave cable</td>
<td>–0152 (152 mm) 5.984” minimum (RF23C &amp; RF25S)</td>
<td></td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**

1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm, 3.92 mm, SMPM, SMP = RF047-A
1.85 mm, 2.40 mm, 2.92 mm, SMP = RF086
2.40 mm, 2.92 mm, SMP = RF23C
2.50 mm, 2.92 mm, SMP = RF25S, RF405
TNCA, N Type = RF180
TNCA, N Type = RF280

-0200 (200 mm) 7.87” minimum (RF280)

Additional connector options available. Contact RFGroup@samtec.com

---

### SMA Board Connectors

**SMA-TH, SMA-SM, SMA-MT, SMA-EM**

**Cable Mates:**
- RF047-A, RF086, RF23C, RF25S, RF402, RF405, RF180, RF280

### SMA Cable Connectors

**PRF01**

**CONNECTORS FOR INDUSTRY STANDARD CABLES**

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
<th>INTERFACE STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF01-P-C-EP-120C-SS Harbour LL120</td>
<td>(4.3180) 170 (3.8100) 150</td>
</tr>
<tr>
<td>PRF01-J-C-EP-142C-SS Harbour LL124</td>
<td>(1.2700) 160 (1.2446) 149</td>
</tr>
<tr>
<td>PRF01-P-C-EP-142-SS Harbour LL142</td>
<td>(4.1200) 160 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-142A-SS Harbour SB142</td>
<td>(4.0854) 161 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-335-SS Harbour LL335</td>
<td>(4.1200) 160 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-335A-SS Harbour LL335i</td>
<td>(4.1200) 160 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-190-SS Semflex HP190</td>
<td>(4.0854) 161 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-190-SS Semflex HP190</td>
<td>(4.0854) 161 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-305-SS Semflex HP305</td>
<td>(4.0854) 161 (4.0854) 161</td>
</tr>
<tr>
<td>PRF01-P-C-EP-299-SS Semflex LA290</td>
<td>(4.0854) 161 (4.0854) 161</td>
</tr>
</tbody>
</table>

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**VSWR**

RF047-A: 1.30 max.
RF086: 1.30 max.
RF23C: 1.30 max.
RF180: 1.35 max.
RF280: 1.35 max.

---

**Also Available**

1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm, SMPM, SMP = RF047-A
1.85 mm, 2.40 mm, 2.92 mm, SMP = RF086
2.40 mm, 2.92 mm, SMP = RF23C
SMP = RF25S, RF405
TNCA, N Type = RF180
TNCA, N Type = RF280

---

**Interface Standard**

- **P-C = Cable Plug**
- **J-C = Cable Jack**
- **EP = Plating**
- **SS = Straight, Solder Clamp**
- **RS = Right-angle, Solder Clamp**

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
SMPM TO 65 GHz

SMPM Cable Assemblies
RF047-A, RF086, RF23C

SERIES
- RF047-A = (1.2 mm) .047” overshield DIA 29 AWG millimeter cable
- RF086 = (2.18 mm) .086” overshield DIA 23 AWG millimeter cable
- RF23C = MWC-2350CU-01 millimeter wave cable with copper foil shield

END 1 CONNECTOR
- MOSP = SMPM Straight Plug, Full Detent
- MOSJ = SMPM Straight Jack
- MORJ = SMPM Right-angle Jack (RF047-A only)
- MOBJ = SMPM Straight Bulkhead Jack (RF047-A only)

END 2 CONNECTOR
- “XXXX” = Overall Length in millimeters
  - 0100 (100 mm) 3.94” minimum (RF047-A, RF086)
  - 0152 (152 mm) 5.984” minimum (RF23C)

OVERALL LENGTH

ALSO AVAILABLE
- 1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm, SMP, SMA = RF047-A
- 1.85 mm, 2.40 mm, 2.92 mm, SMP, SMA = RF086
- 2.40 mm, 2.92 mm, SMP, SMA = RF23C

VSWR
- RF047-A: 1.40 max.
- RF086: 1.40 max.
- RF23C: 1.20 max. (DC to 26.5 GHz) 1.40 max. (26.5 GHz to 50 GHz)

SMPM Board Connectors
SMPM-SM, SMPM-TH, SMPM-RA, SMPM-MT, SMPM-EM

Cable Mates:
RF047-A, RF086, RF23C

SMPM Connector Diagrams

CONNECTORS FOR INDUSTRY STANDARD CABLES

<table>
<thead>
<tr>
<th>CONNECTOR CODE</th>
<th>DESCRIPTION</th>
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<tr>
<td>PRFM0-J-C-EE-085-BD</td>
<td>Harbour SS405</td>
</tr>
<tr>
<td>PRFM0-J-C-EE-047A-BD</td>
<td>Temp-Flex 1000671047</td>
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<tr>
<td>PRFM0-J-C-HG-047A-SD</td>
<td>Temp-Flex 1000671047</td>
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<tr>
<td>PRFM0-J-C-EE-047A-RD</td>
<td>Temp-Flex 1000671047</td>
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<tr>
<td>PRFM0-P-C-HG-047A-SD</td>
<td>Temp-Flex 1001935047</td>
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<tr>
<td>PRFM0-J-C-EE-047B-SD</td>
<td>Temp-Flex 1001935047</td>
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<tr>
<td>PRFM0-J-C-EE-086-SD</td>
<td>Temp-Flex 1001935086</td>
</tr>
<tr>
<td>PRFM0-P-C-EE-086-SD</td>
<td>Temp-Flex 1001935086</td>
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</tbody>
</table>

INTERFACE STANDARD (CATCHER’S MITT)

For a complete list of SMPM cable connectors, visit www.samtec.com/PRFM0

samtec.com/SMPM

F-224

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
## SMPM Ganged Cable: GC47, GC86

**Mates With:**
- GPPC

**GC47**
- Ganged SMPM with (1.2 mm) 0.047" overshield DIA 29 AWG millimeter wave cable

**GC86**
- Ganged SMPM with (2.18 mm) 0.086" overshield DIA 23 AWG millimeter wave cable

### Also Available
Other RF options for end 2
Contact RFGroup@samtec.com

**Notes:**
- Cable lengths longer than 1000 mm (39.37") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

## SMPM Ganged Block: GPPC

**Mates With:**
- GC47, GC86

### GPPC

**Gender**
- PF = Plug Full Detent
- PS = Plug Smooth Bore
- PC = Catcher Mitt

**No. of Positions**
- 02, 04, 06, 08, 10 (Per Row)

**Plating**
- EG = 50 µ (1.27 µm) heavy Gold center contact, 10 µ (0.25 µm) extra Gold outer body (EM only)
- HG = 30 µ (0.76 µm) Gold center contact, 10 µ (0.25 µm) Gold outer body (SL & SM only)

**Orientation**
- ST = Straight
- RA = Right-angle
- SM = Surface Mount
- EM = Edge Mount
- SL = Stub Launch

**Termination**
- 1N

**Notes:**
- Some sizes, styles and options are non-standard, non-returnable.

---

### GC47 NO. OF POSITIONS ASSEMBLY LENGTH

<table>
<thead>
<tr>
<th>No. of Positions</th>
<th>A (mm)</th>
<th>B (mm)</th>
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<tbody>
<tr>
<td>02</td>
<td>8.9</td>
<td>3.56</td>
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<tr>
<td>04</td>
<td>16.0</td>
<td>6.40</td>
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<tr>
<td>06</td>
<td>22.1</td>
<td>8.70</td>
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<tr>
<td>08</td>
<td>30.2</td>
<td>1.19</td>
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<tr>
<td>10</td>
<td>37.3</td>
<td>1.47</td>
</tr>
</tbody>
</table>

**Notes:**
- Cable lengths longer than 1000 mm (39.37") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

---

### GC86 NO. OF POSITIONS ASSEMBLY LENGTH

<table>
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<tr>
<th>No. of Positions</th>
<th>A (mm)</th>
<th>B (mm)</th>
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<tbody>
<tr>
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<td>8.9</td>
<td>3.56</td>
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<tr>
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<td>22.1</td>
<td>8.70</td>
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<tr>
<td>08</td>
<td>30.2</td>
<td>1.19</td>
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<tr>
<td>10</td>
<td>37.3</td>
<td>1.47</td>
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</tbody>
</table>

**Notes:**
- Cable lengths longer than 1000 mm (39.37") are not supported with S.I. test data.
- Some sizes, styles and options are non-standard, non-returnable.

---

### GPPC-PS-1-08-XX-XX SHOWN

**Notes:**
- Leave blank for -SL & -SM

---

### SMPM TO 65 GHZ

- F-224
- samtec.com/SMPM

---

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SMPM TO 65 GHz

SMPM Ganged Block: GPPB

Mates With: PRFIA

- PF = Plug Full Detent
- PS = Plug Smooth Bore
- PC = Catcher’s Mitt

- EG = 50 µ" (1.27 µm) heavy Gold center contact, 10 µ" (0.25 µm) Gold outer body

- ST = Straight
- SM = Compression Mount

-1N = 3.56 mm (.140") Pitch

GPPB–PF–1–08–EG–ST–SM–1N SHOWN


ALSO AVAILABLE
(8.33 mm) .328" Pitch
(5.08 mm) .200" Pitch
Edge Mount termination
Contact RFGroup@samtec.com

SMPM Ganged Block: GPPC

Mates With: GC47, GC86, PRFIA

- PF = Plug Full Detent
- PS = Plug Smooth Bore

- EP = 50 µ" (1.27 µm) heavy Gold center contact, Passivated outer body

- ST = Straight
- CMM = Compression Mount

Leave blank for Individually bagged

- B = Bulk Package


DUAL POSITION SOLDERLESS COMPRESSION MOUNT

NO. OF POSITIONS A B C

-02 7.62 .300 N/A (3.56)

-04 14.73 .580 (7.11) .280 (10.67)

-06 21.64 .860 (14.22) .560 (17.78)

-08 28.96 1.14 (21.34) .840 (24.89)

-10 36.07 1.42 (28.45) 1.12 (32.00)


Contact RFGroup@samtec.com

samtec.com/SMPM

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**SMP Cable Assemblies**

- **RF047-A, RF086, RF23C, RF25S, RF405**

**SERIES**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF047-A</td>
<td>(1.2 mm) .047” overshield DIA 29 AWG millimeter wave cable</td>
<td>-00SJ = SMP Straight Jack (RF047-A, RF086 &amp; RF23C only)</td>
<td>“XXXX” = Overall Length in millimeters</td>
</tr>
<tr>
<td>RF086</td>
<td>(2.18 mm) .086” overshield DIA 23 AWG millimeter wave cable</td>
<td>-00MJ = SMP Right-angle Jack (RF047-A, RF086 &amp; RF23C only)</td>
<td>-0100 (100 mm) 3.94” minimum (RF047-A, RF086, RF23C)</td>
</tr>
<tr>
<td>RF23C</td>
<td>= MWC-2350CU-01 millimeter wave cable with copper foil shield</td>
<td>-00BF = SMP Bulkhead Jack, Full Detent (RF086 &amp; RF23C only)</td>
<td>-0152 (152 mm) 5.984” minimum (RF23C)</td>
</tr>
<tr>
<td>RF25S</td>
<td>= MWC-2355-01 microwave cable with 25 AWG solid FEP dielectric</td>
<td>-00BL = SMP Bulkhead Jack, Limited Detent (RF086 &amp; RF23C only)</td>
<td></td>
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<tr>
<td>RF405</td>
<td>= RG 405 (.086”) 24 AWG semi-flexible microwave cable</td>
<td>-00BS = SMP Bulkhead Jack, Smooth Bore (RF086 &amp; RF23C only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-00SJ7 = SMP Straight Jack (RF25S &amp; RF405 only)</td>
<td>-00BC = SMP Bulkhead Jack, Catcher’s Mitt (RF086 &amp; RF23C only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-00RJ7 = SMP Right-angle Jack (RF25S &amp; RF405 only)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VSWR**

- **RF047-A:** 1.50 max.
- **RF086:** 1.50 max.
- **RF23C:** 1.50 max.
- **RF25S:** Contact Samtec
- **RF405:** Contact Samtec

---

**SMP Cable Connectors**

**PRF00**

**CONNECTORS FOR INDUSTRY STANDARD CABLES**

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
<th>Temperature 1000671047</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF00-J-C-EE-047A-RD</td>
<td>Temp-Flex 1000671047</td>
</tr>
<tr>
<td>PRF00-J-C-EE-085A-SD</td>
<td>.086 Semi-Rigid</td>
</tr>
<tr>
<td>PRF00-PF-C-KK-047D-BD</td>
<td>.047 Semi-Rigid</td>
</tr>
</tbody>
</table>

For a complete list of SMP cable connectors, visit www.samtec.com?PRF00

J-C = Cable Jack
EE = Plating (50 µ” Gold center contact & outer contact)
KK = Plating (100 µ” Gold over Nickel center contact, passivated outer contact)
BD = Bulkhead, Direct Solder
SD = Straight, Direct Solder
RD = Right-angle, Direct Solder

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**INTERFACE STANDARD (FULL DETENT)**

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Samtec.com/SMP

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SMP TO 40 GHz

SMP Board Connectors
SMP-TH, SMP-EM, SMP-MT, SMP-SM

Cable Mates:
RF047-A, RF086, RF23C, RF405, RF25S

SMP - GENDER - TYPE - PLATING - ORIENTATION - TERMINATION

- PF = Plug, Full Detent
- PL = Plug, Limited Detent
- PS = Plug, Smooth Bore
- PC = Plug, Catcher’s Mitt
- P = PCB Mount
- HG = Gold center contact, 10 µ (0.25 µm) Gold outer body
- ST = Straight
- SM = Surface Mount (Not available with PS)
- TH”X” = Through-hole (Specify “X” from chart)
- MT”X” = Mixed Technology (Specify “X” from chart)
- EM = Edge Mount (–PL & –PS only)

SMP - J - TYPE - PLATING - ORIENTATION - BULLET LENGTH

- B = Bullet Adaptor
- HG = Gold center contact, 10 µ (0.25 µm) Gold outer body
- ST = Straight
- 0591 = (5.91 mm) .233”
- 0645 = (6.45 mm) .254”
- 0690 = (6.90 mm) .272”
- 0795 = (7.95 mm) .313”
- 0896 = (8.96 mm) .353”
- 1305 = (13.05 mm) .514”
- 1450 = (14.50 mm) .571”

ALSO AVAILABLE
Low Frequency options.
Contact RFGroup@samtec.com

samtec.com/SMP
N Type TO 18 GHz

N Type Cable Assemblies
RF180, RF280

**SERIES**
- **RF180**
  - (4.52 mm) .178" overshield DIA, 16 AWG microwave cable
- **RF280**
  - (7 mm) .277" overshield DIA, 11 AWG microwave cable

**CONNECTORS FOR INDUSTRY STANDARD CABLES**

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF06-P-C-EP-141A-SS</td>
<td>-06SP</td>
<td>Harbour SS402</td>
<td>&quot;XXXX&quot;</td>
</tr>
<tr>
<td>PRF06-P-C-EP-142-BS</td>
<td>-06RP</td>
<td>Harbour LL142</td>
<td>(152 mm) 5.984&quot; minimum (RF180)</td>
</tr>
<tr>
<td>PRF06-P-C-EP-142-S</td>
<td>-06BJ</td>
<td>Harbour LL142</td>
<td>(200 mm) 7.87&quot; minimum (RF280)</td>
</tr>
<tr>
<td>PRF06-J-C-EP-142-BS</td>
<td>-06SP</td>
<td>Harbour SS402</td>
<td>Harbour LL142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-142-RS</td>
<td>-06RP</td>
<td>Harbour LL142</td>
<td>Harbour LL142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-142A-SS</td>
<td>-06BJ</td>
<td>Harbour SS402</td>
<td>Harbour LL142</td>
</tr>
<tr>
<td>PRF06-J-C-EP-335-BS</td>
<td>-06SP</td>
<td>Harbour LL335</td>
<td>Harbour LL335</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335-RS</td>
<td>-06RP</td>
<td>Harbour LL335</td>
<td>Harbour LL335</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335-SS</td>
<td>-06BJ</td>
<td>Harbour LL335</td>
<td>Harbour LL335</td>
</tr>
<tr>
<td>PRF06-J-C-EP-335A-BS</td>
<td>-06SP</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335A-RS</td>
<td>-06RP</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335A-SS</td>
<td>-06BJ</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
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<td>PRF06-P-C-EP-335A-RS</td>
<td>-06RP</td>
<td>Harbour LL335</td>
<td>Harbour LL335</td>
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<tr>
<td>PRF06-P-C-EP-335A-SS</td>
<td>-06BJ</td>
<td>Harbour LL335</td>
<td>Harbour LL335</td>
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<tr>
<td>PRF06-J-C-EP-335A-RS</td>
<td>-06SP</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335A-SS</td>
<td>-06RP</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-335A-SS</td>
<td>-06BJ</td>
<td>Harbour SS142</td>
<td>Harbour SS142</td>
</tr>
<tr>
<td>PRF06-P-C-EP-160A-BS</td>
<td>-06RP</td>
<td>Harbour LL160</td>
<td>Harbour LL160</td>
</tr>
<tr>
<td>PRF06-P-C-EP-160A-RS</td>
<td>-06BJ</td>
<td>Harbour LL160</td>
<td>Harbour LL160</td>
</tr>
<tr>
<td>PRF06-P-C-EP-120A-SS</td>
<td>-06SP</td>
<td>Semiflex HP120</td>
<td>Semiflex HP120</td>
</tr>
<tr>
<td>PRF06-J-C-EP-190-BS</td>
<td>-06RP</td>
<td>Semiflex HP190</td>
<td>Semiflex HP190</td>
</tr>
<tr>
<td>PRF06-P-C-EP-190A-SS</td>
<td>-06BJ</td>
<td>Semiflex HP190</td>
<td>Semiflex HP190</td>
</tr>
<tr>
<td>PRF06-J-C-EP-290-BS</td>
<td>-06SP</td>
<td>Semiflex LA290</td>
<td>Semiflex LA290</td>
</tr>
<tr>
<td>PRF06-P-C-EP-290A-SS</td>
<td>-06RP</td>
<td>Semiflex LA290</td>
<td>Semiflex LA290</td>
</tr>
<tr>
<td>PRF06-P-C-EP-290A-SS</td>
<td>-06BJ</td>
<td>Semiflex LA290</td>
<td>Semiflex LA290</td>
</tr>
<tr>
<td>PRF06-J-C-EP-290-BS</td>
<td>-06SP</td>
<td>Semiflex HP305</td>
<td>Semiflex HP305</td>
</tr>
<tr>
<td>PRF06-P-C-EP-305A-SS</td>
<td>-06RP</td>
<td>RG 402, .141, semi-rigid</td>
<td>RG 402, .141, semi-rigid</td>
</tr>
<tr>
<td>PRF06-P-C-EP-300A-SS</td>
<td>-06BJ</td>
<td>Times Max Gain 300</td>
<td>Times Max Gain 300</td>
</tr>
<tr>
<td>PRF06-P-C-EP-180B-SS</td>
<td>-06SP</td>
<td>IW 1801</td>
<td>IW 1801</td>
</tr>
<tr>
<td>PRF06-P-C-EP-135-SS</td>
<td>-06RP</td>
<td>Dynawave DF440W</td>
<td>Dynawave DF440W</td>
</tr>
<tr>
<td>PRF06-P-C-EP-270A-BS</td>
<td>-06BJ</td>
<td>Dynawave DF218</td>
<td>Dynawave DF218</td>
</tr>
<tr>
<td>PRF06-P-C-EP-160B-SS</td>
<td>-06SP</td>
<td>ATM CF-210</td>
<td>ATM CF-210</td>
</tr>
<tr>
<td>PRF06-P-C-EP-135B-SS</td>
<td>-06RP</td>
<td>Lab-Flex 160S</td>
<td>Lab-Flex 160S</td>
</tr>
<tr>
<td>PRF06-P-C-EP-284-SS</td>
<td>-06BJ</td>
<td>Micro-Coax UFB311A</td>
<td>Micro-Coax UFB311A</td>
</tr>
</tbody>
</table>

ALSO AVAILABLE
SMR, TNCA = RF180
SMR, TNCA = RF280

N Type Cable Connectors
PRF06

**INTERFACE STANDARD**

For a complete list of N Type cable connectors, visit www.samtec.com/PRF06

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**TNCA TO 18 GHz**

**TNCA Cable Assemblies**
RF180, RF280

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF180</td>
<td>-04SP</td>
<td>-04RP</td>
<td>&quot;XXXX&quot;</td>
</tr>
<tr>
<td></td>
<td>TNCA Straight Plug</td>
<td>TNCA Right-angle Plug</td>
<td>Overall length in millimeters</td>
</tr>
<tr>
<td>RF280</td>
<td>-04BJ</td>
<td>-04RP</td>
<td>-0100 (100 mm)</td>
</tr>
<tr>
<td></td>
<td>TNCA Straight Jack</td>
<td>TNCA Right-angle Plug (RF180 only)</td>
<td>3.94&quot; minimum (RF180)</td>
</tr>
<tr>
<td></td>
<td>-04BJ</td>
<td>-04RP</td>
<td>-0200 (200 mm)</td>
</tr>
<tr>
<td></td>
<td>TNCA Straight Jack</td>
<td>TNCA Right-angle Plug (RF280)</td>
<td>7.87&quot; minimum (RF280)</td>
</tr>
</tbody>
</table>

**VSWR**

RF180: 1.35 max. (-04SP & -04BJ)
1.45 max. (-04RP)
RF280: 1.35 max. (-04SP & -04BJ)

**TNCA Cable Connectors**
PRF04

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
<th>INTERFACE STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRF04-P-C-EP-142-RS Harbour LL142</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-142-BS Harbour LL142</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-142-SS Harbour LL142</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-335-SS Harbour LL335</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-290-SS Samflex LA290</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-190-BS Samflex HP190</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-190-SS Samflex HP190</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-335A-BS Harbour LL335i</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-335A-BS Harbour LL335i</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-300A-SS Times Max Gain 300</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-200-SS Times Max Gain 200</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-160A-SS Harbour LL160</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-270A-BS Dynawave DF218</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-135-SS Dynawave DF440W</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-300A-SS Times Max Gain 300</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-210A-BS Micro-Coax UFA210A</td>
<td></td>
</tr>
<tr>
<td>PRF04-P-C-EP-210A-SS Micro-Coax UFA210A</td>
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</tr>
<tr>
<td>PRF04-P-C-EP-284-SS Micro-Coax UFB311A</td>
<td></td>
</tr>
<tr>
<td>PRF04-J-C-EP-127-4S Storm VSR150</td>
<td></td>
</tr>
</tbody>
</table>

**Also Available**

SMA, N Type = RF180
SMA, N Type = RF280

For a complete list of TNCA cable connectors, visit www.samtec.com/TNCA
**IN-SERIES PRECISION RF ADAPTORs**

1.85 mm, 2.40 mm, 2.92 mm
In-Series Adaptors

**PRFIA**

<table>
<thead>
<tr>
<th><strong>PRFIA</strong></th>
<th><strong>CONNECTOR</strong></th>
<th><strong>END 1 GENDER</strong></th>
<th><strong>END 2 GENDER</strong></th>
<th><strong>ORIENTATION</strong></th>
<th><strong>1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>-185</td>
<td>-P Plug</td>
<td>-J Jack</td>
<td>-P Plug</td>
<td>-S Straight</td>
<td>-1</td>
</tr>
<tr>
<td>-240</td>
<td>-J Jack</td>
<td></td>
<td>-J Jack</td>
<td></td>
<td>-2</td>
</tr>
<tr>
<td>-292</td>
<td>-S Straight</td>
<td></td>
<td>-S Straight</td>
<td></td>
<td>-3</td>
</tr>
</tbody>
</table>

- **PRFIA-185-J-J-S**
- **PRFIA-240-P-P-S**
- **PRFIA-292-P-P-S**
- **PRFIA-292-J-J-S-1**

**VSWR**

- **185**: 1.30 max.
- **240**: 1.20 max.
- **292**: 1.15 max.

**SMPM**

In-Series Adaptor:

**PRFIA**

Mates With:

**SMPM, GPPB, GPPC**

<table>
<thead>
<tr>
<th><strong>PRFIA</strong></th>
<th><strong>SMPM</strong></th>
<th><strong>END 1 GENDER</strong></th>
<th><strong>END 2 GENDER</strong></th>
<th><strong>ORIENTATION</strong></th>
<th><strong>-S LENGTH</strong></th>
<th><strong>-SP LENGTH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>-J Jack</td>
<td>-J Jack</td>
<td>-S Straight</td>
<td></td>
<td></td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>-SP Spring Loaded</td>
<td>-3 = (12.70 mm) .500” extension; (13.96 mm) .550” max. compression</td>
<td>-4 = (4.22 mm) .166”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VSWR**

1.15 max. (DC to 26.5 GHz)
1.35 max. (26.5 GHz to 40 GHz)
1.50 max. (40 GHz to 65 GHz)

**PRFIA-185-J-J-S**

- **S-1 SHOWN**
- **S-2 SHOWN**
- **S-3 SHOWN**

- **-SP-1 SHOWN (COMPRESSED)**
- **-SP-2 SHOWN (COMPRESSED)**

---

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### BETWEEN-SERIES PRECISION RF ADAPTORS

#### 1.00 mm to 1.85 mm Adaptors

**PRFBA**

<table>
<thead>
<tr>
<th>100</th>
<th>CONNECTOR</th>
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<th>CONNECTOR</th>
<th>END 2 GENDER</th>
<th>ORIENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>= 1.00 mm</td>
<td>-185</td>
<td>P</td>
<td>= 1.85 mm</td>
<td>-S</td>
</tr>
<tr>
<td>J</td>
<td>= Plug</td>
<td>= Plug</td>
<td>J</td>
<td>= Jack</td>
<td>= Straight</td>
</tr>
</tbody>
</table>

**VSWR**

- 1.12 max. (DC to 26.5 GHz)
- 1.25 max. (26.5 GHz to 40 GHz)
- 1.30 max. (40 GHz to 50 GHz)
- 1.35 max. (50 GHz to 67 GHz)

#### 2.92 mm to SMPM Adaptors

**PRFBA**

<table>
<thead>
<tr>
<th>292</th>
<th>CONNECTOR</th>
<th>END 1 GENDER</th>
<th>CONNECTOR</th>
<th>END 2 GENDER</th>
<th>ORIENTATION</th>
</tr>
</thead>
<tbody>
<tr>
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<td>= 2.92 mm</td>
<td>= SMPM</td>
<td>P</td>
<td>= Straight</td>
<td>= Straight</td>
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<tr>
<td>J</td>
<td>= Plug</td>
<td>= Jack</td>
<td>J</td>
<td>= Plug</td>
<td>= Plug Full Detent</td>
</tr>
</tbody>
</table>

**VSWR**

- 1.30 max. (DC to 40 GHz)

#### VSWR

- 1.12 max. (DC to 26.5 GHz)
- 1.25 max. (26.5 GHz to 40 GHz)
- 1.30 max. (40 GHz to 50 GHz)
- 1.35 max. (50 GHz to 67 GHz)

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### High-Performance Test Assemblies to 90 GHz

**Features & Benefits**

The Bulls Eye® high-performance test assembly features a high-density, space-saving design that enables smaller evaluation boards and shorter trace lengths in test and measurement applications to 90 GHz.

- Compression mounts to the board for placement directly adjacent to the SerDes being characterized
- Solderless design improves cost and is easy to use within a lab setting
- End 2 connection to instrumentation: 1.00 mm, 1.35 mm, 1.85 mm, 2.40 mm or 2.92 mm
- High-density, space-saving design
- Single row or double row
- Complete list of applications: SerDes characterization, clock/data recovery (CDR), mmWave radar, automated test equipment, FR2 5G networks

**Product Family Cross Reference Guide**

<table>
<thead>
<tr>
<th>Assembly</th>
<th>90 GHz</th>
<th>70 GHz</th>
<th>50 GHz</th>
<th>40 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Bottom View</td>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
<td><img src="image3" alt="Image" /></td>
<td><img src="image4" alt="Image" /></td>
</tr>
<tr>
<td>End 2 Connector</td>
<td>1.00 &amp; 1.35 mm</td>
<td>1.85 mm</td>
<td>2.40 mm</td>
<td>2.92 mm</td>
</tr>
<tr>
<td>Samtec Series</td>
<td>BE90A</td>
<td>BE70A</td>
<td>BE40A</td>
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</tr>
<tr>
<td>Cable Type</td>
<td>.047</td>
<td>.086</td>
<td>MWC-2350CU-01</td>
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<tr>
<td>Cable Management</td>
<td>Yes</td>
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</tr>
<tr>
<td>PCB Transition</td>
<td>Microstrip/CPW or Stripline</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bulls Eye® Connector Design</td>
<td>Spring-Loaded Contact; 360° Grounding</td>
<td>Pogo-Pin for Signal &amp; Ground</td>
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<td></td>
</tr>
<tr>
<td>No. of Rows</td>
<td>Single or Double</td>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Positions</td>
<td>1x: 2, 4, 8, 12 2x: 4, 8, 12, 16</td>
<td>1x: 2, 4, 8, 12 2x: 3, 4, 6, 8, 10, 12, 14, 16</td>
<td>2x: 3, 4, 6, 8, 10, 12, 14, 16</td>
<td></td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
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</tr>
<tr>
<td>FPGA Development Kit</td>
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</tr>
<tr>
<td>SI Evaluation Kit</td>
<td></td>
<td>70 GHz: REF-213864-01</td>
<td>50 GHz: REF-213497-01</td>
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**Test Assembly**

<table>
<thead>
<tr>
<th>SerDes Characterization</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAM 4</td>
</tr>
<tr>
<td>224 Gbps</td>
</tr>
<tr>
<td>BE90A, 90 GHz</td>
</tr>
<tr>
<td>BE70A, 70 GHz</td>
</tr>
<tr>
<td>BE40A, 50 GHz</td>
</tr>
</tbody>
</table>

**SI Evaluation Kit**

- 70 GHz: REF-213864-01
- 50 GHz: REF-213497-01

---

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### BE90A, 2 X 4 FOOTPRINT

Performance was measured using 50 Ohm coplanar waveguide (CPW) transmission line and 6 layer PCB (Isola Tachyon). The BE90A DUT consisted of a 2 row × 4 position -M (CPW/microstrip) block, 6-inch (152 mm) low-loss microwave cable and 1.00 mm end 2 connectors. Results include the breakout region and BE90A cable assembly. All other effects have been removed by de-embedding (AFR technique).

#### MEASURED: BREAKOUT REGION + BE90A

![Insertion Loss Performance](image)

![Return Loss Performance](image)
### 70 GHz ASSEMBLIES

<table>
<thead>
<tr>
<th>BE70A</th>
<th>TRANSMISSION TYPE</th>
<th>END 2</th>
<th>PHASE MATCHING</th>
<th>ROW OPTION</th>
<th>POSITIONS PER ROW</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>-S</td>
<td>Stripline</td>
<td>-18SJ</td>
<td>2.0 Pico-second</td>
<td>-1</td>
<td>-02, -03, -04, -06, -08, -10, -12, -14, -16</td>
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<tr>
<td>-M</td>
<td>Microstrip</td>
<td>-18SP</td>
<td>5.0 Pico-second</td>
<td>-5</td>
<td>-02, -03, -04, -06, -08, -10, -12, -14, -16</td>
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<td></td>
<td></td>
<td></td>
<td>No Phase Matching</td>
<td>-N</td>
<td>-02, -03, -04, -06, -08, -10, -12, -14, -16</td>
<td></td>
</tr>
</tbody>
</table>

**DC TO PAM 4**

**70 GHz**

**F-224**

#### Footprint

12 POSITIONS PER ROW -1 SHOWN

##### 70 GHz 70 GHz assemblies

- Single Row (-02, -04, -08 & -12 positions only)
- Double Row (-03 through -16 positions only)

**OVERALL LENGTH:**

- Overall length in millimeters
- 0152 (152 mm) 5.984" minimum

---

### 50 GHz & 40 GHz ASSEMBLIES

<table>
<thead>
<tr>
<th>BE40A</th>
<th>TRANSMISSION TYPE</th>
<th>END 2</th>
<th>PHASE MATCHING</th>
<th>2</th>
<th>POSITIONS PER ROW</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>-S</td>
<td>Stripline</td>
<td>-92SJ</td>
<td>40 GHz, 2.92 mm Straight Jack</td>
<td>2</td>
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<tr>
<td>-M</td>
<td>Microstrip</td>
<td>-24SJ</td>
<td>50 GHz, 2.40 mm Straight Jack</td>
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<td>-03, -04, -06, -08, -10, -12, -14, -16</td>
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<td></td>
<td></td>
<td>-92SP</td>
<td>40 GHz, 2.92 mm Straight Plug</td>
<td>-N</td>
<td>-03, -04, -06, -08, -10, -12, -14, -16</td>
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<tr>
<td></td>
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<td>-24SP</td>
<td>50 GHz, 2.40 mm Straight Plug</td>
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<td>-03, -04, -06, -08, -10, -12, -14, -16</td>
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**DC TO PAM 4**

**50 GHz**

**F-224**

#### Footprint

12 POSITIONS PER ROW –1 SHOWN

**OVERALL LENGTH:**

- Overall length in millimeters
- 0152 (152 mm) 5.984" minimum

---

### 70 GHz ASSEMBLIES

**End 2 Connectors:**

- 1.85 mm (70 GHz)

**Footprint**

12 POSITIONS PER ROW –2 SHOWN

**OVERALL LENGTH:**

- Overall length in millimeters
- 0152 (152 mm) 5.984" minimum

---

### 50 GHz & 40 GHz ASSEMBLIES

**End 2 Connectors:**

- 2.40 mm (50 GHz)
- 2.92 mm (40 GHz)

**Footprint**

16 POSITIONS PER ROW SHOWN

(Backward compatible with BDRA Series)

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Samtec’s new, high frequency micro waveguide technology is designed to support the demands of next generation millimeter wave systems. It uses a cable design allowing flexibility and a reduced size, and supports frequencies up to 90 GHz (E-band), but with a loss performance greatly improved over coaxial cables.

Due to loss requirements, higher frequencies often require the use of rigid, metallic waveguides. However, Samtec’s innovative technology provides an alternative solution that is flexible, easier to use, and lower cost, while also maintaining the near-loss performance of a traditional rigid waveguide.

**LOSS COMPARISON**

<table>
<thead>
<tr>
<th>Product</th>
<th>Series</th>
<th>Frequency Band</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waveguide</td>
<td>WF12</td>
<td>E (60 to 90 GHz)</td>
<td>Overall Length: 102 mm (4.00”) Min.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Threaded Plug: 5 mm (.196”) x 8 mm (.314”)</td>
</tr>
<tr>
<td>Adaptor</td>
<td>WGBA</td>
<td>WR12</td>
<td>Diameter: 19.05 mm (.750”) (mates with WR12 standard flange)</td>
</tr>
</tbody>
</table>

Also Available: V-Band (50 to 75 GHz)
WF15 Series Flexible Waveguide
Cross Section: 3.76 mm (.148”) x 1.88 mm (.074”) nom.
UG-385 flange adaptor to Threaded Waveguide Jack

**FLEXIBILITY & STABILITY**

Dynamic Stability During Flexure (E-Band Waveguide)

E-Field, Flexed (negligible change in pattern)

E-Field, Straight


Samtec’s Waveguide Technology vs. Traditional Waveguide

Flexible Cable  Rigid, Metallic

View complete specifications at: [samtec.com?WF12](http://samtec.com?WF12) and [samtec.com?WGBA](http://samtec.com?WGBA)
# LOW FREQUENCY CABLE SPECIFICATIONS

## STANDARD OFF-THE-SHELF ASSEMBLIES

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MH081</th>
<th>MH113</th>
<th>RF178</th>
<th>RF174</th>
<th>U5c* (IsoRate®)</th>
<th>RF316, LJ5H, LSH, GRF1-C, GRF1-H-C</th>
<th>RS316</th>
<th>RF058</th>
<th>RF179, GRF7-C, GRF7-H-C</th>
<th>RF88T</th>
<th>RFC8T</th>
<th>RF68T</th>
<th>RFC6T</th>
<th>RFA6T</th>
<th>C28S</th>
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<td>1.13 mm (31 AWG)</td>
<td>RG 178 (28 AWG)</td>
<td>RG 174 (24 AWG)</td>
<td>Samtec 26 AWG, high-temp micro coax</td>
<td>RG 316 (24 AWG)</td>
<td>RG 316, double shielded (24 AWG)</td>
<td>RG 58 (20 AWG)</td>
<td>RG 179 (28 AWG)</td>
<td>Belden 1855A (23 AWG)</td>
<td>126-SDI, Belden 4855R (23 AWG)</td>
<td>Belden 1694A (18 AWG)</td>
<td>126-SDI, Belden 4694R (18 AWG)</td>
<td>RG 6 (18 AWG)</td>
<td>Samtec 28 AWG, shielded twisted pair</td>
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<td>6 GHz</td>
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<td>5.90</td>
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<td>2.20 @ 5 GHz</td>
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<td>PTFE</td>
<td>KLPE</td>
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<td>FHDPE</td>
<td>PE (Foam)</td>
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<td>FEP</td>
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<td>1. Al Foil-Polyester Tape-Al Foil 2, Tinned Copper</td>
<td>1. Bonded Al Foil 2, Al Wire</td>
<td>1. Al Foil-Polyester Tape-Al Foil 2, Tinned Copper</td>
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<tr>
<td>-40 °C to +90 °C</td>
<td>-50 °C to +165 °C</td>
<td>-20 °C to +80 °C</td>
<td>-40 °C to +200 °C</td>
<td>-55 °C to +165 °C</td>
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<td>-50 °C to +165 °C</td>
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<td>-20 °C to +105 °C</td>
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<tr>
<td>Bend Radius</td>
<td>Min</td>
<td>5.00 mm</td>
<td>6.80 mm</td>
<td>10.20 mm</td>
<td>25.40 mm</td>
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<td>Connector Options</td>
<td>MHF1, MHF3, MHF4</td>
<td>MMXCM, MMXCV, MCMX, MCXV, SMX, SMB, BNC, TNC, N Type</td>
<td>MMXCM, MMXCV, MCMX, MCXV, SMX, SMB, BNC, TNC, N Type, Ganged</td>
<td>IsoRate®</td>
<td>MMXCM, MMXCV, MCMX, MCXV, SMX, SMB, BNC, TNC, N Type, Ganged</td>
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<td>MMXCM, MMXCV, MCMX, MCXV, SMX, SMB, BNC, TNC, N Type, Ganged</td>
<td>SMA, TNC, N Type</td>
<td>MCX, MMXCV/7, SMB, BNC, DIN 1.0/2.3, Ganged</td>
<td>HD-BNC, DIN 1.0/2.3, Ganged</td>
<td>HD-BNC, BNC, DIN 1.0/2.3, Ganged</td>
<td>HD-BNC, BNC, DIN 1.0/2.3, Ganged</td>
<td>HD-BNC, BNC, DIN 1.0/2.3, Ganged</td>
<td></td>
<td>CJT</td>
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</table>

* ALSO USES RG 316

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**SERIES**

MH081 = 0.81 mm Cable

MH113 = 1.13 mm Cable

**APPLICATION**

Specify END OPTIONS from chart

**OVERALL LENGTH**

-0030 = 1.18” (30 mm)
-0050 = 1.97” (50 mm)
-0100 = 3.94” (100 mm)
-0150 = 5.91” (150 mm)
-0300 = 11.81” (300 mm)

---

**SPECIFICATIONS**

- **Outer Contact Material:** Au plated Phosphor Bronze (MHX)
- **Center Contact Material:** Au plated BeCu (SMA)
- **Insulator Material:** PBT (MHX)
- **PTFE (SMA)**
- **Operating Temperature:** -40 °C to +90 °C
- **Voltage Rating:** 170 V max
- **Dielectric Withstanding Voltage:** 200 Vrms

**0.81 mm Cable:**
- **Capacitance:** 100 pF/meter
- **Max Attenuation (cable only):** 3.1 dB @ 1 GHz
- **Conductor Size:** 36 AWG, (0.81 mm) .032” dia.
- **Conductor Material:** Silver Plated Copper
- **Conductor Resistance:** 1.40 Ω/meter max
- **Insulator Diameter:** (0.4 mm) .016”
- **Insulator Material:** FEP
- **Shield Material:** Silver Plated Copper
- **Jacket Material:** FEP
- **Jacket Diameter:** (0.81 mm) .032” dia.
- **Bend Radius:** 5.0 mm
- **Jacket Temp Rating:** -40 °C to +90 °C

**1.13 mm Cable:**
- **Capacitance:** 95 pF/meter
- **Max Attenuation (cable only):** 2 dB @ 1 GHz
- **Conductor Size:** 32 AWG, (1.13 mm) .045” dia.
- **Conductor Material:** Silver Plated Copper
- **Conductor Resistance:** 0.60 Ω/meter max
- **Insulator Diameter:** (0.66 mm) .026”
- **Insulator Material:** FEP
- **Shield Material:** Tinned Copper
- **Jacket Material:** FEP
- **Jacket Diameter:** (1.13 mm) .045” dia
- **Bend Radius:** 6.8 mm
- **Jacket Temp Rating:** -40 °C to +90 °C

---

**EXTRACTION TOOLS**

MH1RP = RSP-122893-01
MH3RP = RSP-122893-02
MH4RP = RSP-122893-03

**MATING SOLUTIONS**

MH1RP end mates with RSP-122811-01 (Cycles: 30 max.)
MH3RP end mates with RSP-122811-02
MH4RP end mates with RSP-122811-03

---

**END OPTIONS**

- **MH1RP = MHF1 Type Plug**
  - (3.9 µ” (0.1 µm) Gold on Center Contact, 1.9 µ” (0.05 µm) Gold on Shell)
- **MH3RP = MHF3 Type Plug**
  - (3.9 µ” (0.1 µm) Gold on Center Contact, 1.9 µ” (0.05 µm) Gold on Shell) (MH081 only)
- **MH4RP = MHF4 Type Plug**
  - (10 µ” (0.25 µm) Gold on Center Contact, 1.9 µ” (0.05 µm) Gold on Shell) (MH081 only)
- **-01BJ1 = SMA Straight Bulkhead Jack (MH081 only)**
- **-01BJ2 = SMA Straight Bulkhead Jack, Reversed Polarity**
- **-01SB1 = SMA Straight Jack, Sealed Bulkhead**
- **-01SR1 = SMA Straight Jack, Sealed Bulkhead, Reversed Polarity**
  - (30 µ” (0.76 µm) Gold on Center Contact, Gold Flash on Shell)
- **-015S1 = SMA Straight Jack, Sealed Bulkhead, Reversed Polarity**
- **-015R1 = SMA Straight Jack, Sealed Bulkhead, Reversed Polarity**
- **-018J1 = SMA Straight Bulkhead Jack (MH081 only)**
- **-018J2 = SMA Straight Bulkhead Jack**
- **-018R1 = SMA Straight Jack, Sealed Bulkhead, Reversed Polarity**
  - (30 µ” (0.76 µm) Gold on Center Contact, Gold Flash on Shell)
- **-SING = Single Ended**
  - (End 2 callout)
- **XXXXXX = Stripped & Tinned**
  - (End 2 callout)

---

**STRIPPED & TINNED (Dimensions in mm)**

<table>
<thead>
<tr>
<th>CALLOUT</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30030</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>-30040</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>-40030</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>-40040</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Both center conductor and braid shield are stripped, only the center conductor is tinned.
### SMA Cable Assemblies

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174</td>
<td>= RG 174 Cable</td>
<td>−01SP1</td>
<td>= SMA Straight Plug</td>
</tr>
<tr>
<td>RF178</td>
<td>= RG 178 Cable</td>
<td>−01RP1</td>
<td>= SMA Right-angle Plug</td>
</tr>
<tr>
<td>RF316</td>
<td>= RG 316 Cable, Single Braid Shield</td>
<td>−01BJ1</td>
<td>= SMA Straight Bulkhead Jack</td>
</tr>
<tr>
<td>RS316</td>
<td>= RG 316 Cable, Double Shield</td>
<td>−01SB1</td>
<td>= Straight Bulkhead Jack, Sealed</td>
</tr>
<tr>
<td>RF058</td>
<td>= RG 58 Cable</td>
<td>−01SR1</td>
<td>= Straight Bulkhead Jack, Sealed, Reversed Polarity</td>
</tr>
<tr>
<td></td>
<td>−01BR1</td>
<td>= Straight Bulkhead Jack, Reversed Polarity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>−01PN1</td>
<td>= 4-Hole Panel Mount Jack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>−“XXXX”</td>
<td>= Overall Length in millimeters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 0100 (100 mm)</td>
<td>= 3.94&quot; minimum</td>
<td></td>
</tr>
</tbody>
</table>

### SMA Cable Connectors

- **SMA-CA**
- **SMA-GENDER**
- **TYPE**
- **PLATING**
- **ORIENTATION**
- **TERMINATION**
- **PACKAGING**

![SMA Cable Connectors](samtec.com/SMA)

**SMA Board Connectors**

See page 154 for Board Connectors

Supplied with pins, washers, nuts and ferrules. See website for dimensions.

Samtec, Inc.

500 Oakmeade Parkway

Cupertino, CA 95014

Telephone: 800-872-8537

Fax: 408-872-3395

sales@samtec.com

Samtec’s specifications which are subject to change without notice.


**50 Ω MCX TO 6 GHz**

**MCX Cable Assemblies**

- **RF174** = RG 174 Cable
- **RF178** = RG 178 Cable
- **RF316** = RG 316 Cable, Single Braid Shield
- **RS316** = RG 316 Cable, Double Shielded

**SERIES**

<table>
<thead>
<tr>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174</td>
<td>-02S1</td>
<td>-&quot;XXXX&quot;</td>
</tr>
<tr>
<td>RF178</td>
<td>-02R1</td>
<td>(mm) 3.94&quot;</td>
</tr>
<tr>
<td>RF316</td>
<td>-02P1</td>
<td>minimum</td>
</tr>
<tr>
<td>RS316</td>
<td>(RS316 not available)</td>
<td></td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**

- 50 Ω: MMCX, SMA, SMB, BNC, TNC, N Type = RF174, RF178, RF316
- 50 Ω: MMCX, SMA, BNC, TNC = RS316

**MCX Board Connectors**

- **MCX-TH**, **MCX-5M**, **MCX-EM**, **MCX-MT**

**MCX Cable Connectors**

**MCX-CA**

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MCX-J-C-H-ST-CA1</strong></td>
</tr>
<tr>
<td><strong>MCX-P-C-H-ST-CA1</strong></td>
</tr>
<tr>
<td><strong>MCX-P-C-H-ST-CA2</strong></td>
</tr>
<tr>
<td><strong>MCX-P-C-H-RA-CA1</strong></td>
</tr>
<tr>
<td><strong>MCX-P-C-H-RA-CA1S</strong></td>
</tr>
</tbody>
</table>

Supplied with pins and ferrules. See website for dimensions.

**See website for dimensions.**

*Add ".B" to the end of the part number for bulk packaging.

[Web link: samtec.com/MCX]
50 Ω MMCX TO 6 GHz

MMCX

Cable Assemblies
RF174, RF178, RF316, RS316

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174</td>
<td>-03SP1</td>
<td>RF178</td>
<td>“XXXX”</td>
</tr>
<tr>
<td></td>
<td>= MMCX Straight Plug</td>
<td>= MMCX Straight Plug</td>
<td>= Overall Length in millimeters</td>
</tr>
<tr>
<td>RF178</td>
<td>-03RP1</td>
<td></td>
<td>-0100 (100 mm) 3.94&quot; minimum</td>
</tr>
<tr>
<td>RS316</td>
<td>-V3SP1</td>
<td>RS316</td>
<td></td>
</tr>
<tr>
<td>RF316</td>
<td>-V3RP1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= MMCXV Straight Plug, High Vibration</td>
<td>= MMCXV Right-angle Plug, High Vibration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-V3SJ1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= MMCXV Straight Jack, High Vibration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ALSO AVAILABLE
50 Ω: MCX, SMA, SMB, BNC, TNC, N Type = RF174, RF178, RF316
50 Ω: MCX, SMA, BNC, TNC = RS316

MMCX

Board Connectors
MMCX-SM, MMCX-TH, MMCX-MT, MMCX-EM

Cable Mates:
RF174, RF178, RF316, RS316, GRF1H-C, IJ5H

MMCX - GENDER - TYPE - PLATING - ORIENTATION - TERMINATION

- J = Jack
- P = Plug
- H = 30 µ” (0.76 µm) Gold center contact, 3 µ” (0.08 µm) Gold outer contact
- ST = Straight
- RA = Right-angle
- TH1 = Through-hole
- MT1 = Mixed Technology (~ST only)
- SM1 = Surface Mount (~RA plug not available)
- EM1 = Edge Mount (~ST only)

MMCX

Cable Connectors
MMCX-CA

CONNECTORS FOR INDUSTRY STANDARD CABLES

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
<th>Cable Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMCX-P-C-H-ST-CA1</td>
<td>RG 174/316 Cable</td>
<td></td>
</tr>
<tr>
<td>MMCX-P-C-H-ST-CA2</td>
<td>RG 178 Cable</td>
<td></td>
</tr>
<tr>
<td>MMCX-P-C-HF-ST-CA1S</td>
<td>RG 316 Double Shielded Cable</td>
<td></td>
</tr>
<tr>
<td>MMCX-P-C-H-RA-CA1</td>
<td>RG 174/316 Cable</td>
<td></td>
</tr>
<tr>
<td>MMCX-P-C-H-RA-CA2</td>
<td>RG 178 Cable</td>
<td></td>
</tr>
</tbody>
</table>

Add “-B” to the end of the part number for bulk packaging
P-C = Cable Plug
H or HF = Plating (30 µ” Gold center contact, 3 µ” Gold outer contact)
ST = Straight
RA = Right-angle

Supplied with pins and ferrules. See website for dimensions.

samtec.com/MMCX

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**50 Ω TNC TO 6 GHz**

**TNC Cable Assemblies**
RF174, RF178, RF316, RS316, RF058

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174  = RG 174 Cable</td>
<td>-05SP3 = TNC Straight Plug (RF058 not available)</td>
<td>-&quot;XXXX&quot; = Overall Length in millimeters</td>
<td></td>
</tr>
<tr>
<td>RF178  = RG 178 Cable</td>
<td>-05BJ3 = TNC Straight Bulkhead Jack (RS316 &amp; RF058 not available)</td>
<td>-0100 (100 mm) 3.94&quot; minimum</td>
<td></td>
</tr>
<tr>
<td>RF316  = RG 316 Cable, Single Braid Shield</td>
<td>-05SR3 = TNC Straight Plug, Reversed Polarity (RF058 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS316  = RG 316 Cable, Double Shielded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF058  = RG 58 Cable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**
50 Ω: MCX, MMCX, SMA, SMB, BNC, N Type = RF174, RF178, RF316
50 Ω: MCX, MMCX, SMA, BNC = RS316
50 Ω: SMA, N Type = RF058

**TNC Board Connectors**
TNC-TH

<table>
<thead>
<tr>
<th>GENDER</th>
<th>TYPE</th>
<th>PLATING</th>
<th>ORIENTATION</th>
<th>TERMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-J = Jack</td>
<td>-P = PCB Mount</td>
<td>-H = 30 μ&quot; (0.76 μm) Gold center contact, Nickel on shell</td>
<td>-RA = Right-angle</td>
<td>-TH1 = Through-hole</td>
</tr>
</tbody>
</table>

**Cable Mates:**
RF174, RF178, RF316, RS316, RF058, GRF1H-C

**TNC Cable Connectors**
TNC-CA

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNC-P-C-GN-ST-CA1 = RG 174/316 Cable</td>
</tr>
<tr>
<td>TNC-P-C-GN-ST-CA2 = RG 178 Cable</td>
</tr>
<tr>
<td>TNC-P-C-GN-SR-C10 = RG 58 Cable</td>
</tr>
<tr>
<td>TNC-J-C-GN-ST-BH1 = RG 174/316 Cable, Bulkhead</td>
</tr>
<tr>
<td>TNC-J-C-GN-ST-BH2 = RG 178 Cable, Bulkhead</td>
</tr>
</tbody>
</table>

P-C = Cable Plug
J-C = Cable Jack
GN = Plating (10 μ" Gold on contact, Nickel on body)
ST = Straight
SR = Straight Reverse Polarity

Supplied with pins, washers, nuts and ferrules. See website for dimensions.

samtec.com/TNC

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**BNC Cable Assemblies**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174</td>
<td>= RG 174 Cable</td>
<td>-04SP3</td>
<td>“XXXX”</td>
</tr>
<tr>
<td>RF178</td>
<td>= RG 178 Cable</td>
<td>-04BJ2</td>
<td>= Overall Length in millimeters</td>
</tr>
<tr>
<td>RF316</td>
<td>= RG 316 Cable, Single Braid Shield</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS316</td>
<td>= RG 316 Cable, Double Shielded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**

50 Ω: MCX, MMCX, SMA, SMB, TNC, N Type = RF174, RF178, RF316

50 Ω: MCX, MMCX, SMA, TNC = RS316

---

**BNC Cable Connectors**

**BNC5-CA**

Supplied with pins, washers, nuts, gaskets and ferrules. See website for dimensions.

**CONNECTORS FOR INDUSTRY STANDARD CABLES**

<table>
<thead>
<tr>
<th>Connector Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BNC5-P-C-GN-ST-CA1</td>
<td>RG 174/316 Cable</td>
</tr>
<tr>
<td>*BNC5-P-C-GN-ST-CA2</td>
<td>RG 178 Cable</td>
</tr>
<tr>
<td>*BNC5-J-C-GN-ST-BH1</td>
<td>RG 174/316 Cable, Bulkhead</td>
</tr>
<tr>
<td>BNC5-J-C-GN-ST-BH2</td>
<td>RG 178 Cable, Bulkhead</td>
</tr>
<tr>
<td>BNC5-J-C-GN-ST-BH1S</td>
<td>RG 316 Double Shielded Cable, Bulkhead</td>
</tr>
</tbody>
</table>

*Add “-B” to the end of the part number for bulk packaging

P.C = Cable Plug
J.C = Cable Jack
GN = Plating (10 µ” Gold on contact, Nickel on body)
ST = Straight

---

F-224

samtec.com/BNC

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**50 Ω SMB TO 4 GHz**

**SMB Cable Assemblies**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF174  = RG 174 Cable</td>
<td>-07SP1 = SMB Straight Plug</td>
<td>-07BJ2 = SMB Bulkhead Jack (RF178 only)</td>
<td>–&quot;XXXX&quot; = Overall Length in millimeters</td>
</tr>
<tr>
<td>RF178  = RG 178 Cable</td>
<td>-07RP1 = SMB Right-angle Plug</td>
<td></td>
<td>-0100 (100 mm) 3.94&quot; minimum</td>
</tr>
<tr>
<td>RF316  = RG 316 Cable, Single Braid Shield</td>
<td>-07BJ1 = SMB Bulkhead Jack</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**

50 Ω: MCX, MMCX, SMA, BNC, TNC, N Type = RF174, RF178, RF316

**SMB Board Connectors**

<table>
<thead>
<tr>
<th>SMB5</th>
<th>GENDER</th>
<th>TYPE</th>
<th>PLATING</th>
<th>ORIENTATION</th>
<th>TERMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>–J   = Jack</td>
<td>–P = PCB Mount</td>
<td>–H = 30 µ&quot; (0.76 µm) Gold center contact, 3 µ&quot; (0.08 µm) Gold outer contact</td>
<td>–RA = Right-angle</td>
<td>–TH1 = Through-hole</td>
<td></td>
</tr>
</tbody>
</table>

**SMB Cable Connectors**

<table>
<thead>
<tr>
<th>CONNECTORS FOR INDUSTRY STANDARD CABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMB5-P.C.H-ST-CA1 = RG 174/316 Cable</td>
</tr>
<tr>
<td>SMB5-P.C.H-RA-CA1 = RG 174/316 Cable</td>
</tr>
<tr>
<td>SMB5-J.C.H-ST-CA2 = RG 178 Cable</td>
</tr>
<tr>
<td>SMB5-J.C.H-ST-BH1 = RG 316 Cable, Bulkhead</td>
</tr>
</tbody>
</table>

P-C = Cable Plug
J-C = Cable Jack
H = Plating (30 µ" Gold center contact, 3 µ" Gold on outer contact)
ST = Straight
RA = Right-angle

Supplied with pins, washers, nuts and ferrules. See website for dimensions.

samtec.com/SMB
**75 Ω BNC to 12 GHz**

### BNC Cable Assemblies

**RFC6T, RFA6T, RFB6T, RF179**

- **RFC6T**
  - 12G-SDI, Belden 4694R Cable

- **RFA6T**
  - RG 6 Cable

- **RFB6T**
  - Belden 1694A Cable

- **RF179**
  - RG 179 Cable

### Series

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-74SP3</td>
<td>75 Ω BNC Straight Plug</td>
</tr>
<tr>
<td>-D4SP3</td>
<td>75 Ω BNC Die Cast Straight Plug (RFA6T, RFB6T, RF179 only)</td>
</tr>
<tr>
<td>-74BJ3</td>
<td>75 Ω BNC Bulkhead Jack (RF179 only)</td>
</tr>
<tr>
<td>-74RP3</td>
<td>75 Ω BNC Right-angle Plug (RFA6T, RFB6T, RFC6T only)</td>
</tr>
</tbody>
</table>

### End 1 Connector

### End 2 Connector

### Overall Length

- **”XXXX”**
  - Overall Length in millimeters

  - 0300 (300 mm)
  - 11.81” minimum (RFA6T, RFB6T, RFC6T)
  - 0100 (100 mm)
  - 3.94” minimum (RF179)

### Also Available

- 75 Ω: DIN 1.0/2.3, HDBNC = RFA6T, RFB6T, RFC6T
- 75 Ω: DIN 1.0/2.3, SMB, MCX, MMCX = RF179

- **75 Ω BNC to 12 GHz BNC Cable Assemblies**

- **BNC Cable Connectors**
  - **BNC7T-CA**

- **Connectors for Industry Standard Cables**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BNC7T-P-C-GN-ST-CA3</strong></td>
<td>Machined, RG 179 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-RA-CA3</strong></td>
<td>Machined, RG 179 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-ST-CA6</strong></td>
<td>*Machined, RG 6 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-RA-CA6</strong></td>
<td>*Machined, RG 6 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-ST-CA6B</strong></td>
<td>Belden 4694R Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-RA-CA6B</strong></td>
<td>Belden 4694R Cable</td>
</tr>
<tr>
<td><strong>BNC7T-J-C-GN-ST-BH3</strong></td>
<td>Machined, Bulkhead, RG 179 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-ST-CA3D</strong></td>
<td>Die Cast, RG 179 Cable</td>
</tr>
<tr>
<td><strong>BNC7T-P-C-GN-ST-CA6D</strong></td>
<td>Die Cast, RG 179 Cable</td>
</tr>
</tbody>
</table>

- **Machined**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-CA3D</td>
<td>-CA6D</td>
</tr>
</tbody>
</table>

- **Die Cast**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-CA3D</td>
<td>-CA6D</td>
</tr>
</tbody>
</table>

- **Termination C (Dia)**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-CA3</td>
<td>(2.70) 106</td>
</tr>
<tr>
<td>-CA6</td>
<td>(6.85) 207</td>
</tr>
</tbody>
</table>

### Notes:

- Additional plating options available on Cable Assemblies, Cable Connectors and Board Connectors.
- Contact RFGroup@samtec.com

---

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
75 Ω DIE CAST BNC TO 12 GHz

BNC Board Connectors
BNC7T-TH, BNC7T-BH, BNC7T-BM, BNC7T-EM

<table>
<thead>
<tr>
<th>GENDER</th>
<th>TYPE</th>
<th>PLATING</th>
<th>ORIENTATION</th>
<th>TERMINATION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>-J</td>
<td>-P</td>
<td>-GN</td>
<td>-ST</td>
<td>-TH2D</td>
<td>Leave blank for individually bagged.</td>
</tr>
<tr>
<td>Jack</td>
<td>PCB Mount</td>
<td>(10 µm) Gold contact, 100 µ&quot; (2.54 µm) Nickel Shell</td>
<td>Straight</td>
<td>Tall Through-hole Die Cast (-ST only)</td>
<td></td>
</tr>
<tr>
<td>-RA-BM1D (BALANCED FOR PICK-AND-PLACE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-RA-BH2D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-ST-EM1D &amp; -ST-EM2D</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>-ST-TH2D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Contact RFGroup@samtec.com for 12G-SDI PCB mount launch characteristics.
Designed to meet SMPTE 2082 12G-SDI specifications.
Additional plating options available on Board Connectors. Contact RFGroup@samtec.com

75 Ω MACHINED BNC TO 12 GHz

BNC Board Connectors
BNC7T-TH, BNC7T-BH, BNC7T-EM

<table>
<thead>
<tr>
<th>GENDER</th>
<th>TYPE</th>
<th>PLATING</th>
<th>ORIENTATION</th>
<th>TERMINATION</th>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>-J</td>
<td>-P</td>
<td>-GN</td>
<td>-ST</td>
<td>-TH1</td>
<td>Leave blank for individually bagged.</td>
</tr>
<tr>
<td>Jack</td>
<td>PCB Mount</td>
<td>(10 µm) Gold contact, 100 µ&quot; (2.54 µm) Nickel Shell</td>
<td>Straight</td>
<td>Standard Through-hole (-ST only)</td>
<td></td>
</tr>
<tr>
<td>-RA-BH1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-ST-EM1 &amp; -ST-EM2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-ST-TH1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Contact RFGroup@samtec.com for 12G-SDI PCB mount launch characteristics.
Designed to meet SMPTE 2082 12G-SDI specifications.
Additional plating options available on Board Connectors. Contact RFGroup@samtec.com

Cable Mates:
RF179, RFA6T, RF68T, RFC6T, GRF7H-C

*Lock washers & knurled nuts supplied with bulkhead/panel mount options

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
75 Ω HIGH-DENSITY BNC TO 12 GHz

**HIGH-DENSITY BNC Cable Assemblies**
- RFA6T, RF6B6T, RFC6T, RFC8T

**SERIES**
- RFC6T* = 12G-SDI, Belden 4694R Cable
- RFC8T* = 12G-SDI, Belden 4855R Cable
- RFA6T = RG 6 Cable
- RFB6T = Belden 1694A Cable
- RFB8T = Belden 1855A Cable

**END 1 CONNECTOR**
- H4SP3 = 75 Ω High-Density BNC Straight Plug

**END 2 CONNECTOR**
- “XXXX” = Overall Length in millimeters
  - 0300 (300 mm)
  - 11.81” minimum

**OVERALL LENGTH**

**ALSO AVAILABLE**
- 75 Q: DIN 1.0/2.3, BNC = RFB6T, RFA6T, RFC6T
- 75 Q: DIN 1.0/2.3 = RFB8T, RFC8T

*Designed to meet SMPTE 2082 12G-SDI specifications.

**HIGH-DENSITY BNC Board Connectors**
- HDBNC-TH, HDBNC-EM, HDBNC-BH, HDBNC-BM

**Cable Mates:**
- RFA6T, RF6B6T, RFC6T, RFC8T

**HDBNC**
- Gender = Jack
- Gender = PCB Mount
- Plating = 10 µ" (0.25 µm) Gold contact, 100 µ" (2.54 µm) Nickel shell
- Orientation = Straight
- Orientation = Right-angle
- Termination = Through-hole
- Termination = Through-hole (2.36 mm) .093" PCB (-RA only)
- Termination = Die Cast Bulkhead Mixed Technology for (1.60 mm) .062" PCB (-RA only)
- Termination = Die Cast Bulkhead Mixed Technology for (3.18 mm) .125" PCB (-RA only)
- Termination = Edge Mount (-ST only)
- Termination = Through-hole, Three Legs (-ST only)
- Packaging = Leave blank for individually bagged.
- Packaging = Bulk packaged (-BHX only)

**Notes:**
- Designed to meet SMPTE 2082 12G-SDI specifications.
- Additional plating options available on Cable Assemblies, Cable Connectors and Board Connectors. Contact RFGroup@samtec.com

**HIGH-DENSITY BNC Cable Connectors**
- HDBNC-CA

**CONNECTORS FOR INDUSTRY STANDARD CABLES**
- HDBNC-P.C.GN-ST-CA6 = RG 6, Belden 1694A or Belden 4694R Cable
- HDBNC-P.C.GN-ST-CA8 = Belden 1855A or Belden 4855R Cable

Add “-B” to the end of the part number for bulk packaging (100 max.)
- P.C = Cable Plug
- GN = Plating (10 µ" Gold on contact, Nickel on outer contact & shell)
- ST = Straight

Supplied with pins and ferrules. See website with dimensions.

Designed to meet SMPTE 2082 12G-SDI specifications.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
### DIN Cable Assemblies

- **RFC6T***
  - = 12G-SDI, Belden 4694R Cable
- **RFC8T***
  - = 12G-SDI, Belden 4855R Cable
- **RFA6T***
  - = RG 6 Cable
- **RFB6T***
  - = Belden 1694A Cable
- **RF179***
  - = RG 179 Cable
- **RFB8T***
  - = Belden 1855A Cable

*D*Designed to meet SMPTE 2082 12G-SDI specifications.

### DIN Board Connectors

#### DIN7A-TH, DIN7A-BH

- **Cable Mates:**
  - RFA6T, RFB6T, RF179, RFB8T, RFC6T, RFC8T, GRF7H-C

#### Connectors for Industry Standard Cables

<table>
<thead>
<tr>
<th>DIN7A-PP-C-GF-ST-CA3</th>
<th>RG 179</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN7A-PP-C-GF-ST-CA6</td>
<td>*RG 6, Belden 1694A or Belden 4694R Cable</td>
</tr>
<tr>
<td>DIN7A-PP-C-GF-ST-CA8</td>
<td>*Belden 1855A or Belden 4855R Cable</td>
</tr>
</tbody>
</table>

*Designed to meet SMPTE 2082 12G-SDI specifications.

Notes:
- Contact RFGroup@samtec.com for 12G-SDI PCB mount launch characteristics.
- Designed to meet SMPTE 2082 12G-SDI specifications.
- Additional plating options available on Cable Assemblies, Cable Connectors and Board Connectors. Contact RFGroup@samtec.com

### DIN Cable Connectors

#### DIN7A-CA

Supplied with pins and ferrules. See website for dimensions.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**SMB Cable Connectors**

**RF179**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>END 1 CONNECTOR</th>
<th>END 2 CONNECTOR</th>
<th>OVERALL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF179</td>
<td>-77SP1 = 75 Ω SMB Straight Plug</td>
<td>-77RP1 = 75 Ω SMB Right-angle Plug</td>
<td>-“XXXX” = Overall Length in millimeters</td>
</tr>
<tr>
<td>75 Ω: DIN 1.0/2.3, BNC, MCX, MMCX = RF179</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SMB Cable Connectors**

**SMB7H-TH, SMB7H-EM**

**Cable Mates:**

**RF179, GRF7H-C**

**Connectors for Industry Standard Cables**

- **SMB7H-P-C-H-ST-CA3**
  - RG 179 Cable
- **SMB7H-P-C-HF-RA-CA3**
  - RG 179 Cable

- **P** = Cable Plug
- **H or HF** = Plating (30 µ" Gold center contact, 3 µ" Gold outer contact)
- **ST** = Straight
- **RA** = Right-angle

**Note:**

Additional plating options available on Cable Assemblies, Cable Connectors and Board Connectors. Contact RFGroup@samtec.com

**F-224**

samtec.com/SMB

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ORIGINAL SOLUTIONS
LOW FREQUENCY RF

SHIELDED TWISTED PAIR SYSTEM
- 100 Ω differential pair
- 28 AWG shielded twisted pair cable assembly
- High reliability BeCu contacts
- 1/4-turn bayonet lock

GANGED MICRO-MINI SYSTEMS
- 50 Ω & 75 Ω board stacking and cable assemblies
- High performance rugged contacts
- Variety of End 2 connectors (GRF1H-C, GRF7H-C Series)

ISORATE® SYSTEMS
- 50 Ω board stacking and cable assemblies
- Isolated signal systems for 90 percent performance of traditional RF at 50 percent of the cost

MINI & MICRO-MINI INTERCONNECTS
- 75 Ω impedance (MMCX7 & MCX7 Series)
- Higher extraction forces (MMCXV Series)
- Not intermateable with standard MMCX, MCX

HIGH-CYCLE U.FL CABLE PLUG
- 500 cycle U.FL compatible plug (HMHF1 Series)
- .047” DIA flexible cable (RF047 Series)

CABLE SOLUTIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>C28S/CJT</th>
<th>GRF1-C/GRF7-C</th>
<th>GRF1H-C/GRF7H-C</th>
<th>RF047</th>
<th>IJSC/IJSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Shielded Twisted Pair</td>
<td>50 Ω &amp; 75 Ω Micro-Mini Ganged</td>
<td>50 Ω &amp; 75 Ω Micro-Mini Hybrid Ganged</td>
<td>50 Ω .047 DIA Flexible Cable</td>
<td>50 Ω IsoRate®</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERIES</th>
<th>GRF1-P/GRF1-J</th>
<th>GRF7-P/GRF7-J</th>
<th>MMCX7</th>
<th>MCX7</th>
<th>MMCXV</th>
<th>IJ5/IP5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>50 Ω Micro-Mini Ganged</td>
<td>75 Ω Micro-Mini Ganged</td>
<td>75 Ω Mini and Micro-Mini Interconnects</td>
<td>High-Vibration Micro-Mini</td>
<td>50 Ω IsoRate®</td>
<td></td>
</tr>
</tbody>
</table>

High Frequency Original RF Solutions Available. See page 147
CUSTOM SOLUTIONS & QUICK-TURN MODIFICATIONS

Samtec’s fully vertically integrated business model enables the flexibility to quickly and efficiently identify and/or develop innovative, application-specific interconnect solutions to meet a variety of demands in digital/analog systems. Contact RFGroup@samtec.com to discuss your application.

- Termination types
- Custom tail lengths / designs
- Right-angle height adjustment
- Heat-shrink tubing
- High frequency applications
- Pick & Place machine designs
- Counterweights for automated assembly (eliminate hand-soldering)
- Alternate platings
- Custom labels
- Test & Measurement solutions

TECHNICAL SUPPORT, SI & RF DESIGN EXPERTISE

Samtec’s Signal Integrity / RF Design & Simulation Engineers provide personal support for solving complex system challenges. In addition, a variety of resources are available online which help answer questions specific to microwave / millimeter wave system design.

- Launch optimization & design services
- Simulation
- Prototyping
- Physical test and measurement verification
- Full channel analysis, system support
- Specific design and development application assistance

TECHNICAL RESOURCES

More available on samtec.com

WHITE PAPERS
samtec.com/tech-library
- Wideband RF Launches
- Impacts of Solder Reflow on RF Connectors
- Millimeter Wave Design

TECH REPORT
samtec.com/alignment
- Precision Alignment Features

PRESENTATION
samtec.com/system-impedance
- Understanding Transmission Line Discontinuities

PRECISION RF EVALUATION KITS
samtec.com/kits/RF
- Precision RF
- Bulls Eye®
- Analog Over Array™

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
ULTRA RUGGED SOLUTIONS

EXTREME HIGH MATING CYCLES • RUGGED MIL-DTL MATERIALS • SEVERE ENVIRONMENT TESTING

185 RUGGED POWER I/O SYSTEMS (B1SD(T)/P1PD(T)/P1M)

185 38999 RUGGED I/O SYSTEMS (NVA3E/NVA3P)

186 RUGGED/COMPACT OPTICS (CSPO, CSSO)

186 VITA 90 VNX+ SOLUTIONS (SEARAY™, GPCC, RUGGED OPTICS)

186 EXTREME ENVIRONMENT & EXTENDED TEMP OPTICS (ETMO, ETUO, UECS/UCC8)

Hardware & High-Reliability Plating ................................................................. 187
Ultra Rugged Testing (SET, E.L.P.™ & DQT) ................................................... 188-189
Samtec’s ultra rugged solutions provide reliability and flexibility in small form factors for extreme/harsh environments. From rugged I/O cable assemblies, sealed & compact optics, and VITA 90 VNX+ modules to ultra rugged hardware and high-temp coatings, these solutions are ideal for military, aerospace, submersible and other harsh environment applications. Many ultra rugged offerings are available now with a robust roadmap to meet or exceed requirements for harsh environment applications and industries.

For design flexibility and cost optimization, Samtec’s Severe Environment Testing (SET) qualified products are Commercial-Off-the-Shelf (COTS) and modified COTS to get solutions to market faster. See page 188-189 or visit samtec.com/set for more information.
RUGGED POWER I/O SYSTEMS

- Four points of contact for a reliable connection and high mating cycles
- Extreme density with up to 1,450 I/Os in a 1RU panel
- EMI shielding limits signal degradation and optimizes performance
- Series: B1SD(T)/P1PD(T)/P1M
- See page 212-215 for more information
- samtec.com/ursa

38999 RUGGED I/O SYSTEMS

- High data rate cable system in a rugged 38999 shell
- Salt fog resistant to 48 hours; IP67 for dust and waterproof sealing
- Threaded cable-to-panel design
- High-density 16 pair; 32 on roadmap
- Series: NVA3E/NVA3P
- See page 103 for more information
- samtec.com/novaray-io
ULTRA RUGGED/COMPACT OPTICS

- FireHawk™ is the smallest optical transceiver in the industry – 10 x 7.7 x 2.5 mm
- Extreme performance up to 40 Gbps transfer rates
- Rugged BGA attach withstands high shock and vibration
- Radiation tolerant design
- Series: CSPO, CSSO
- See page 138 for more information
- samtec.com/firehawk

VITA 90 VNX+ SOLUTIONS

- RF backplane system to support 110 GHz with high-density size 20 cable; size 16 on roadmap
- Rugged blind mate solution
- Configured with SEARAY™ right-angle array and rugged optics
- SWaP-C reductions make this ideal for military and aerospace applications
- COTS or modified COTS solution for cost and time flexibility
- See page 328-329 for more information
- samtec.com/vnx-plus

EXTREME ENVIRONMENT OPTICAL SYSTEM

- Sealed and parylene-coated for exposed military, aerospace and submersible applications
- Ruggedized for tin whisker mitigation and fungal resistance; operates in harsh environments including salt fog, blowing sand and dust, jet fuel exposure, altitudes up to 65,000 feet
- Extended temp range of -40 ºC to +85 ºC
- Series: ETMO/UEC5/UCC8
- See page 133 for more information
- samtec.com/firefly

EXTENDED TEMP OPTICAL SYSTEMS

- Extended temperature range from -40 ºC to +85 ºC
- x4 and x12 designs to 25 Gbps per lane performance
- Samtec’s Extended Temp FireFly™ optical with Amphenol® Aerospace bulkhead interconnects
- Micro footprint allows for increased density
- Series: ETUO/UEC5/UCC8
- See page 132 for more information
- samtec.com/firefly
ULTRA RUGGED HARDWARE

- Guide post standoffs (GPSO) allow for .035” of initial misalignment
- Assists with “blind mate” for ultra micro, fine pitch mezzanine connectors
- 5 to 30 mm stack heights
- 303 stainless steel with MIL-C-13924 black oxide finish
- Jack screw precision standoffs (JSO) reduce the risk of component damage
- Standoffs (SO) with precision machined tolerances (+/- .002” (0.05 mm))
- See pages 33-34 and 60 for more information
- samtec.com/hardware

HIGH-RELIABILITY PLATING

- 40 to 50 μ” palladium nickel plating with gold flash for high-temp, high-cycle applications
- Qualified up to 150 ºC ambient; 200 ºC on roadmap
- Available on SEARAY™ 1.27 mm pitch high-density arrays to 3,000 cycles (SEAF/SEAM)
- Product Roadmap includes SEARAY™ 0.80 mm, AcceleRate® HP, LP Array™ and Generate™ 0.80 mm
- Ideal for ATE applications

ROADMAP

High-cycle “super lube” for extreme mating cycles
Expand testing to MIL-DTL-55302 including salt spray and enhanced shock & vibration
URSA™ I/O configurations of power, signal, RF coax and high-speed contacts for high-reliability in harsh environments
Rugged blind mate solution with RF and optical connectivity for backplane applications
Size 16 and 20 high-frequency coax 38999 contacts for high-density, multi-position housings
Phase & insertion loss stable microwave/millimeter wave cable assemblies - Orange is the new cable!

samtec.com/Ultra-Rugged
ULTRA RUGGED TESTING

SEVERE ENVIRONMENT TESTING (SET)

Severe Environment Testing (SET) is a Samtec initiative to test products beyond typical industry standards and specifications for performance confidence in rugged/harsh environment industries. These products undergo additional testing, inspired by military standards, to ensure they are more than suitable for military, space, automotive, industrial and other extreme applications.

SET qualified products are Commercial Off-the-Shelf (COTS) and modified COTS for incredible design flexibility to get solutions to market faster. Visit samtec.com/SET or contact SET@samtec.com for additional information and current available test results.

MEETS OR EXCEEDS:
- VITA 47.1 Module Insertions
- VITA 47.3 Humidity
- VITA 47.1 Operating Shock Class OS2
- VITA 47.1 Vibration Class VS3
- Exceeds VITA 47.1 Temperature Cycling Class C4
- Exceeds VITA 47.1 Non-Operating Temperature Class C4
- VITA 47.1 Electrostatic Discharge Resistance
- Exceeds VITA 47.1 Altitude for DWV
- Aligns with MIL-DTL-55302

LOT SCREEN SAMPLE TESTING
Lot screen sample testing available to ensure product meets required specifications. Military/Aerospace Product (MAP) required; contact MAP@samtec.com

SET QUALIFIED PRODUCTS

Tiger Eye™ 1.27 mm Pitch Micro Rugged System
SEARAY™ High-Density Arrays
Razor Beam™ Hermaphroditic Strips
.100” Pitch Square Post Header & Socket
.050” Pitch Header & Socket
Edge Rate® Rugged High-Speed Strips
Tiger Eye™ 2.00 mm Pitch Micro Rugged System
mPOWER® Ultra Micro Power Connectors
SEARAY™ 0.80 mm Ultra-High Density Arrays

NASA

Samtec’s SET products are approved for NASA Class D missions that require high-reliability, quick-turn and cost-effective solutions for LEO satellites, SmallSats, CubeSats and other space exploration applications.

Samtec also utilizes NASA outgassing data to determine if certain products meet NASA’s ASTM E595-77/84/90 test requirements. Visit outgassing.nasa.gov for data.
EXTENDED LIFE PRODUCT™

E.L.P.™ products are tested to rigorous standards, which evaluate contact resistance in simulated storage and field conditions.

- 10 year Mixed Flowing Gas (MFG)
- High Mating Cycles (250 to 2,500)
- Certain plating and/or contact options will apply

For complete details about Samtec’s E.L.P.™ program, a list of qualifying products and test results, please visit samtec.com/ELP or email the Customer Engineering Support Group at ASG@samtec.com

DESIGN QUALIFICATION TESTING (DQT)

All Samtec series undergo Design Qualification Testing (DQT), which includes:

- Gas Tight
- Normal Force
- Thermal Aging
- Mating/Unmating/Durability
- IR/DWV
- Current Carrying Capacity (CCC)
- Mechanical Shock/Random Vibration/LLCR
- Mechanical Shock/Random Vibration/Event Detection

TESTING REFERENCE CHART

<table>
<thead>
<tr>
<th>TEST</th>
<th>SET</th>
<th>E.L.P.™</th>
<th>DQT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Tight</td>
<td>X*</td>
<td>X*</td>
<td>N/A</td>
</tr>
<tr>
<td>Normal Force</td>
<td>X*</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Thermal Aging</td>
<td>X*</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Mating / Unmating / Durability (240 Hrs)</td>
<td>X (100% RH, 250 Cycles)</td>
<td>X* (90-98% RH, 100 Cycles)</td>
<td>X (90-98% RH, 100 Cycles)</td>
</tr>
<tr>
<td>IR / DWV</td>
<td>X (At Altitude of 70,000 Feet)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CCC</td>
<td>X*</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Mechanical Shock / Random Vibration / LLCR &amp; Nanosecond Event Detection</td>
<td>X (40 G Peak, 11 ms, Half Sine &amp; 12gRMS, 5 - 2,000 Hz, 1 Hr / Axis)</td>
<td>X* (100 G Peak, 6 ms, Half Sine &amp; 7.56gRMS Avg, 2 Hr / Axis)</td>
<td>X (100 G Peak, 6 ms, Half Sine &amp; 7.56gRMS Avg, 2 Hr / Axis)</td>
</tr>
<tr>
<td>Temperature Cycling (500 Cycles)</td>
<td>X</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Non-Operating Class Temperature</td>
<td>X</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Electrostatic Discharge (ESD)</td>
<td>X</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>10 Year MFG (Mixed Flowing Gas)</td>
<td>N/A</td>
<td>X</td>
<td>N/A</td>
</tr>
<tr>
<td>Mating Cycles (250 to 2,500)</td>
<td>N/A</td>
<td>X</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Completed as part of initial Design Qualification Testing (DQT). E.L.P.™ and SET testing are performed in addition to DQT.
POWER SERVICES

POWER INTEGRITY SERVICES

• Standard power test data, including current carrying capacity, working voltage, voltage drop and resistance, creepage and clearance, is available for select power systems
• Current Cycling Test Data, which demonstrates connector performance in realistic and common applications, is available for select series
• Power Integrity Guidelines are based on test data and proven design parameters, designed to help in connector selection and PCB design maximization
• Power Integrity Certified products undergo testing and additional requirements unique to Samtec. Products must pass Current Cycling Test EIA 365-55, have current carrying capacity, resistance vs. number of contacts data available and Power Integrity Guidelines developed
• Visit samtec.com/powerintegrity to learn more.

POWER ARCHITECTURE, SYSTEM DESIGN & ROUTING SERVICES

Samtec provides complete support and strategies for the optimization of system power architectures. Visit samtec.com/sig for more information.

INTERACTIVE POWER CHART

Samtec offers power simulation that can calculate temperature increase in the connector area, in real time. Find this tool on samtec.com when searching a product for your specific application. Contact RuggedPower@samtec.com for assistance.
HIGH POWER SYSTEMS
UP TO 60 AMPS • ULTRA MICRO POWER • POWER/SIGNAL COMBINATIONS

mPOWER® ULTRA MICRO POWER SYSTEMS
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Cable-to-Cable Panel Mount Assemblies & Components (UMPE(T), UMPI(T), IMPE, IMPC, TC146, CC489) . 196-197

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RUGGED POWER SYSTEMS
Mini Mate® Terminals & Sockets (IPT1, IPS1) .................................................................................. 209
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FEATURES & BENEFITS
• Board-to-board, cable-to-board and cable-to-cable
• Up to 18 A per blade (1 blade powered)
• Choice of 2 to 10 positions
• 5 mm to 20 mm stack heights; vertical and right-angle orientations
• Tin or 10 µ" Gold plated power blades; 30 µ" Gold plating available to meet specific regulations
• Optional weld tabs
• Mating cable assemblies with plastic top or metal side latching
• Severe Environment Testing qualified (UMPT/UMPS); aligns with MIL-DTL-55302. Visit samtec.com/set

KEY SPECIFICATIONS (UMPT/UMPS)

<table>
<thead>
<tr>
<th>STACK HEIGHTS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20 mm</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +105 °C with Tin</td>
<td>460 VAC / 650 VDC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

CURRENT RATING (PER CONTACT)

<table>
<thead>
<tr>
<th>PINS</th>
<th>UMPT</th>
<th>UMPMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-T</td>
<td>17.8 A</td>
<td>17.5 A</td>
</tr>
<tr>
<td>1</td>
<td>15.5 A</td>
<td>16.3 A</td>
</tr>
<tr>
<td>2</td>
<td>13.5 A</td>
<td>13.9 A</td>
</tr>
<tr>
<td>3</td>
<td>12.9 A</td>
<td>13.2 A</td>
</tr>
<tr>
<td>4</td>
<td>9.8 A</td>
<td>8.9 A</td>
</tr>
</tbody>
</table>

Ratings are derated 20% with 30 °C rise to maximum allowable temperature.

CREEPAGE & CLEARANCE

<table>
<thead>
<tr>
<th>UMPT/UMPS</th>
<th>CREEPAGE</th>
<th>CLEARANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMPT/UMPS</td>
<td>2.20 mm</td>
<td>1.65 mm</td>
</tr>
</tbody>
</table>

Selectively loading contacts achieves customer specific creepage and clearance requirements.
ULTRA MICRO POWER SOCKET

UMPS

-02, -03, -04, -05, -06, -07, -08, -09, -10

NO. OF POSITIONS

LEAD STYLE

-03.5

= (03.5 mm)

.138"

-05.5

= (05.5 mm)

.217"

-07.5

= (07.5 mm)

.295"

PLATING OPTION

V

S

OPTION

“X”R

-03 – (03.5 mm)

.138"

-04 = (07.5 mm)

.295"

-05 = (05.5 mm)

.217"

-08 – (08.0 mm)

.315"

-09 – (09.0 mm)

.354"

-10 – (10.0 mm)

.394"

-02

-03

-04

-05

-06

-07

-08

-09

-10

-03.5

= 10 μ (0.25 μm)

Gold on contact,
Matte Tin on tail

-05.5

= 30 μ (0.76 μm)

Gold on contact,
Matte Tin on tail

-07.5

= Matte Tin

-02

-03

-04

-05

-06

-07

-08

-09

-10

-03.5

= Weld Tab
Through-hole
(Leave blank for
no weld tab)

-05.5

= Tape & Reel

-07.5

= Full Reel Tape & Reel
(must order max. quantity
per reel; contact Samtec
for quantity breaks)

Notes:
Severe Environment
Testing qualified; aligns
with MIL-DTL-55302.
Visit samtec.com/set
Some lengths, styles and
options are non-standard,
non-returnable

View complete specifications at: samtec.com?UMPS

UMPS

Board Mates:
UMPT

Standoffs:
GP50

UMPT/UMPS

CURRENT RATING (PER CONTACT)

PINS

-01.5

(5.00).197

(7.00).276

(9.00).354

-02.5

(6.00).236

(8.00).315

(10.00).394

-06.5

(10.00).394

(12.00).472

(14.00).551

-07.5

(11.00).433

(13.00).512

(15.00).591

-12.5

(16.00).630

(18.00).709

(20.00).787

MAX

18 A

F-224

samtec.com/mPOWER

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Some lengths, styles and options are non-standard, non-returnable.

Notes:
Severe Environment Testing qualified; aligns with MIL-DTL-55302. Visit samtec.com/set

View complete specifications at: samtec.com/UMPT

View complete specifications at: samtec.com/UMPT-RA
**IMPC**

- **NO. OF POSITIONS**
  - 02, 03, 04, 05, 06, 07, 08, 09, 10

- **LATCH OPTION**
  - P = Plastic top latch
  - M = Metal side latches

- **WIRE GAUGE**
  - L = 16 AWG
  - 16C = Color Coded Cable (UMPC only)

- **PLATING OPTION**
  - L = 10 µ" (0.25 µm) Gold on contact, Tin on tail
  - S = 30 µ" (0.76 µm) Gold on contact, Tin on tail

- **LENGTH**
  - “XX.X” = Assembled Length in Inches

- **PLATING**
  - L = 10 µ" (0.25 µm) Gold on contact, Tin on tail
  - S = 30 µ" (0.76 µm) Gold on contact, Tin on tail
  - T = Tin

- **PACKAGE**
  - P = Plastic top latch
  - M = Metal side latches

- **TOOLING**
  - Hand Tool: CAT-HT-489-1618-13
  - Mini Applicator: CAT-MC-489-1618-XX-01

*Note: Some lengths, styles and options are non-standard, non-returnable.*

For wiring option information refer to drawings on web.

---

**ULTRA MICRO POWER CABLE**

- **SERIES**
  - UMPC = Ultra Micro PVC Cable
  - UMPCT = Ultra Micro Blue “Teflon” Fluoropolymer Cable

- **NO. OF POSITIONS**
  - 02, 03, 04, 05, 06, 07, 08, 09, 10

- **LATCH OPTION**
  - P = Plastic top latch
  - M = Metal side latches

- **WIRE GAUGE**
  - -16 = 16 AWG
  - -16C = Color Coded Cable (UMPC only)

- **PLATING OPTION**
  - L = 10 µ" (0.25 µm) Gold on contact, Tin on tail
  - S = 30 µ" (0.76 µm) Gold on contact, Tin on tail

- **LENGTH**
  - “XX.X” = Assembled Length in Inches

- **PLATING**
  - -L = 10 µ" (0.25 µm) Gold on contact, Tin on tail
  - -S = 30 µ" (0.76 µm) Gold on contact, Tin on tail
  - -T = Tin

- **PACKAGE**
  - P = Plastic top latch
  - M = Metal side latches

- **TOOLING**
  - Hand Tool: CAT-HT-489-1618-13
  - Mini Applicator: CAT-MC-489-1618-XX-01

*Note: Some lengths, styles and options are non-standard, non-returnable.*

For wiring option information refer to drawings on web.

---

**IMPC(T)**

- Board Mates: UMPCT
  - (Plastic (-P) or metal (-M) latch required)

- **SPECIFICATIONS**
  - **Insulator Material:** Black LCP
  - **Contact Material:** Copper Alloy
  - **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
  - **Wire:** 16 or 18 AWG
  - **Voltage Rating:** 435 VAC

- **UMPC CABLE HOLDER**
  - (Required for use with IMPC)

- **CABLE COLOR CODING**
  - **PIN**
  - **COLOR**
  - 1 = BROWN
  - 2 = RED
  - 3 = ORANGE
  - 4 = YELLOW
  - 5 = GREEN
  - 6 = BLUE
  - 7 = VIOLET
  - 8 = GRAY
  - 9 = WHITE
  - 10 = BLACK

*Note: For wiring option information refer to drawings on web.*

---

**SERIES**

- **NUMBER OF POSITIONS**
  - 02, 03, 04, 05, 06, 07, 08, 09, 10

- **LEAD STYLE**
  - 01 = 16 AWG
  - 02 = 18 AWG

- **CURRENT RATING (PER CONTACT)**
<table>
<thead>
<tr>
<th>PIN</th>
<th>CURRENT RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18.1 A</td>
</tr>
<tr>
<td>2</td>
<td>15.8 A</td>
</tr>
<tr>
<td>3</td>
<td>13.5 A</td>
</tr>
<tr>
<td>4</td>
<td>12.2 A</td>
</tr>
<tr>
<td>10</td>
<td>9.2 A</td>
</tr>
</tbody>
</table>

*Note: Some lengths, styles and options are non-standard, non-returnable.*

For wiring option information refer to drawings on web.

---

**CC489**

- **PLATING**
  - -L = 10 µ" (0.25 µm) Gold on contact, Tin on tail
  - -S = 30 µ" (0.76 µm) Gold on contact, Tin on tail

- **PACKAGE**
  - P = Plastic top latch
  - M = Metal side latches

- **TOOLING**
  - Hand Tool: CAT-HT-489-1618-13
  - Mini Applicator: CAT-MC-489-1618-XX-01

View complete specifications at: samtec.com/IMPC & samtec.com/CC489

---

**Note:** Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
mPOWER®

ULTRA MICRO CABLE-TO-CABLE

SERIES - NO. OF POSITIONS - PLATING OPTION - WIRE GAUGE - LENGTH - END 2 OPTION - PINOUT

UMPE = Ultra Micro PVC Cable

-02, -03, -04, -05, -06, -07, -08, -09, -10

-10 = 10 µ" (0.25 µm) Gold on contact, Tin on tail

-16 = 16 AWG

-“XX.X” = Assembled Length in Inches

_S = 30 µ" (0.76 µm) Gold on contact, Tin on tail

-16 = 16 AWG

-16C = 16 AWG Color Coded Cable (not available with UMPET)

-18 = 18 AWG

-18C = 18 AWG Color Coded Cable (not available with UMPET)

(T = Terminal

-S = Socket

(Leave blank for Single ended)

(Leave blank for Single ended)

Notes:

- Teflon™ Fluoropolymer cable is intended for crimp only.
- Contact Samtec for solderable cable applications.
- For wiring option information refer to drawings on web.
- Some lengths, styles and options are non-standard, non-returnable.

CABLE COLOR CODING

<table>
<thead>
<tr>
<th>PIN</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
</tr>
<tr>
<td>4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
</tr>
<tr>
<td>6</td>
<td>BLUE</td>
</tr>
<tr>
<td>7</td>
<td>VIOLET</td>
</tr>
<tr>
<td>8</td>
<td>GRAY</td>
</tr>
<tr>
<td>9</td>
<td>WHITE</td>
</tr>
<tr>
<td>10</td>
<td>BLACK</td>
</tr>
</tbody>
</table>

IMPE CABLE HOLDER (Required for use with IMPE)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
<th>LEAD STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPE</td>
<td>-02, -03, -04, -05, -06, -07, -08, -09, -10</td>
<td>01 = 16 AWG</td>
</tr>
<tr>
<td></td>
<td>-10</td>
<td>02 = 18 AWG</td>
</tr>
</tbody>
</table>

IMPE - NO. OF POSITIONS - LATCH OPTION - TC146 - 01 - PLATING - HOT SWAP - PACKAGING

-02, -03, -04, -05, -06, -07, -08, -09, -10

-M = Metal Side Latches

-L = 10 µ" (0.25 µm) Gold on contact, Tin on tail

-1 = 6.60

-2 = 7.10

-R = Full Reel (5,000 Contacts)

-M = Mini Reel (1,000 Contacts)

-B = Bubble Bag (35 Contacts)

HOT SWAP - D

-1 = (21.81) .859

-2 = (21.81) .839

TOOLING

Hand Tool: CAT-HT-489-1618-13

Mini Applicator: CAT-MC-489-1618-XX-01

View complete specifications at: samtec.com?IMPE & samtec.com?TC146

Notes:

- Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?UMPE & samtec.com?UMPET

Notes:

- Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

ULTRA MICRO CABLE-TO-CABLE PRELIMINARY

SERIES - NO. OF POSITIONS - PLATING OPTION - WIRE GAUGE - LENGTH - END 2 OPTION - PINOUT

UMPE(T) = Ultra Micro Blue Teflon® Fluoropolymer Cable

-02, -03, -04, -05, -06, -07, -08, -09, -10

-10 = 10 µ" (0.25 µm) Gold on contact, Tin on tail

-16 = 16 AWG

-“XX.X” = Assembled Length in Inches

-S = 30 µ" (0.76 µm) Gold on contact, Tin on tail

-16 = 16 AWG

-16C = 16 AWG Color Coded Cable (not available with UMPET)

-18 = 18 AWG

-18C = 18 AWG Color Coded Cable (not available with UMPET)

(T = Terminal

-S = Socket

(Leave blank for Single ended)

(Leave blank for Single ended)

Notes:

- Teflon™ Fluoropolymer cable is intended for crimp only.
- Contact Samtec for solderable cable applications.
- For wiring option information refer to drawings on web.
- Some lengths, styles and options are non-standard, non-returnable.

CABLE COLOR CODING

<table>
<thead>
<tr>
<th>PIN</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
</tr>
<tr>
<td>4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
</tr>
<tr>
<td>6</td>
<td>BLUE</td>
</tr>
<tr>
<td>7</td>
<td>VIOLET</td>
</tr>
<tr>
<td>8</td>
<td>GRAY</td>
</tr>
<tr>
<td>9</td>
<td>WHITE</td>
</tr>
<tr>
<td>10</td>
<td>BLACK</td>
</tr>
</tbody>
</table>

IMPE(T) Cable Mates:

UMPI(T) End 2 Mates:

UMPT, UMPT

UMPE(T)

IMPE(T) PRELIMINARY

SERIES - NO. OF POSITIONS - LATCH OPTION - PLATING - HOT SWAP - PACKAGING

IMPEC = IMPE End 2 Mates

-02, -03, -04, -05, -06, -07, -08, -09, -10

-M = Metal Side Latches

-L = 10 µ" (0.25 µm) Gold on contact, Tin on tail

-1 = 6.60

-2 = 7.10

-R = Full Reel (5,000 Contacts)

-M = Mini Reel (1,000 Contacts)

-B = Bubble Bag (35 Contacts)

HOT SWAP - D

-1 = (21.81) .859

-2 = (21.81) .839

TOOLING

Hand Tool: CAT-HT-489-1618-13

Mini Applicator: CAT-MC-489-1618-XX-01

View complete specifications at: samtec.com?IMPE & samtec.com?TC146

Notes:

- Some lengths, styles and options are non-standard, non-returnable.
### ULTRA MICRO CABLE-TO-CABLE

**SERIES**
- UMPI = Ultra Micro PVC Cable
- UMPIT = Ultra Micro Blue *Teflon™* Fluoropolymer Cable

**UMPI(T)**
- Cable Mates: UMPI(T)
- End 2 Mates: UMPI(T), UMPIT

**SPECIFICATIONS**
- **Insulator Material:** Black LCP
- **Contact Material:** Copper Alloy
- **Plating:**
  - Sn or Au over 50 µ" (1.27 µm) Ni
- **Wire:**
  - 16 or 18 AWG
- **Voltage Rating:**
  - 00 Volt = 16 & 18 AWG PVC
  - 300 Volt = 16 AWG Teflon™ Fluoropolymer
  - 600 Volt = 18 AWG Teflon™ Fluoropolymer

**SERIES**
- **NO. OF POSITIONS**
- **PLATING OPTION**
- **WIRE GAUGE**
- **LENGTH**
- **PINOUT**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
<th>PLATING OPTION</th>
<th>WIRE GAUGE</th>
<th>LENGTH</th>
<th>PINOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMPI</td>
<td>-02, -03, -04, -05, -06, -07, -08, -09, -10</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact, Tin on tail</td>
<td>-16 = 16 AWG</td>
<td>-“XX.X” = Assembled Length in Inches</td>
<td>(Leave blank for Single ended)</td>
</tr>
<tr>
<td>UMPIT</td>
<td></td>
<td>-S = 30 µ&quot; (0.76 µm) Gold on contact, Tin on tail</td>
<td>-16C = Color Coded Cable (not available with UMPIT)</td>
<td>-18 = 18 AWG</td>
<td>M1 = Metal Latch Pin 01 to Pin 01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-T = Tin</td>
<td></td>
<td></td>
<td>M2 = Metal Latch Pin 01 to Pin N</td>
</tr>
</tbody>
</table>

**CABLE COLOR CODING**
- **PIN**
- **COLOR**
- 1: BROWN
- 2: RED
- 3: ORANGE
- 4: YELLOW
- 5: GREEN
- 6: BLUE
- 7: VIOLET
- 8: GRAY
- 9: WHITE
- 10: BLACK

**IMPC**
- **NO. OF POSITIONS**
- **LATCH**
- **CC489**
- **01**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
<th>LATCH</th>
<th>CC489</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPC</td>
<td>-02, -03, -04, -05, -06, -07, -08, -09, -10</td>
<td>-P1 = Panel Mount</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact, Tin on tail</td>
<td>-R = Full Reel (5,000 Contacts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-S = 30 µ&quot; (0.76 µm) Gold on contact, Tin on tail</td>
<td>-M = Mini Reel (1,000 Contacts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-T = Tin</td>
<td>-B = Bubble Bag (35 Contacts)</td>
</tr>
</tbody>
</table>

**TOOLING**
- **Hand Tool:** CAT-HT-489-1618-13
- **Mini Applicator:** CAT-MC-489-1618-XX-01

LOW PROFILE, EXTREME HIGH-POWER/SIGNAL COMBO

FEATURES & BENEFITS

- 30 A per power blade and 1 A per signal pin
- Low 7.5 mm profile design (right-angle) for improved system airflow and space savings
- Double-stacked power blades per bank for increased density and power
- Ideal for coplanar and perpendicular applications
- Rugged guide posts are standard for blind mating assistance
- Socket available as vertical with press-fit tails and right-angle through-hole; mates with terminal or standard .062" (1.60 mm) PCB card

Standard Creepage* 5.63 mm
Standard Clearance* 2.69 mm

*Selectively loading contacts achieves customer specific creepage and clearance requirements. Contact asp@samtec.com

KEY SPECIFICATIONS (LPHT/LPHS)

<table>
<thead>
<tr>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>TERMINAL MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>VOLTAGE RATING</th>
<th>MATING CYCLES</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(12.00 mm) .472&quot; (pwr) (1.27 mm) .050&quot; (sig)</td>
<td>Black LCP</td>
<td>Signal: Brass Power: Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>40 °C to +105 °C</td>
<td>250 VAC / 500 VDC</td>
<td>250 (MFG Tested)</td>
<td>Yes (RT1 &amp; RT2 option)</td>
</tr>
</tbody>
</table>

Notes:
Series is rated up to 60 A per power bank.
Some lengths, styles and options are non-standard, non-returnable.
The Molex EXTreme LPHPower™ line is a second source to the Samtec LPHT/LPHS Series.
*EXTreme LPHPower™ is a trademark of Molex Incorporated.
**SERIES**
- LPHT
  - Terminal
- LPHS
  - Socket

**POWER POSITIONS**
- Total, 2 per power bank
  - –02, –04, –06, –08, –10
  - –12, –16, –20, –24, –32

**SIGNAL POSITIONS**
- Total
- –12, –16, –20, –24, –32

**PLATING OPTION**
- –L
  - 10 µ" (0.25 µm)
  - Gold on contact, Matte Tin on tail

**TAIL**
- –VP1
  - = Vertical Press-fit
    (LPHS only)
- –RT1
  - = Right-angle Through-hole
    (Use with (1.60 mm) .062" thick board)
- –RT2
  - = Right-angle Through-hole
    (Use with (2.36 mm) .093" thick board)

**GP**
- –LPHT
- –LPHS

---

**LPHT**
Board Mates:
- LPHS

---

**LPHS**
Board Mates:
- LPHT

---

**SIGNAL POSITIONS**

<table>
<thead>
<tr>
<th>POWER POSITIONS</th>
<th>A (–02)</th>
<th>A (–04)</th>
<th>A (–06)</th>
<th>A (–08)</th>
<th>A (–10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–16</td>
<td>(33.97)</td>
<td>1.337</td>
<td>(43.97)</td>
<td>1.810</td>
<td>(57.97)</td>
</tr>
<tr>
<td>–20</td>
<td>(36.51)</td>
<td>1.437</td>
<td>(48.51)</td>
<td>1.910</td>
<td>(60.51)</td>
</tr>
<tr>
<td>–24</td>
<td>(39.05)</td>
<td>1.537</td>
<td>(51.05)</td>
<td>2.010</td>
<td>(63.05)</td>
</tr>
<tr>
<td>–32</td>
<td>(44.13)</td>
<td>1.737</td>
<td>(56.13)</td>
<td>2.210</td>
<td>(68.13)</td>
</tr>
</tbody>
</table>

---

**View complete specifications at: samtec.com?LPHT**

---

**SIGNAL POSITIONS**

<table>
<thead>
<tr>
<th>POWER POSITIONS</th>
<th>B (–02)</th>
<th>B (–04)</th>
<th>B (–06)</th>
<th>B (–08)</th>
<th>B (–10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–16</td>
<td>(31.64)</td>
<td>(25.68)</td>
<td>(43.64)</td>
<td>1.491</td>
<td>(55.64)</td>
</tr>
<tr>
<td>–20</td>
<td>(34.18)</td>
<td>(28.42)</td>
<td>(46.18)</td>
<td>1.681</td>
<td>(58.18)</td>
</tr>
<tr>
<td>–24</td>
<td>(36.72)</td>
<td>(30.96)</td>
<td>(48.72)</td>
<td>1.871</td>
<td>(60.72)</td>
</tr>
<tr>
<td>–32</td>
<td>(41.80)</td>
<td>(36.04)</td>
<td>(53.80)</td>
<td>2.181</td>
<td>(65.80)</td>
</tr>
</tbody>
</table>

---

**View complete specifications at: samtec.com?LPHS**

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
EXTREME HIGH-POWER 60 A SYSTEMS

FEATURES & BENEFITS

- Up to 60 A per power blade (2 blades powered)
- Low 10 mm profile (right-angle) for enhanced system airflow
- Power only, or power/signal combinations
- 3 or 5 signal rows in the same form factor
- AC power, DC power, power/signal combinations and split power options available
- Coplanar and perpendicular applications
- Modules can be configured to accommodate most any design
- Rugged guide posts are standard; top design for board space savings
- Press-fit (ET60S only) and hot swap (ET60T only) options available

<table>
<thead>
<tr>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>TERMINAL MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>VOLTAGE RATING</th>
<th>MATING CYCLES</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (5.50 mm)</td>
<td>.217&quot; (7.50 mm) .295&quot;</td>
<td>Black LCP</td>
<td>Signal: Phosphor Bronze Power: Copper Alloy</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-40 °C to +105 °C</td>
<td>280 VAC</td>
<td>500</td>
</tr>
<tr>
<td>Signal (2.00 mm)</td>
<td>.097&quot; (5 row) (2.54 mm)</td>
<td>.100&quot; (3 row)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Selectively loading contacts achieves customer specific creepage and clearance requirements. Contact asp@samtec.com

Notes:
Some lengths, styles and options are non-standard, non-returnable.
*EXTreme Ten60Power™ is a trademark of Molex Incorporated and is dual sourced by Molex®
## ET60T - Terminal

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POWER OPTION (R)</th>
<th>ROWS</th>
<th>SIGNAL POS. PER ROW</th>
<th>POWER OPTION (L)</th>
<th>PLATING</th>
<th>TAIL</th>
<th>GUIDE POST</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET60T</td>
<td>–AXX = AC Power Positions (02 - 06)</td>
<td>–00 = No Signal</td>
<td>–AXX = AC Power Positions (02 - 06)</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on contact, Matte Tin on tail (Not available for 5 rows)</td>
<td>–S = 30 µ&quot; (0.76 µm) Gold on contact, Matte Tin on tail</td>
<td>–R1 = Right-angle Through-hole (Use with (1.60 mm) .062&quot; thick card)</td>
<td>–S = Side Guide Post</td>
<td>–H = Hot Swap (ET60T only)</td>
</tr>
<tr>
<td>ET60S</td>
<td>–DXX = DC Power Positions (02 - 10)</td>
<td>–08 = 3 Row only</td>
<td>–DXX = DC Power Positions (02 - 10)</td>
<td>–V1 = Vertical Through-hole (Use with (1.60 mm) .062&quot; thick card) (-0 and –3 Row only) (Not available with ET60T)</td>
<td>–S = Vertical Press-fit (Not available with ET60T)</td>
<td>–T* = Top Guide Post</td>
<td>(Required callout)</td>
<td>(Leave blank for no hot swap)</td>
</tr>
<tr>
<td>ET60T</td>
<td>–SXX* = Split Power</td>
<td>–0 = No Signal</td>
<td>–SXX* = Split Power</td>
<td>–000 = No Power</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on contact, Matte Tin on tail (Not available for 5 rows)</td>
<td>–S = 30 µ&quot; (0.76 µm) Gold on contact, Matte Tin on tail</td>
<td>–R1 = Right-angle Through-hole (Use with (1.60 mm) .062&quot; thick card)</td>
<td>–H = Hot Swap (ET60T only)</td>
</tr>
</tbody>
</table>

---

**Board Mates:**

- **ET60S**
- **ET60T**

**View complete specifications at:**

- [samtec.com?ET60T](http://samtec.com?ET60T)
- [samtec.com?ET60S](http://samtec.com?ET60S)

---

**RIGHT-ANGLE**

**ET60S-D04-S-03-A04-X-R1-S SHOWN**

**VERTICAL**

**ET60S-D04-S-03-A04-X-VP-S SHOWN**

**ET60T-D04-S-03-A04-X-R1-S SHOWN**
## HIGH POWER SYSTEMS

### KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPT/UPS</td>
<td>(3.81 mm)</td>
<td>Black LCP</td>
<td>BeCu</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>23 A</td>
<td>438 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>UPPT</td>
<td>(3.81 mm)</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>21.4 A</td>
<td>425 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MPT/MPS</td>
<td>(5.00 mm)</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>28.8 A</td>
<td>575 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>MPTC/MPSC</td>
<td>(5.00 mm)</td>
<td>Black LCP</td>
<td>Signal: phosphor bronze terminal: copper alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>28.8 A</td>
<td>250 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>PET/PES</td>
<td>(6.35 mm)</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>58.7 A</td>
<td>450 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>PETC/PESC</td>
<td>(6.35 mm)</td>
<td>Black LCP</td>
<td>Copper Alloy</td>
<td>Sn or Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +105 °C (Sn)</td>
<td>31.4 A</td>
<td>650 VAC (pwr)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### FEATURES & BENEFITS

- Current Rating: 23 A - 58.7 A per power blade
- 3.81 mm, 5.00 mm and 6.35 mm pitch
- Dual blade contact system
- Power only or power/signal combinations available
- Right-angle and vertical orientations
- Rugged screw down and locking clip options
- Discrete wire cable assemblies with 10-16 AWG wire (see pages 246-248)
- “Hinged” for unique mating in any orientation from 0° to 90° and space confined applications

### CREEPAGE & CLEARANCE

<table>
<thead>
<tr>
<th>SERIES</th>
<th>CREEPAGE</th>
<th>CLEARANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPT/UPS/UPPT</td>
<td>5.50 mm</td>
<td>1.51 mm</td>
</tr>
<tr>
<td>MPT/MPS/MPTC/MPSC</td>
<td>2.95 mm</td>
<td>2.71 mm</td>
</tr>
<tr>
<td>PET/PES/PETC/PESC</td>
<td>3.66 mm</td>
<td>3.31 mm</td>
</tr>
</tbody>
</table>

Selectively loading contacts achieves customer specific creepage and clearance requirements.

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### UPT Board Mates: UPS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>POWER PINS</th>
<th>LEAD STYLE</th>
<th>TAIL LENGTH</th>
<th>PLATING OPTION</th>
<th>TAIL</th>
<th>OTHER OPTION</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPT</td>
<td>–02</td>
<td>–01</td>
<td>–01</td>
<td>–L</td>
<td>–V</td>
<td>Leave blank</td>
<td>–TR</td>
</tr>
<tr>
<td></td>
<td>–04</td>
<td>–03.0</td>
<td>–03</td>
<td>–T</td>
<td>–RA</td>
<td>= Tape &amp; Reel</td>
<td>–FR</td>
</tr>
<tr>
<td></td>
<td>–06</td>
<td>–04.0</td>
<td></td>
<td>–PV</td>
<td>–TR</td>
<td>= Full Reel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>–08</td>
<td>–07.0</td>
<td></td>
<td></td>
<td>–FR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Leave blank for tube packaging

- **TR** = Tape & Reel
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

**MATED HEIGHT**

- **UPS LEAD STYLE**
- **UPT LEAD STYLE**

*Processing conditions will affect mated height.

### UPS Board Mates: UPT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
<th>01</th>
<th>TAIL LENGTH</th>
<th>PLATING OPTION</th>
<th>RA</th>
<th>SD</th>
<th>&quot;X&quot;R</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1.60 mm) .062&quot; Thick PCB</td>
<td>(10 μ&quot;) (0.25 μm) Gold on contact, Matte Tin on tail</td>
<td>Right-angle</td>
<td>Matte Tin</td>
<td></td>
</tr>
</tbody>
</table>

Leave blank for tube packaging

- **TR** = Tape & Reel
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

**Note:**
Some lengths, styles and options are non-standard, non-returnable.
### MPT
- **Board Mates:** MPS
- **Cable Mates:** MPSS

### MPS
- **Board Mates:** MPT

### MPT-RA
- **Board Mates:** MPS
- **Cable Mates:** MPSS

### MPS-RA
- **Board Mates:** MPT

#### Series
- **MPT** Terminal
- **MPS** Socket

#### Power Pins
- **MPT**
  - -02, -03, -04, -06, -08
- **MPS**
  - -02, -04, -06, -08

#### Lead Style
- **MPT**
  - -6.30 = (6.30 mm) 0.248” (MPT only)
  - -7.70 = (7.70 mm) 0.303” (MPS only)
- **MPS**
  - -6.30 = (6.30 mm) 0.248” (MPS only)
  - -7.70 = (7.70 mm) 0.303” (MPS only)

#### Tail Length
- **MPT**
  - -01 = Use with (1.60 mm) .062” Thick PCB
  - -03 = Use with (2.36 mm) .093” Thick PCB
- **MPS**
  - -01 = Use with (1.60 mm) .062” Thick PCB
  - -03 = Use with (2.36 mm) .093” Thick PCB

#### Plating Option
- **MPT**
  - -L = 10 µ” (0.25 µm) Gold on contact, Matte Tin on tail
  - -T = Matte Tin
- **MPS**
  - -L = 10 µ” (0.25 µm) Gold on contact, Matte Tin on tail
  - -T = Matte Tin

#### Tail
- (Required Callout)
- **MPT**
  - -L = Vertical
- **MPS**
  - -V = Vertical

#### Mated Height
- **MPT**
  - **MPS**
  - -01 = Use with (1.60 mm) .062” Thick PCB
  - -03 = Use with (2.36 mm) .093” Thick PCB

#### Tail Length
- **MPT**
  - -01 = (2.72) .107
  - -03 = (3.51) .138
- **MPS**
  - -01 = (2.72) .107
  - -03 = (3.52) .139

#### View complete specifications at: samtec.com?MPT & samtec.com?MPS

Note:
- Some lengths, styles and options are non-standard, non-returnable.

---

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<table>
<thead>
<tr>
<th>SERIES</th>
<th>POWER PINS</th>
<th>SIGNAL PINS</th>
<th>POWER PINS</th>
<th>LEAD STYLE</th>
<th>TAIL LENGTH</th>
<th>PLATING OPTION</th>
<th>RA</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPTC</td>
<td>Per end -01</td>
<td>-16</td>
<td>Per end -01</td>
<td>-6.30</td>
<td>= Use with (1.60 mm) .062&quot; Thick PCB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socket</td>
<td>-02</td>
<td>-24</td>
<td>-02</td>
<td>-7.70</td>
<td>= Use with (2.36 mm) .093&quot; Thick PCB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MPTC**
- Board Mates: MPSC
- Cable Mates: MPCC

**MPSC**
- Board Mates: MPTC

**MPTC-RA**
- Board Mates: MPSC
- Cable Mates: MPCC

**MPSC-RA**
- Board Mates: MPTC

---

**Tail Length**
- **B**
  - MPTC: Per end -01 (2.72) .107, -03 (3.51) .138
  - MPSC: Per end -01 (2.72) .107, -03 (3.52) .139

**View complete specifications at:** samtec.com?MPTC & samtec.com?MPSC

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**PET**

- **Board Mates:** PET
- **Cable Mates:** PESS

### LEAD STYLE
- **–01** = Use with (1.60 mm) .062” Thick PCB
- **–02** = Use with (3.18 mm) .125” Thick PCB

### PLATING OPTION
- **–L** = 10 µ” (0.25 µm) Gold on contact, Matte Tin on tail
- **–T** = Matte Tin

### TAIL OPTION
- **–VT** = Vertical
- **–RA** = Right-angle (Screw Down option required)
- **–SD** = Screw Down (Right-angle only)

### OTHER OPTION
- **–01** = Use with (1.60 mm) .062” Thick PCB
- **–02** = Use with (3.18 mm) .125” Thick PCB

---

**PES**

- **Board Mates:** PES

### LEAD STYLE
- **–01** = Use with (1.60 mm) .062” Thick PCB
- **–02** = Use with (3.18 mm) .125” Thick PCB

### PLATING OPTION
- **–L** = 10 µ” (0.25 µm) Gold on contact, Matte Tin on tail
- **–T** = Matte Tin

### TAIL OPTION
- **–VT** = Vertical
- **–RA** = Right-angle (Screw Down option required)
- **–SD** = Screw Down (Right-angle only)

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com/PET](http://samtec.com/PET)

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com/PES](http://samtec.com/PES)

---

**Samtec.com/PowerStrip**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
Board Mates: PESC

Note: Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/PETC

Board Mates: PESC

Note: Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/PESC

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**ISOLATED POWER SYSTEMS**

**FEATURES & BENEFITS**

- Individually shrouded contacts for electrical and mechanical protection
- .100" (2.54 mm) and .165" (4.19 mm) pitch
- Surface mount or through-hole
- Vertical and right-angle for parallel, perpendicular and coplanar applications
- Locking clip, key polarization and guide post options
- Discrete wire assemblies with 16-30 AWG PVC or Teflon™ fluoropolymer wire (see pages 243-245).
- Metal or plastic rugged latching system

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec

**CREEPAGE & CLEARANCE**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPT1/IPS1</td>
<td>.100&quot; (2.54 mm)</td>
<td>Black LCP</td>
<td>Phosphor Bronze</td>
<td>Sn or Au over 50 µ&quot; (1.27 µm) Nickel</td>
<td>-55 °C to +125 °C</td>
<td>5.9 A (1 pin powered)</td>
<td>775 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td>IPBT/IPBS</td>
<td>.165&quot; (4.19 mm)</td>
<td>Black LCP</td>
<td>High Copper Alloy (IPBT) Phosphor Bronze (IPBS)</td>
<td>Sn over 50 µ&quot; (1.27 µm) Nickel</td>
<td>-55 °C to +105 °C</td>
<td>10.3 A (2 pins powered)</td>
<td>400 VAC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Selectively loading contacts achieves customer specific creepage and clearance requirements.

**KEY SPECIFICATIONS**

- Flexible standard or high-power stacking systems with Power Eye three-finger BeCu contacts for reliable connection. For available series, visit samtec.com/flexiblestrips

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
## IPT1 - MINIMATE® Power Connector Set

### Specifications:
- **Lead Style:** Specify lead style from chart.
- **Plating Options:**
  - **L:** 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
  - **RA:** Right-angle
  - **VS:** Surface Mount
- **Tail Options:**
  - **A:** Alignment Pin (-VS only; N/A with –LC)
  - **LC:** Locking Clip (Manual placement required) (-VS only; N/A with –A)
  - **K:** (6.00 mm) .236" DIA Polymide film Pick & Place Pad (-VS only)
  - **TR:** Tape & Reel (-VS only)
  - **FR:** Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks) (-VS only)

### Board Mates:
- **IPT1**
- **IPS1**

### PINS / CURRENT RATING:

<table>
<thead>
<tr>
<th>PINS</th>
<th>CURRENT RATING (PER CONTACT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.5 A</td>
</tr>
<tr>
<td>2</td>
<td>4.8 A</td>
</tr>
<tr>
<td>3</td>
<td>4.1 A</td>
</tr>
<tr>
<td>4</td>
<td>3.6 A</td>
</tr>
<tr>
<td>50</td>
<td>2.3 A</td>
</tr>
</tbody>
</table>

### Note:
- Some lengths, styles and options are non-standard, non-returnable.

### View complete specifications at: samtec.com/IPT1 & samtec.com/IPS1

---

## IPS1 - MINIMATE® Power Connector Set

### Specifications:
- **Lead Style:** Leave blank for Through-hole
- **Plating Options:**
  - **L:** 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
  - **RA:** Right-angle
  - **VS:** Surface Mount

### Board Mates:
- **IPT1**

### View complete specifications at: samtec.com/IPT1 & samtec.com/IPS1

---

*Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.*
### IPBT

**Board Mates:** IPBT  
**Cable Mates:** PMSD, PMSS

<table>
<thead>
<tr>
<th>NO. OF POSITIONS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02, 03, 04, 05, 08, 10</td>
<td>–H1</td>
<td>–T</td>
<td>–S</td>
<td>–RA</td>
</tr>
<tr>
<td>15</td>
<td>= Through-hole</td>
<td>= Matte Tin</td>
<td>= Single Row</td>
<td>= Right-angle</td>
</tr>
<tr>
<td>(–D Only)</td>
<td></td>
<td></td>
<td>= Double Row</td>
<td>(Lead Style –H1 only)</td>
</tr>
<tr>
<td></td>
<td>–H2</td>
<td></td>
<td></td>
<td>–GP</td>
</tr>
<tr>
<td></td>
<td>= Surface Mount</td>
<td></td>
<td></td>
<td>= Guide Post Holes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–K</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= Keyed Polarization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>–S</td>
<td></td>
<td>–D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Single Row</td>
<td></td>
<td>= Double Row</td>
<td></td>
</tr>
</tbody>
</table>

- **–GP**: Guide Post Holes (Not available with –K)  
- **–RA**: Right-angle (Lead Style –H1 only)  
- **–K**: Keyed Polarization (Not available with –GP option, is required callout if –GP not called out)

### IPBS

**Board Mates:** IPBT  
**Cable Mates:** IPBT

<table>
<thead>
<tr>
<th>NO. OF POSITIONS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>02, 03, 04, 05, 08, 10</td>
<td>–01</td>
<td>–T</td>
<td>–S</td>
<td>–GP</td>
</tr>
<tr>
<td>15</td>
<td>= Standard Power</td>
<td>= Matte Tin</td>
<td>= Single Row</td>
<td>= Guide Post</td>
</tr>
<tr>
<td>(–D Only)</td>
<td></td>
<td></td>
<td>= Double Row</td>
<td></td>
</tr>
</tbody>
</table>

- **–GP**: Guide Post

**View complete specifications at:** samtec.com/IPBT & samtec.com/IPBS

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**MATED HEIGHT**

- **IPBT/IPBS LEAD STYLE**: H1–01  
- **MATED HEIGHT**: (15.20) .600  
- **IPBT/IPBS LEAD STYLE**: H2–02  
- **MATED HEIGHT**: (16.84) .663

*Processing conditions will affect mated height.*
RUGGED I/O SYSTEMS

POWER I/O • MICRO-HYPERBOLOID CONTACT • SEALED CIRCULARS & RECTANGULARS

ACCLI MATE™

SCRES/SCPE

RCU/RPBU

ACP/ACR

BCLU/BCPU/BRU

MCP/MCR

RUGGED I/O SYSTEMS

POWER I/O  •  MICRO-HYPERBOLOID CONTACT  •  SEALED CIRCULARS & RECTANGULARS

Summary of Sections:

212-215 URSA™ I/O ULTRA RUGGED POWER CABLE SYSTEMS
Socket Cables and Components (B1SD(T), B1SDS, IBT1, CC508) ............................................................... 213
Panel Mount Terminal Cables and Components (P1PD(T), P1PDS, IPP1, TC145) ............................................... 214
Board Mount I/O Connector (P1M) .................................................................................................................. 215

216-218 FLEXIBLE SEALED SYSTEMS
AccliMate™ IP67 & IP68 Sealed Circular & Rectangular Systems .......................................................... 216-218
Ultra Rugged I/O Systems
(1.00 mm) .0394" Pitch

**Features & Benefits**

- Small form factor
- Four points of contact for a reliable connection and high mating cycles
- Up to 40 positions per row
- Cable-to-cable & cable-to-board solutions
- EMI shielding limits signal degradation and optimizes performance
- Through-hole or surface mount
- 28 & 30 AWG cable

**Key Specifications (P1PD(X), B1SD(X) & P1M)**

<table>
<thead>
<tr>
<th>Pitch</th>
<th>Insulator Material</th>
<th>Contact Material</th>
<th>Shield Material</th>
<th>Plating</th>
<th>Operating Temp Range</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 mm</td>
<td>Liquid Crystal Polymer</td>
<td>Beryllium Copper</td>
<td>Zinc Alloy</td>
<td>Au over 50 μ&quot; (1.27 μm) Ni</td>
<td>–10 °C to +80 °C (PVC) –40 °C to +125 °C (*Teflon™ Fluoropolymer)</td>
<td>2.9 A per pin (2 pins powered)</td>
<td>253 VAC</td>
</tr>
</tbody>
</table>

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

Ultra Rugged I/O Systems

Shown actual size at 20 total positions

Hyperboloid-type contact for extreme high mating cycles

Extreme density with up to 1,450 total I/Os in a 1RU panel
(29 cables at 50 total I/Os each)

samtec.com/URSA

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
B1SD, B1SDT

Cable Mates: P1PD, P1PDT
Board Mates: P1M

B1SD Cable Holder
(Required for use with IBT1)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1SDR</td>
<td>-10, -15, -25, -30</td>
</tr>
</tbody>
</table>

B1SDS

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>N</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10, -15, -25, -30</td>
<td>-</td>
<td>-CS = Captive Screw</td>
</tr>
</tbody>
</table>

B1SD Cable Mates: P1PD, P1PDT
Board Mates: P1M

Notes:
- Some lengths, styles and options are non-standard, non-returnable.

TOOLING
- Hand Tool: TBD
- Mini Applicator: TBD

View complete specifications at: samtec.com/B1SDS & samtec.com/B1SDT
(1.00 mm) .0394" PITCH • PANEL MOUNT I/O CABLE/COMPONENTS

**P1PD**

- Double Row Panel Mount PVC Cable
- NO. OF POSITIONS: -10, -15, -25, -30
- WIRE GAUGE: 28 AWG
- COLOR CODE: (Leave blank for standard wire)
- PLATING: H = 30 µ" (0.76 µm) Gold on contact area, Gold flash on tail
- “XX.X” = Length in inches 06.0" (152.4 mm) minimum
- END OPTION: (Leave blank for single ended)
- PINOUT: (Leave blank for single ended)

**P1PDT**

- Double Row Panel Mount, Blue *Teflon™* Fluoropolymer Cable
- NO. OF POSITIONS: -10, -15, -25, -30
- WIRE GAUGE: 30 AWG
- COLOR CODE: No. of Positions
- PLATING: C = Color Code Wire (Not available with P1PDT)
- “XX.X” = Length in inches 06.0" (152.4 mm) minimum
- END OPTION: (Leave blank for single ended)
- PINOUT: (Leave blank for single ended)

---

**P1PDX-10-XXX-H-XX.X SHOWN**

*“Teflon™* is a trademark of The Chemours Company FC, LLC used under license by Samtec.

Notes:
- *Teflon™* Fluoropolymer Cable is intended for crimp only. Contact Samtec for solderable cable applications.
- Some lengths, styles and options are non-standard, non-returnable.

---

**P1PD CABLE HOLDER**

(Required for use with IPP1)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NUMBER OF POSITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1PDR</td>
<td>-10, -15, -25, -30</td>
</tr>
</tbody>
</table>

---

**P1PDS**

- NO. OF POSITIONS: -10, -15, -25, -30

---

**IPP1**

- NO. OF POSITIONS: -10, -15, -25, -30

---

**TC145**

- NO. OF POSITIONS: R = Full Reel (25,000 Terminals Per Reel)
- PLATING: H = 30 µ" (0.76 µm) Gold on contact area, Gold flash on tail
- PACKAGING: M = Mini Reel (1,000 to 5,000 Terminals Per Reel)
- B = Bubble Bag (35 Terminals)

---

**TOOLING**

- Hand Tool: TBD
- Mini Applicator: TBD

---

View complete specifications at: samtec.com/P1PD, samtec.com/P1PDT & samtec.com/IPP1 & samtec.com/TC145

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
(1.00 mm) .0394" PITCH • I/O BOARD MOUNT

P1M
- NO. OF POSITIONS - LEAD STYLE - PLATING - D - RA - PIN LENGTH - "X"R

-10, -15, -25, -30
(Per Row)

-01 = Surface Mount

-02 = Through-hole (1.57 mm PCB)

-03 = Through-hole (2.36 mm PCB)

- S = 30 µ (0.76 µm)
Gold on contact area, Matte Tin on tail

- STL = 30 µ (0.76 µm)
Gold on contact area, Tin/Lead on tail

(Leave blank for standard)

- H = Hot Swap

- TR = Tape & Reel

- FR = Full Reel Tape & Reel
(must order max. quantity per reel; contact Samtec for quantity breaks)

P1M
Cable Mates:
B1SD, B1SDT

P1M-10-01-S-D-RA SHOWN
(SURFACE MOUNT)

P1M-10-02-S-D-RA SHOWN
(THROUGH-HOLE)

Note:
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/P1M

P1M
- NO. OF POSITIONS - LEAD STYLE - PLATING - D - RA - PIN LENGTH - "X"R

-10, -15, -25, -30
(Per Row)

-01 = Surface Mount

-02 = Through-hole (1.57 mm PCB)

-03 = Through-hole (2.36 mm PCB)

- S = 30 µ (0.76 µm)
Gold on contact area, Matte Tin on tail

- STL = 30 µ (0.76 µm)
Gold on contact area, Tin/Lead on tail

(Leave blank for standard)

- H = Hot Swap

- TR = Tape & Reel

- FR = Full Reel Tape & Reel
(must order max. quantity per reel; contact Samtec for quantity breaks)

P1M
Cable Mates:
B1SD, B1SDT

P1M-10-01-S-DV SHOWN

View complete specifications at: samtec.com/P1M

Note:
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/P1M

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FEATURES & BENEFITS

- Meets IP68 & IP67 requirements for dust and waterproof sealing
- Ideal for high reliability in harsh environments
- Bayonet circulars in 12 mm, 16 mm and 22 mm shell sizes with choice of pin configuration and gender (ACX)
- Lightweight plastic mini push-pull system in a small form factor for increased panel density (MCP/MCR)
- Threaded sealed circular systems available with USB or Ethernet
- Rectangular sealed circular systems available with USB or Ethernet
- Rugged dust caps available

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>TYPE</th>
<th>INSULATOR MATERIAL</th>
<th>TERMINAL MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>OPERATING TEMP RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP-12/ACR-12</td>
<td>Bayonet Circular</td>
<td>Thermoplastic</td>
<td>Brass</td>
<td>Brass/BeCu</td>
<td>-10 °C to +80 °C</td>
</tr>
<tr>
<td>ACP-16/ACR-16</td>
<td>Bayonet Circular</td>
<td>Thermoplastic</td>
<td>Brass</td>
<td>Brass/BeCu</td>
<td>-10 °C to +105 °C</td>
</tr>
<tr>
<td>ACP-22/ACR-22</td>
<td>Bayonet Circular</td>
<td>Thermoplastic</td>
<td>Brass</td>
<td>Brass/BeCu</td>
<td>-10 °C to +105 °C</td>
</tr>
<tr>
<td>MCP/MCR</td>
<td>Mini Push-Pull</td>
<td>PPS</td>
<td>Phosphor Bronze</td>
<td>Phosphor Bronze</td>
<td>-20 °C to +80 °C</td>
</tr>
<tr>
<td>BCU/BPCU/BRU</td>
<td>Threaded Circular</td>
<td>Thermoplastic</td>
<td>--</td>
<td>Copper Alloy</td>
<td>-40 °C to +80 °C</td>
</tr>
<tr>
<td>SCRUS/SCRES</td>
<td>Threaded Circular</td>
<td>PBT</td>
<td>--</td>
<td>Phosphor Bronze</td>
<td>-20 °C to +75 °C (SCRUS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-40 °C to +70 °C (SCRES)</td>
</tr>
<tr>
<td>RPBE/RPCE</td>
<td>Rectangular</td>
<td>Black LCP (RPBE)</td>
<td>--</td>
<td>Phosphor Bronze</td>
<td>-40 °C to +75 °C</td>
</tr>
<tr>
<td>RPBU/RPCU</td>
<td>Rectangular</td>
<td>Glass Filled Thermoplastic (RPCE)</td>
<td>--</td>
<td>Phosphor Bronze</td>
<td>-20 °C to +80 °C</td>
</tr>
</tbody>
</table>
## IP68 SEALED BAYONET CIRCULAR - 12 mm SHELL

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP-12</td>
<td>Terminal</td>
<td>MAX 5.0 Amps</td>
<td>Metal or Plastic</td>
<td>samtec.com/acp-12</td>
</tr>
<tr>
<td>ACR-12</td>
<td>Socket</td>
<td></td>
<td>Metal or Plastic</td>
<td>samtec.com/acr-12</td>
</tr>
</tbody>
</table>

Kitted components available for field assembly, visit samtec.com/acpk-12 or samtec.com/acrk-12

## IP68 SEALED BAYONET CIRCULAR - 16 mm SHELL

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP-16</td>
<td>Terminal</td>
<td>MAX 11.6 Amps</td>
<td>Metal or Plastic</td>
<td>samtec.com/acp-16</td>
</tr>
<tr>
<td>ACR-16</td>
<td>Socket</td>
<td></td>
<td>Metal or Plastic</td>
<td>samtec.com/acr-16</td>
</tr>
</tbody>
</table>

Kitted components available for field assembly, visit samtec.com/acpk-16 or samtec.com/acrk-16

## IP68 SEALED BAYONET CIRCULAR - 22 mm SHELL

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP-22</td>
<td>Terminal</td>
<td>MAX 8.3 Amps</td>
<td>Metal or Plastic</td>
<td>samtec.com/acp-22</td>
</tr>
<tr>
<td>ACR-22</td>
<td>Socket</td>
<td></td>
<td>Metal or Plastic</td>
<td>samtec.com/acr-22</td>
</tr>
</tbody>
</table>

Kitted components available for field assembly, visit samtec.com/acpk-22 or samtec.com/acrk-22

## IP67 SEALED MINI PUSH-PULL - 8 SERIES

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCP</td>
<td>Terminal</td>
<td>MAX 3.4 Amps</td>
<td>Plastic</td>
<td>samtec.com/mcp</td>
</tr>
<tr>
<td>MCR</td>
<td>Socket</td>
<td></td>
<td>Plastic</td>
<td>samtec.com/mcr</td>
</tr>
</tbody>
</table>

Dust caps: DCA-MCR-8 and DCA-MCP-8

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### IP67 THREADED CIRCULAR SYSTEM - USB TYPE C

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCU</td>
<td>Terminal (Cable)</td>
<td>Supports 100 W power delivery (5 A @ 20 V)</td>
<td>Plastic</td>
<td>samtec.com/bcu</td>
</tr>
<tr>
<td>BPCU</td>
<td>Socket (Cable)</td>
<td></td>
<td>Plastic</td>
<td>samtec.com/bpcu</td>
</tr>
<tr>
<td>BRU</td>
<td>Socket (Board Mount)</td>
<td></td>
<td>Plastic</td>
<td>samtec.com/bru</td>
</tr>
</tbody>
</table>

Dust cap: DCA-BRU-C-01

### IP68 SEALED THREADED CIRCULAR SYSTEM - USB TYPE A/B & ETHERNET

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Mates With</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCRUS</td>
<td>Socket (USB)</td>
<td>4.3 Amps MAX</td>
<td>Plastic</td>
<td>SCPU</td>
<td>samtec.com/scrus</td>
</tr>
<tr>
<td>SCRES</td>
<td>Socket (Ethernet)</td>
<td>3.8 Amps MAX</td>
<td>SCPE</td>
<td></td>
<td>samtec.com/scres</td>
</tr>
</tbody>
</table>

Dust caps: DCA-17-03, DCA-17-01 and SCPA-17-01 (panel plug)

### IP68 SEALED RECTANGULAR SYSTEM - ETHERNET

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Housing</th>
<th>Mates With</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPBE</td>
<td>Socket</td>
<td>Plastic</td>
<td>RCE</td>
<td>samtec.com/rpbe</td>
</tr>
<tr>
<td>RPCE</td>
<td>Socket</td>
<td>Plastic</td>
<td>RCE</td>
<td>samtec.com/rpce</td>
</tr>
</tbody>
</table>

Dust caps: DCA-RPBE-01-01-P (no latch) and DCA-RPBE-XX-01-L (latching)

### IP68 SEALED RECTANGULAR SYSTEM - USB TYPE A/B

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Current Carrying Capacity</th>
<th>Housing</th>
<th>Mates With</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPBU</td>
<td>Socket</td>
<td>4.5 Amps MAX</td>
<td>Plastic (Single Port Only)</td>
<td>RCU</td>
<td>samtec.com/rpbu</td>
</tr>
<tr>
<td>RPCU</td>
<td>Socket</td>
<td>4.5 Amps MAX</td>
<td>Plastic (Single Port Only)</td>
<td>RCU</td>
<td>samtec.com/rpcu</td>
</tr>
</tbody>
</table>

Dust caps: DCA-RPBU-XX-01-X

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
RUGGED TIGER EYE™ SYSTEMS

HIGH-RELIABILITY • MULTI-FINGER BeCu CONTACT • HIGH MATING CYCLES

.050" (1.27 mm) PITCH TIGER EYE™ SYSTEMS

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>220-225</td>
</tr>
<tr>
<td>Standard Pitch Sockets &amp; Terminals (SFM, TFM)</td>
</tr>
<tr>
<td>Cost-Effective Tiger Eye™ Lite Sockets &amp; Terminals (SFC, TFC)</td>
</tr>
<tr>
<td>Quad Row Strips (MOLC, FOLC)</td>
</tr>
<tr>
<td>Flexible Pin Count Tiger Eye™ Sockets (SFMC)</td>
</tr>
</tbody>
</table>

0.80 mm PITCH TIGER EYE™ SYSTEMS

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>226-227</td>
</tr>
<tr>
<td>Micro Pitch Sockets &amp; Terminals (SEM, SEMS, TEM, TEMS)</td>
</tr>
</tbody>
</table>

2.00 mm PITCH TIGER EYE™ SYSTEMS

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>228-230</td>
</tr>
<tr>
<td>2.00 mm Pitch Sockets &amp; Terminals (S2M, T2M)</td>
</tr>
<tr>
<td>2.00 mm Pitch Flex Stack &amp; IDC Cable Socket (SMM)</td>
</tr>
</tbody>
</table>
FEATURES & BENEFITS

- Screw down, locking clip, friction latching and weld tab ruggedizing options
- Shrouded, polarized and keyed
- Surface mount or through-hole tails
- High-density, four row design (FOLC/MOLC Series)
- Discrete wire assemblies available in single or double row, 28 and 30 AWG PVC or *Teflon™ Fluoropolymer (See pages 238-239).
- Contact asp@samtec.com for custom solutions.
- Cable components (ISDF/CC03) and tooling available: samtec.com/tooling
- Severe Environment Testing qualified (SFM/TFM); aligns with MIL-DTL-55302. Visit samtec.com/set

KEY SPECIFICATIONS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>STACK HEIGHTS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
<th>MAX. CYCLES</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFM/TFM</td>
<td>6 to 12 mm</td>
<td>Black LCP</td>
<td>BeCu (SFM)</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>3.2 A per pin (2 pins powered)</td>
<td>250 VAC</td>
<td>10,000 with 30 µ&quot; (0.76 µm) Au</td>
<td>Yes</td>
</tr>
<tr>
<td>SFC/TFC</td>
<td>6 to 12 mm</td>
<td>Black LCP</td>
<td>Phosphor Bronze (TFM)</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>3.1 A per pin (2 pins powered)</td>
<td>350 VAC</td>
<td>(Call Samtec for E.L.P.™ plating option)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.
**Series**

<table>
<thead>
<tr>
<th>option</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFM</td>
<td>Standard</td>
</tr>
<tr>
<td>SFML</td>
<td>Locking</td>
</tr>
</tbody>
</table>

**No. Pins Per Row**

- 03, 04, 06, 08 (SFM only)
- 05, 07, 10, 15, 20, 25, 30, 35, 40, 45, 50 (Standard sizes)

**Lead Style**

<table>
<thead>
<tr>
<th>option</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–02</td>
<td>Tiger Eye™ Contact (BeCu)</td>
</tr>
<tr>
<td>–L2</td>
<td>Low Insertion Force Tiger Eye™ Contact (BeCu)</td>
</tr>
<tr>
<td>–T2</td>
<td>Tiger Eye™ LITE Contact (Phosphor Bronze)</td>
</tr>
<tr>
<td>–01</td>
<td>Tiger Eye™ Contact (BeCu)</td>
</tr>
<tr>
<td>–L1</td>
<td>Low Insertion Force Tiger Eye™ Contact (BeCu)</td>
</tr>
<tr>
<td>–T1</td>
<td>Tiger Eye™ LITE Contact (Phosphor Bronze)</td>
</tr>
</tbody>
</table>

**Plating Option**

<table>
<thead>
<tr>
<th>option</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>–S</td>
<td>Single Row (SFM only)</td>
</tr>
<tr>
<td>–D</td>
<td>Double Row</td>
</tr>
<tr>
<td>–L</td>
<td>10 μm (0.25 μm) Gold on contact, Matte Tin on tail (Call Samtec for E.L.P.® plating option)</td>
</tr>
<tr>
<td>–SH</td>
<td>Single Horizontal (05 thru 30 positions only) (SFM only) (Lead style –02 only)</td>
</tr>
<tr>
<td>–DH</td>
<td>Double Horizontal (05 thru 30 positions only) (SFM only) (Lead style –02 only)</td>
</tr>
</tbody>
</table>

**Row Option**

- Specify only –A, –LC or –DS (Not available with SFML) (Mate with TFM-DS option) (Not available with –A, –LC, –K, –P, –XR)
- Specify only –K or –P (Leads styles –02, –L2, –T2 only)

**Options**

- Specify only –K or –P (Leads styles –02, –L2, –T2 only)
- –A = Alignment Pin
- –LC = Locking Clip (Manual placement required)
- –DS = Dual Screw Down for (1.60 mm) .062" PCB (05 thru 40 positions only) (Lead styles –01, –02 & –03 only) (Requires –D row option) (Not available with SFML) (Mates with TFM-DS option) (Not available with –A, –LC, –K, –P, –XR)
- –SH = Single Horizontal (05 thru 30 positions only) (SFM only) (Lead style –02 only)
- –DH = Double Horizontal (05 thru 30 positions only) (SFM only) (Lead style –02 only)

**Notes:**

- Severe Environment Testing qualified (SFM); aligns with MIL-DTL-55302.
- Visit samtec.com/set for complete specifications.
- Some lengths, styles and options are non-standard, non-returnable.

**Board Mates:**

- SFM: TFM
- SFML: TFS

**Cable Mates:**

- SFM: TFSD, TFSS
- SFML: TFSD

**Contact Information:**

samtec.com/127mm-TigerEye

**Additional Notes:**

- Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
(1.27 mm) .050" • SMT/THROUGH-HOLE HEADER

**SERIES**

<table>
<thead>
<tr>
<th>TFM</th>
<th>TFML</th>
</tr>
</thead>
</table>

**NO. PINS PER ROW**

<table>
<thead>
<tr>
<th>TFM</th>
<th>03, 04, 06, 08 (TFM –01 &amp; –02 only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFML</td>
<td>05, 07, 10, 15, 20, 25, 30, 35, 40, 45, 50 (Standard sizes)</td>
</tr>
</tbody>
</table>

**LEAD STYLE**

Specify LEAD STYLE from chart

**PLATING OPTION**

- **L** = Standard
- **TFML** = Locking (–01 & –02 lead style only)

**ROW OPTION**

Specify only –RA, –RE1 or –RE2

**OPTIONS**

- **K** = Polyimide Film Pick & Place Pad
- **P** = Plastic Pick & Place Pad (5 positions min.)
- **–TR** or -FR last (Not available with –DS)

**Notes:**

- Severe Environment Testing qualified (TFM); aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/TFM & samtec.com/TFML

---

**MATED HEIGHTS**

**LEAD STYLE (SMT)**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>TFM</th>
<th>SFM</th>
<th>MATED HEIGHT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-02</td>
<td>(6.35) .250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-12</td>
<td>(8.13) .320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-22</td>
<td>(9.91) .390</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-32</td>
<td>(11.81) .465</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LEAD STYLE (T/H)**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>TFM</th>
<th>SFM</th>
<th>MATED HEIGHT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(5.97) .235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-03</td>
<td>(5.97) .235</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-11</td>
<td>(7.75) .305</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-13</td>
<td>(7.75) .305</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-21</td>
<td>(9.53) .375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-23</td>
<td>(9.53) .375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-31</td>
<td>(11.43) .450</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

---

**LEAD STYLE (T/H) A**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(5.59) .220</td>
<td>(1.97) .078</td>
</tr>
<tr>
<td>-03</td>
<td>(5.59) .220</td>
<td>(2.77) 109</td>
</tr>
<tr>
<td>-11</td>
<td>(7.37) .290</td>
<td>(1.97) .078</td>
</tr>
<tr>
<td>-13</td>
<td>(7.37) .290</td>
<td>(2.77) .109</td>
</tr>
<tr>
<td>-21</td>
<td>(9.14) .360</td>
<td>(1.97) .078</td>
</tr>
<tr>
<td>-23</td>
<td>(9.14) .360</td>
<td>(2.77) .109</td>
</tr>
<tr>
<td>-31</td>
<td>(11.09) .435</td>
<td>(1.97) .078</td>
</tr>
</tbody>
</table>

* Not Available with 07 or 4 row option

---

**Notes:**

- SMT lead styles only
- Specify only –K or –P

---

**View complete specifications at:** samtec.com/TFM & samtec.com/TFML

---

*Not otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.*
### SFC

<table>
<thead>
<tr>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>04, 05, 10, 15, 20, 25, 30, 35, 40, 45, 50 (Standard sizes)</td>
<td>-T1 = Through-hole Tiger Eye™ LITE</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-A = Alignment Pin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-T2 = Surface Mount Tiger Eye™ LITE</td>
<td>-L = 10 µ (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td>-K = (4.00 mm) .157&quot; Dia Polyimide film Pick &amp; Place Pad</td>
<td></td>
</tr>
</tbody>
</table>

#### Board Mates:
- TFC
- Cable Mates:
  - TFSD, TFSDT

#### SMT LEAD STYLE

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Pin</td>
<td>02 (5.72) .225</td>
<td>(3.38) .133</td>
</tr>
<tr>
<td>12 (7.49) .295</td>
<td>(3.80) .150</td>
<td></td>
</tr>
<tr>
<td>22 (9.27) .365</td>
<td>(3.30) .130</td>
<td></td>
</tr>
<tr>
<td>32 (11.18) .440</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### TH LEAD STYLE

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Pin</td>
<td>01 (5.59) .220</td>
<td>(3.38) .133</td>
</tr>
<tr>
<td>11 (7.37) .290</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 (9.14) .360</td>
<td>(3.30) .130</td>
<td></td>
</tr>
<tr>
<td>31 (11.05) .435</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

View complete specifications at: [samtec.com?SFC](samtec.com?SFC)

### TFC

<table>
<thead>
<tr>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>03, 04, 06, 08 (Lead Style –01 &amp; –02 only)</td>
<td>-X1 = Through-hole Tiger Eye™ LITE</td>
<td>-F = Gold flash on post, Matte Tin on tail</td>
<td>-RA = Right-angle (~01 only)</td>
<td></td>
</tr>
<tr>
<td>05, 07, 10, 15, 20, 25, 30, 35, 40, 45, 50 (Standard sizes)</td>
<td>-X2 = Surface Mount Tiger Eye™ LITE</td>
<td>-L = 15 µ (0.38 µm) Gold on post, Matte Tin on tail</td>
<td>-A = Alignment Pin</td>
<td></td>
</tr>
</tbody>
</table>

#### Board Mates:
- SFC
- Cable Mates:
  - SFSD, SFSDT

#### SMT LEAD STYLE

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Pin</td>
<td>02 (5.72) .225</td>
<td>(3.38) .133</td>
</tr>
<tr>
<td>12 (7.49) .295</td>
<td>(3.80) .150</td>
<td></td>
</tr>
<tr>
<td>22 (9.27) .365</td>
<td>(3.30) .130</td>
<td></td>
</tr>
<tr>
<td>32 (11.18) .440</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### TH LEAD STYLE

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Pin</td>
<td>01 (5.59) .220</td>
<td>(3.38) .133</td>
</tr>
<tr>
<td>11 (7.37) .290</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 (9.14) .360</td>
<td>(3.30) .130</td>
<td></td>
</tr>
<tr>
<td>31 (11.05) .435</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

View complete specifications at: [samtec.com?TFC](samtec.com?TFC)

Note: Some lengths, styles and options are non-standard, non-returnable.
QUAD ROW TERMINAL/ SOCKET

(1.27 mm) .050" PITCH • FOLC/MOLC SERIES

**SPECIFICATIONS**

- **Insulator Material:** Black Liquid Crystal Polymer
- **Contact Material (FOLC):** BeCu
- **Terminal Material (MOLC):** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating:** 2.6 A per pin (4 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 165 VAC/230 VDC
- **Insertion Depth (FOLC):** (3.30 mm) .130" to (4.06 mm) .160"
- **Max Cycles (FOLC):** 100

**PROCESSING**

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity (MOLC):** (0.10 mm) .004" max (20-25) (0.15 mm) .006" max (30-50)*
- **Surface Mount (FOLC):** (0.04" stencil solution may be available; contact ipg@samtec.com)
- **Lead Style:**
  - FOLC: –01 = Through-hole
  - MOLC: –01 = Surface Mount

**APPLICATIONS**

- **Lead Style:**
  - MOLC: –01 = Mixed Technology
  - –04 = Mixed Technology
  - –M1 = Mixed Technology

**Packaging:**

- **FOLC:**
  - No. of positions x (1.27) .050 + (0.51) .020

- **MOLC:**
  - No. of positions x (1.27) .050 + (0.76) .030

**Note:** Some lengths, styles and options are non-standard, non-returnable.

**View complete specifications at:** samtec.com?FOLC

**View complete specifications at:** samtec.com?MOLC

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FLEXIBLE PIN COUNT TIGER EYE™ SOCKET

(1.27 mm) .050" PITCH • SFMC SERIES

SFMC
Board Mates:
TFM
Cable Mates:
FMTP, FFMD

“Note: Standard FFMD callout will not mate with FLE, SFMC. Must use gold plated callouts. (See drawing on web.)

SPECIFICATIONS

Insulator Material:
Black Liquid Crystal Polymer
Contact Material:
Tiger Eye™ = BeCu
Tiger Eye™ LITE= Phosphor Bronze
Plating:
Au or Sn over 50 µ" (1.27 µm) Ni
Current Rating:
2.9 A per pin (2 pins powered)
Voltage Rating:
220 VAC/310 VDC
Operating Temp Range:
-55 °C to +125 °C
Insertion Depth:
(3.05 mm) .120" to (4.06 mm) .160"
Max Cycles:
10,000 with 30 µ" (0.76 µm) Au

PROCESSING

Lead-Free Solderable:
Yes
SMT Lead Coplanarity:
(0.10 mm) .004" max (02-26)
(0.15 mm) .006" max (27-50)*
*1.004” stencil solution may be available; contact ipg@samtec.com

ALSO AVAILABLE

Other plating (MOQ Required)

LEAD STYLE A B
-01, -03 (1.91) .075 (0.41) .016
-01, -L1, -L3 (3.05) .120 (0.51) .020
-02, -L2 = Surface Mount
-02, -L3 = Low Insertion Force Through-hole
-02, -T1 = Through-hole Tiger Eye™ LITE
-02, -T2 = Surface Mount Tiger Eye™ LITE
-02, -P OPTION

F-224

Note:
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?SFMC

samtec.com/127mm-TigerEye

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
High-reliability, multi-finger BeCu contact
Micro pitch and slim body for space savings
6 mm, 7 mm and 10 mm stack heights
Locking clip, alignment pins and weld tab ruggedizing features
Rugged latching system for increased withdrawal force
Vertical and right-angle mating headers
Discrete wire assembly available with 32 AWG Teflon™ Fluoropolymer (See page 241).
Contact asp@samtec.com for custom solutions.
Extended Life Product™ testing available

*Rteflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

**KEY SPECIFICATIONS (SEM/TEM)**

<table>
<thead>
<tr>
<th>STACK HEIGHTS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>MAX. CYCLES</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 10 mm</td>
<td>Black LCP</td>
<td>BeCu (SEM)</td>
<td>Au or Sn over 50 μ&quot; (1.27 μm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>2.9 A per pin (2 pins powered)</td>
<td>100 with 10 μ&quot; (0.25 μm) Au</td>
<td>235 VAC/330 VDC</td>
<td>Yes</td>
</tr>
</tbody>
</table>

samtec.com/080mm-TigerEye

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### SERIES
- **SEM**
  - Socket
- **SEMS**
  - Slim Socket
- **TEM**
  - Header
- **TEMS**
  - Slim Header

### NO. PINS PER ROW
- **05, 10, 15, 20, 25**
  - (SEM, SEMS, TEM, TEMS only)
- **30, 35, 40, 45, 50**
  - (SEM/TEM only)
  - (Standard sizes)

### STACK HEIGHT
- **-03.0**
  - 6 mm
  - Stack Height
  - (SEM/SEMS Series)
- **-04.0**
  - 7 mm
  - Stack Height
  - (TEM/TEMS only)
- **-07.0**
  - 10 mm
  - Stack Height
  - (TEM/TEMS only)

### PLATING OPTION
- **-FG**
  - Gold Flash
- **-G**
  - 10 µ" (0.25 µm)
  - Gold on contact, Gold Flash on tail
- **-H**
  - 30 µ" (0.76 µm)
  - Gold on contact, Gold Flash on tail

### OPTIONS
- **-A**
  - Alignment Pin
  - (Not available with –LC or –WT)
  - Leave blank for SEMS/TEMS
- **-LC**
  - Locking Clip
  - (Not available with –A or –WT)
  - (Manual placement required)
- **-WT**
  - Weld Tab
  - (Not available with –A or –LC)
- **-K**
  - (3.50 mm) .138"
  - DIA Polyimide film
  - Pick & Place Pad
  - (Required for SEMS)
- **-TR**
  - Tape & Reel
- **-FR**
  - Full Reel
  - (must order max. quantity per reel; contact Samtec for quantity breaks)

### OTHER OPTIONS
- **-A**
  - Alignment Pin
  - (Not available with –LC or –WT)
- **-LC**
  - Locking Clip
  - (Not available with –A or –WT)
  - (Manual placement required)
- **-WT**
  - Weld Tab
  - (Not available with –A or –LC)
  - Leave blank for SEMS/TEMS

### BOARD MATES
- **SEM**
  - Board Mates:
  - TEM
- **SEMS**
  - Board Mates:
  - TEM
- **TEMS**
  - Board Mates:
  - SEM, SEMS

### MATED HEIGHTS

<table>
<thead>
<tr>
<th>STACK HEIGHT</th>
<th>A</th>
<th>MATED HEIGHT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>-03.0</td>
<td>(5.610) .2209</td>
<td>6 mm</td>
</tr>
<tr>
<td>-04.0</td>
<td>(6.610) .2602</td>
<td>7 mm</td>
</tr>
<tr>
<td>-07.0</td>
<td>(9.610) .3783</td>
<td>10 mm</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

Note:
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?SEM & samtec.com?SEMS

View complete specifications at: samtec.com?TEM & samtec.com?TEMS

samtec.com/080mm-TigerEye

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
RUGGED TIGER EYE™ SYSTEMS
(2.00 mm) .0787" PITCH

FEATURES & BENEFITS

• Rugged Tiger Eye™ contact system for high reliability
• Wide range of stack heights (SMM/TMM Series)
• Right-angle mating headers available
• Optional metal latching, screw downs, weld tabs and locking clips
• Surface mount or through-hole
• Discrete wire assemblies available in 24-30 AWG PVC or *Teflon™ Fluoropolymer (See page 240).
• Severe Environment Testing qualified (S2M/T2M); aligns with MIL-DTL-55302. Visit samtec.com/set

Contact asp@samtec.com for custom solutions

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

KEY SPECIFICATIONS (S2M/T2M)

<table>
<thead>
<tr>
<th>STACK HEIGHTS</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>MAX. CYCLES</th>
<th>VOLTAGE RATING</th>
<th>LEAD-FREE SOLDERABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 &amp; 7 mm</td>
<td>Black LCP</td>
<td>BeCu (S2M)</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-55 °C to +125 °C</td>
<td>3.8 A (T2M)</td>
<td>100 with 10 µ&quot; (0.25 µm) Au</td>
<td>350 VAC</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phosphor Bronze (T2M)</td>
<td>Ni or Sn over 50 µ&quot; (1.27 µm) Ti-Ni</td>
<td></td>
<td>2.6 A (S2M) (2 pins powered)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(2.00 mm) .0787" PITCH • HIGH-RELIABILITY CABLE INTERCONNECTS

### S2M

**Socket**
- **Number of Positions:** 05, 07, 10, 15, 20, 25, 30 (Per Row)
- **Lead Style:**
  - **-01:** Through-hole
  - **-02:** Surface Mount
- **Plating Options**:
  - **-F:** Gold flash on contact, Matte Tin on tail
  - **-L:** 10 μ" (0.25 μm) Gold on contact, Matte Tin on tail
- **Options**:
  - **-K:** (5.50 mm) .217" DIA Polyimide film Pick & Place Pad
  - **-LC:** Locking Clip
    - Manual placement required
- **Packaging**:
  - Leave blank for tube packaging
  - **-TR:** Tape & Reel
  - **-FR:** Full Reel Tape & Reel
    - (must order max. quantity per reel; contact Samtec for quantity breaks)

### T2M

**Header**
- **Number of Positions:** 05, 07, 10, 15, 20, 25, 30 (Per Row)
- **Plating Options**:
  - **-L:** 10 μ" (0.25 μm) Gold on contact, Matte Tin on tail
  - **-TH:** Through-hole
  - **-RA:** Right-angle
  - **-SM:** Surface Mount
- **Tail Options**:
  - **-WT:** Weld Tab
  - **-RA:** Right-angle
  - **-SM:** Surface Mount
- **Other Options**:
  - **-WT:** Weld Tab
  - **-DS:** Screw Down
  - **-K:** (7.50 mm) .295" DIA Polyimide film Pick & Place Pad
- **Packaging**:
  - Leave blank for tube packaging
  - **-TR:** Tape & Reel
  - **-FR:** Full Reel Tape & Reel
    - (must order max. quantity per reel; contact Samtec for quantity breaks)

**Notes:**
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some lengths, styles and options are non-standard, non-returnable.

---

View complete specifications at: [samtec.com/S2M](https://samtec.com/S2M)

View complete specifications at: [samtec.com/T2M](https://samtec.com/T2M)

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
(2.00 mm) .0787" PITCH • TIGER EYE™ SOCKET

SMM - 1 NO. PINS PER ROW - 02 - PLATING OPTION - ROW OPTION - OTHER OPTIONS

02 thru 40

- F = Gold flash on contact, Matte Tin on tail
- L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- S = 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail

- S = Single Row
- D = Double Row

- “XX” = Polarized Position
- K = (5.50 mm) .217" DIA Polymide Film Pick & Place Pad (2 positions minimum, –02 thru –05 requires –TR)
- P = Plastic Pick & Place Pad (–02 thru –05 requires –TR)
- TR = Tape & Reel Packaging (27 positions maximum)
- FR = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (27 positions maximum)

SMM
Board Mates: TMM, TMMP, MTMM, MMT, LTMM, TW, PTT, ZLTMM

Cable Mates: TCMD

SPECIFICATIONS

Insulator Material:
Black Liquid Crystal Polymer

Contact Material:
BeCu

Plating:
Sn or Au over 50 µ" (1.27 µm) Ni

Current Rating (TMM/SMM):
3.2 A per pin (2 pins powered)

Voltage Rating:
350 VAC

Operating Temp Range:
-55 °C to +125 °C

Insertion Depth:
(3.05 mm) .120" to (3.25 mm) .128"

Max Cycles:
100 with 10 µ" (0.25 µm) Au

PROCESSING

Lead–Free Solderable:
Yes

SMT Lead Coplanarity:
(0.10 mm) .004" max

ALSO AVAILABLE

MOQ Required

Locking Clip
(Manual placement required)

Other platings

Note:
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?SMM

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
DISCRETE WIRE SYSTEMS

MICRO PITCH • HIGH-CYCLE CONTACTS • ISOLATED POWER • COMPONENTS & TOOLING

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MICRO MATE™

RUGGED MICRO CABLE SYSTEMS
(1.00 mm) .0394" PITCH

FEATURES & BENEFITS

- Cable-to-cable, panel-to-board and cable-to-board applications
- Extremely small form factors
- 28 and 30 AWG wire options in PVC or Teflon™ Fluoropolymer
- Rugged positive latching for increased retention
- Socket or terminal, single or double row assemblies
- Vertical and right-angle mating headers

Dual leaf contact system for a reliable connection
Components and tooling available: samtec.com/tooling
Custom solutions available contact: asp@samtec.com

KEY SPECIFICATIONS (S1SX(T)/T1M, T1SX(T) & T1PX(T))

<table>
<thead>
<tr>
<th>PITCH</th>
<th>INSULATOR MATERIAL</th>
<th>CONTACT MATERIAL</th>
<th>PLATING</th>
<th>OPERATING TEMP RANGE</th>
<th>CURRENT RATING</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 mm</td>
<td>Black LCP (S1SS(T) without latch) Natural LCP (T1M) Natural Nylon (S1SS(T) with Latch, S1SD(T), T1XD(T)) Nylon, Light Green (T1XS(T))</td>
<td>Phosphor Bronze</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
<td>-10 °C to +85 °C (PVC) -40 °C to +125 °C (Teflon ™ Fluoropolymer)</td>
<td>3.3 A per pin (1 pin powered) (Max.)</td>
<td>250 VAC/353 VDC</td>
</tr>
</tbody>
</table>

Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.
**SERIES** - **NO. OF POSITIONS** - **PLATING OPTION** - **ROW OPTION** - **LATCH** - **OPTIONS** - **“X”R**

T1M
-02, -03, -05, -07, -10, -15, -20

- **F** = 3 µ" (0.07 µm) Gold on contact, Matte Tin on tail
- **SH** = Single Row Horizontal
- **SV** = Single Row Vertical
- **-L** = Positive Latch
- **K** = (4.00 mm) .157" DIA Polyimide Film Pick & Place Pad (-SH only)
- **P** = Pick & Place Pad (-SV only)
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

**T1M-SH/SV**
Cable Mates: S1SS(T), S1SD(T)

**SPECIFICATIONS**

- Insulator Material: Natural LCP
- Terminal Material: Phosphor Bronze
- Plating: Sn or Au over 50 µ" (1.27 µm) Ni
- Operating Temp Range: -55 °C to +125 °C (Component only)
- Voltage Rating: 250 VAC/353 VDC

View complete specifications at: samtec.com?T1M

**T1M-DH/DV**
Cable Mates: S1SS(T), S1SD(T)

**SPECIFICATIONS**

- Insulator Material: Natural LCP
- Terminal Material: Phosphor Bronze
- Plating: Sn or Au over 50 µ" (1.27 µm) Ni
- Operating Temp Range: -55 °C to +125 °C (Component only)
- Voltage Rating: 250 VAC/353 VDC

View complete specifications at: samtec.com?T1M

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

**samtec.com/MicroMate**

F-224

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SERIES** - **PINS PER ROW** - **WIRE GAUGE** - **PLATING OPTION** - **ASSEMBLED LENGTH** - **OPTION**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PINS PER ROW</th>
<th>WIRE GAUGE</th>
<th>PLATING OPTION</th>
<th>ASSEMBLED LENGTH</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1SS</td>
<td>-02, -03, -05, -07, -10, -15, -20</td>
<td>-28 = 28 AWG</td>
<td>-GF = 3 μ&quot; (0.07 μm) Gold on contact and tail</td>
<td>-“XX.XX” = Assembled Length in Inches (45.72 mm) 01.80” min.</td>
<td>(Required Callout)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-28C</td>
<td></td>
<td></td>
<td>-L     = Single Ended With Latch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-30 = 30 AWG</td>
<td></td>
<td></td>
<td>-L1    = Double Ended Latch down, straight (Pin 1 to Pin N)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-30C</td>
<td></td>
<td></td>
<td>-L3    = Double Ended Latch up, straight (Pin 1 to Pin N)</td>
</tr>
</tbody>
</table>

**S1SS(T)**

**Board Mates:** T1M

**Cable Mates:** T1S(T), T1PS(T)

**SPECIFICATIONS**

- **Insulator Material:** Nylon, White (with latch), Black, LCP (without latch)
- **Contact Material:** Phosphor Bronze
- **Plating:** Au over 50 μ" (1.27 μm) Ni
- **Operating Temp Range (S1SS(T)/T1M):**
  - -10 °C to +85 °C (PVC)
  - -40 °C to +125 °C (*Teflon™ Fluoropolymer)
- **Current Rating (28 AWG):** 2.7 A per pin (1 pin powered)
- **Voltage Rating:** 250 VAC/353 VDC
- **Wire:** 28 or 30 AWG

**TOOLING**

- **Hand Tool:** CAT-HT-309-2830-12
- **Clamp for mounting hand tool:** CAT-HT-MNT-01

**View complete specifications at:** samtec.com/S1SS & samtec.com/S1SST

---

**S1SS CABLE COLOR CODING**

<table>
<thead>
<tr>
<th>PIN</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
</tr>
<tr>
<td>4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
</tr>
<tr>
<td>6</td>
<td>BLUE</td>
</tr>
<tr>
<td>7</td>
<td>VIOLET</td>
</tr>
<tr>
<td>8</td>
<td>GRAY</td>
</tr>
<tr>
<td>9</td>
<td>WHITE</td>
</tr>
<tr>
<td>10</td>
<td>BLACK</td>
</tr>
<tr>
<td>ETC</td>
<td>REPEAT</td>
</tr>
</tbody>
</table>

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

**Note:** Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.

---

**F-224**

**View complete specifications at:** samtec.com/MSM1, samtec.com/TMS09R & samtec.com/TMS09M
**SERIES**

- **S1SD** = Double Row PVC Cable
- **S1SDT** = Double Row Blue “Teflon” Fluoropolymer Cable

**Board Mates:**
- T1M

**Cable Mates:**
- T1SD(T), T1PD(T)

**SPECIFICATIONS**

- **PINS PER ROW**
  - -02, -03, -04, -05, -10, -15, -20 (Standard sizes)
  - -28 = 28 AWG
  - -30 = 30 AWG

- **WIRE GAUGE**
  - -GF = 3 µ” (0.07 µm) Gold on contact and tail

- **PLATING OPTION**
  - “XX.XX” = Assembled Length in Inches (45.72 mm) 01.90” min.

- **ASSEMBLED LENGTH**
  - No. of positions x (1.00) .03937 + (7.30) .287

- **WIRING OPTION**
  - L1 = Pin 1 to Pin 1
  - L2 = Pin 1 to Pin 2
  - L3 = Pin 1 to Pin N
  - L4 = Pin 1 to Pin N-1

- **TOOLING**
  - Hand Tool: CAT-HT-309-2830-12
  - Clamp for mounting hand tool: CAT-HT-MNT-01
  - Mini Applicator: CAT-MC-309-2830-XX-01

**INSULATOR MATERIAL:**
- White Nylon

**CONTACT MATERIAL:**
- Phosphor Bronze

**PLATING:**
- Au over 50 µ” (1.27 µm) Ni

**Operating Temp Range (S1SD(T)/T1M):**
- -10 °C to +85 °C (PVC)
- -40 °C to +125 °C (*Teflon™ Fluoropolymer)

**Current Rating (28 AWG):**
- 2.3 A per pin (2 pins powered)

**Voltage Rating:**
- 250 VAC/353 VDC

**Wire:**
- 28 or 30 AWG

**VIEW COMPLETE SPECIFICATIONS AT:**
- samtec.com?S1SD & samtec.com?S1SDT

Note: Some lengths, styles and options are non-standard, non-returnable.
SERIES - NO. OF POSITIONS - WIRE GAUGE - PLATING OPTION - ASSEMBLED LENGTH - PANEL OPTION - PINOUT

**T1SS** = Single Row Non-Panel Mount PVC Cable
- 02 postions not available with T1PS or T1PST
- 02 thru –10 (Per Row)
- 28 = 28 AWG
- 28C = 28 AWG Color Coded Cable (T1SS & T1PS only)
- 30 = 30 AWG
- 30C = 30 AWG Color Coded Cable (T1SS & T1PS only)

**T1PS** = Single Row Panel Mount PVC Cable

**T1SST** = Single Row Non-Panel Mount Blue *Teflon™ Fluoropolymer Cable

**T1PST** = Double Row Panel Mount Blue *Teflon™ Fluoropolymer Cable

**T1SS(T)**, **T1PS(T)**
- Cable Mates: S1SS, S1SST
- 02 thru –10 (Per Row)
- 03 thru –10 (Per Row)

**TC37R** = Contact, Full Reel (25,000 Parts per Reel)
- A = Fits .033" (.84 mm), .062" (1.57 mm) and .090" (2.29 mm) Thick Panels

**TC37M** = Contact, Mini Reel (1,000 - 5,000 Parts per Reel)
- A = Fits .033" (.84 mm), .062" (1.57 mm) and .090" (2.29 mm) Thick Panels

**TC37C, TC37M CABLE COLOR CODING**

- PIN | COLOR
- 1  | BROWN
- 2  | RED
- 3  | ORANGE
- 4  | YELLOW
- 5  | GREEN
- 6  | BLUE
- 7  | VIOLET
- 8  | GRAY
- 9  | WHITE
- 10 | BLACK

*Note: Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.

**SPECIFICATIONS**
- Insulator Material: Nylon, Light Green
- Contact Material: Phosphor Bronze
- Plating: Au over 50 µ" (1.27 µm) Ni
- Operating Temp Range: -10 °C to +80 °C (PVC)
- -40 °C to +125 °C (*Teflon™ Fluoropolymer)
- Wire: 28 or 30 AWG

**SERIES** - NO. OF POSITIONS - PANEL THICKNESS - SERIES - 01 - PLATING

**IST1** = Single Row Body
- 02 thru –10 (IST1 Body)
- 30 = 30 AWG
- A = Fits .033", .062" and .090" Thick Panels

**ISP1** = Single Row Panel Mount Body
- 03 thru –10 (ISP1 Body)
- 30 = 30 AWG
- A = Fits .033", .062" and .090" Thick Panels

**TC37R** = Contact, Full Reel (25,000 Parts per Reel)
- A = Fits .033", .062" and .090" Thick Panels

**TC37M** = Contact, Mini Reel (1,000 - 5,000 Parts per Reel)
- A = Fits .033", .062" and .090" Thick Panels

**TOOLING**
- Hand Tool: CAT-HT-1137-2830-12
- Mini Applicator: CAT-MC-309-2830-XX-01

View complete specifications at: samtec.com/T1SS, samtec.com/T1SST, samtec.com/T1PS & samtec.com/T1PST

**Note:** Some lengths, styles and options are non-standard, non-returnable.

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View complete specifications at: samtec.com/T1SS, samtec.com/T1SST, samtec.com/T1PS & samtec.com/T1PST

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**SERIES**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. OF POSITIONS</th>
<th>WIRE GAUGE</th>
<th>PLATING OPTION</th>
<th>ASSEMBLED LENGTH</th>
<th>PANEL OPTION</th>
<th>PINOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1SD</td>
<td>–02 thru –10</td>
<td>–28</td>
<td>–GF</td>
<td>“XX, X”</td>
<td>–A</td>
<td>–D1</td>
</tr>
<tr>
<td></td>
<td>(Per Row)</td>
<td>28 AWG</td>
<td>3 µ” (0.07 µm) Gold on contact and tail</td>
<td>Assembled Length in Inches (45.7 mm) 01.8” min.</td>
<td>Fits .033” (0.84 mm), .062” (1.57 mm), and .090” (2.29 mm) Thick Panels</td>
<td>Double Ended down (Not available with T1PD or T1PDT)</td>
</tr>
<tr>
<td>T1PD</td>
<td></td>
<td>–28C</td>
<td>30 AWG</td>
<td>–30</td>
<td>–A</td>
<td>–D3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28 AWG</td>
<td>Gold on contact and tail</td>
<td>30 AWG</td>
<td>Fits .033” (0.84 mm), .062” (1.57 mm), and .090” (2.29 mm) Thick Panels</td>
<td>Double Ended up (Not available with T1PD or T1PDT)</td>
</tr>
<tr>
<td>T1SDT</td>
<td></td>
<td>–30C</td>
<td>30 AWG</td>
<td>–30C</td>
<td>–A</td>
<td>–T1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 AWG</td>
<td>Gold on contact and tail</td>
<td>30 AWG</td>
<td>Fits .033” (0.84 mm), .062” (1.57 mm), and .090” (2.29 mm) Thick Panels</td>
<td>Transfer to socket down</td>
</tr>
<tr>
<td>T1PDT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–A</td>
<td>–T3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fits .033” (0.84 mm), .062” (1.57 mm), and .090” (2.29 mm) Thick Panels</td>
<td>Transfer to socket up</td>
</tr>
</tbody>
</table>

**T1SD(T), T1PD(T) Cable Mates:**
- T1SD
- T1SDT
- T1PD
- T1PDT

**SPECIFICATIONS**

- **Insulator Material:** Nylon, White
- **Contact Material:** Phosphor Bronze
- **Plating:** Au over 50 µ” (1.27 µm) Ni
- **Operating Temp Range:**
  - PVC: -10 °C to +80 °C
  - *Teflon™ Fluoropolymer*: -40 °C to +125 °C
- **Wire:** 28 or 30 AWG

**TOOLING**

- **Hand Tool:** CAT-HT-1137-2830-12
- **Mini Applicator:** CAT-MC-309-2830-XX-01

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

**View complete specifications at:** samtec.com?T1SD, samtec.com?T1SDT, samtec.com?T1PD & samtec.com?T1PDT
SERIES

- SFSS = Single Row PVC Cable
- SFSST = Single Row Blue Teflon Fluoropolymer Cable

SERIES - POSITIONS PER ROW

-03, -04, -05, -07, -10, -15, -20, -25, -40, -50 (Standard sizes)

WIRE GAUGE

-28 C Color Coded Cable (SFSS only)

PLATING OPTION

- G = 10 µ" (0.25 µm) Gold on contact, Gold Flash on balance

ASSEMBLED LENGTH

- "XX.XX" = Assembled Length in Inches (76.20 mm) 03.00" min. for -S end option (82.60 mm) 03.25" min. for -D end option

END OPTION

- S = Single Ended
- D = Double Ended

END 2 OPTION

- SR = Single Ended Retention Latch (TFM-WT option required for mating)
- DR = Double Ended Retention Latch (TFM-WT option required for mating)

Requires -D or -DR (End 1 Notch Up)

- NUS = Notch up, straight (Pin 1 to Pin N)
- NDS = Notch down, straight (Pin 1 to Pin 1)

No. of Positions x (1.27) .050 + (0.53) .021

-28C CABLE COLOR CODING

<table>
<thead>
<tr>
<th>PIN</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
</tr>
<tr>
<td>4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
</tr>
<tr>
<td>6</td>
<td>VIOLET</td>
</tr>
<tr>
<td>7</td>
<td>GRAY</td>
</tr>
<tr>
<td>8</td>
<td>WHITE</td>
</tr>
<tr>
<td>9</td>
<td>BLACK</td>
</tr>
<tr>
<td>10</td>
<td>BLUE</td>
</tr>
</tbody>
</table>

View complete specifications at: samtec.com?ISDF, samtec.com?CC03R & samtec.com?CC03M

Notes:

- Teflon Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.
- For wiring option information refer to drawings on web.

TOOLING

Hand Tool: CAT-HT-203-2830-12
Mini Applicator: CAT-MC-203-2830-XX-01
Clamp for mounting hand tool: CAT-HT-MNT-01
Extraction Tool: CAT-EX-169-01

View complete specifications at: samtec.com/ISDF, samtec.com/CC03R & samtec.com/CC03M

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**SERIES**

- **SFSD** = Double Row PVC Cable
- **SFSDT** = Double Row Blue "Teflon™" Fluoropolymer Cable

**SPECIFICATIONS**

**Insulator Material:**
Black LCP

**Contact Material:**
BeCu

**Plating:**
Au over 50 µ" (1.27 µm) Ni

**Current Rating:**
2.9 A per pin
(2 pins powered)

**Operating Temp Range:**
-10 °C to +80 °C (PVC)
-40 °C to +125 °C (*Teflon™ Fluoropolymer)

**Voltage Rating:**
280 VAC (PVC)
313 VAC (*Teflon™ Fluoropolymer)

**Wire:**
28 or 30 AWG

**-28C Cable Color Coding**

<table>
<thead>
<tr>
<th>PIN</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
</tr>
<tr>
<td>4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
</tr>
<tr>
<td>6</td>
<td>VIOLET</td>
</tr>
<tr>
<td>7</td>
<td>GRAY</td>
</tr>
<tr>
<td>8</td>
<td>WHITE</td>
</tr>
<tr>
<td>9</td>
<td>BLACK</td>
</tr>
<tr>
<td>10</td>
<td>BLUE</td>
</tr>
</tbody>
</table>

**End 1 Notch** (Always Up)

**-SR**

**-D-NUS**

**SFSO OR SFSDT**

**Series Options**

- **ISDF** – Positions per Row

**Row Option**

- **D** = Double Row

**Option**

- **M** = Metal Retention Latch
- **S** = Screw Down

**Series Options**

- **CC03R** = Contact, Full Reel (35,000 Parts per Reel)
- **CC03M** = Contact, Mini Reel (1,000 - 5,000 Parts per Reel)

**Wire Gauge**

- **2830** = 28 to 30 AWG

**Plating**

- **GF** = Gold flash contact
- **G** = 10 µ" (0.25 µm) Gold on contact

**TOOLING**

- **Hand Tool:** CAT-HT-203-2830-12
- **Mini Applicator:** CAT-MC-203-2830-XX-01
- **Clamp for mounting hand tool:** CAT-HT-MNT-01
- **Extraction Tool:** CAT-EX-169-01

**Notes:**
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?ISDF, samtec.com?CC03R & samtec.com?CC03M

---

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

For wiring option information refer to drawings on web.
**SERIES**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>PINS PER ROW</th>
<th>WIRE GAUGE</th>
<th>PLATING OPTION</th>
<th>ASSEMBLED LENGTH</th>
<th>END OPTIONS</th>
<th>END 2 OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2SD</td>
<td>-05, -07, -10, -15, -20, -25, -30 (Standard sizes)</td>
<td>-24</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact</td>
<td>&quot;XX.XX&quot; = Wire Length in Inches (69.85 mm) 02.75&quot; min.</td>
<td>-S = Single End</td>
<td>(Only available with D, DR &amp; DS)</td>
</tr>
<tr>
<td>S2SDT</td>
<td>= Double Row Blue &quot;Teflon™ Fluoropolymer Cable (24, 28, 30 AWG only)</td>
<td>-24C = Color Coded Cable (S2SD only)</td>
<td>-D = Double End Specify &quot;S&quot; for single ended and &quot;D&quot; for double ended.</td>
<td>-SR = Retention Latch (-SR mates with T2M-WT)</td>
<td>-S = Screw Down (10 positions minimum) (mates with T2M-DS)</td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

- **Insulator Material:** Black LCP
- **Contact Material:** BeCu
- **Plating:** Au over 50 µ" (1.27 µm) Ni
- **Wire:** 24, 26, 28 or 30 AWG
- **Operating Temp Range:** -10 °C to +105 °C (PVC)
  -40 °C to +125 °C (*Teflon™ Fluoropolymer)
- **Current Rating (S2SD-24/T2M):** 3.8 A per pin (2 pins powered)
- **Voltage Rating:** 250 VAC

**Notes:**
- Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.
- For wiring option information refer to drawings on web.

**TOOLING**

- **Hand Tool:** CAT-HT-281-2430-13
- **Mini Applicator:** CAT-EX-169-01
- **Extraction Tool:** CAT-EX-169-01

View complete specifications at: samtec.com?S2SD & samtec.com?S2SDT

---

**ISD2**

<table>
<thead>
<tr>
<th>POSITIONS PER ROW</th>
<th>ROW OPTION</th>
<th>LATCH OPTION</th>
<th>SERIES</th>
<th>WIRE GAUGE</th>
<th>01</th>
<th>PLATING OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-05, -07, -10, -15, -20, -25, -30 (Standard sizes)</td>
<td>-D = Double Row</td>
<td>-M = Metal Retention Latch</td>
<td>CC81L = Contact, Loose</td>
<td>-2426 = 24 to 26 AWG</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-S = Screw Down</td>
<td>CC81R = Contact, Full Reel (17,000 Parts per Reel)</td>
<td>-2830 = 28 to 30 AWG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Some lengths, styles and options are non-standard, non-returnable.


---

**F-224**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SESDT**

- Double Row
- Blue *Teflon*™ Fluoropolymer Cable
- (32 AWG)

**positions per row**
- 05, 10, 15, 20 (Standard sizes)

**plating option**
- **G**
  - 10 µ" (0.25 µ"
  - Gold on contact area,
  - 3 µ" (0.08 µ"
  - Gold on tail

**assembled length**
- “XX.X”
  - Assembled Length in Inches (76.2 mm) 03.0” min.

**options**
- Double Ended Assemblies
  - **L1**
    - Pin 1 to Pin 1
  - **L2**
    - Pin 1 to Pin 2
  - **L3**
    - Pin 1 to Pin N-1
  - **L4**
    - Pin 1 to Pin N

**single ended assembly**
- **L**
  - Latching

**specifications**
- Insulator Material:
  - Natural Nylon
- Contact Material:
  - BeCu
- Plating:
  - Au over 50 µ" (1.27 µ"
- Wire:
  - Tinned Copper
- Wire Insulation:
  - FEP
- Operating Temp Range:
  - -55 °C to +125 °C
- Current Rating:
  - 1.9 A per pin
  - (2 pins powered)
- Voltage Rating:
  - 200 VAC/280 VDC

*Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Samtec.

**note:**
- Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.

---

**ISDE**

- **positions per row**
  - 05, 10, 15, 20 (Standard sizes)

- **D**
  - Dual Row

- **L**
  - Latch

**series**
- **CC396**
  - Contact
- **3234**
  - 32 to 34 AWG

**wire gauge**
- **G**
  - 10 µ" (0.25 µ"
  - Gold on contact area,
  - 3 µ" (0.08 µ"
  - Gold on tail

**reel options**
- **U**
  - Micro Reel (4K Contacts)
- **M**
  - Mini Reel (15K Contacts)
- **R**
  - Reel (50K Contacts)

**tooling**
- Hand Tool: CAT-HT-396-3232-12
- Mini Applicator: CAT-MC-396-3232-XX-03

**note:**
- Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/SESDT & samtec.com/ISDE & samtec.com/CC396

---

**view complete specifications at:** samtec.com?SESDT

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
(0.80 mm) .0315" Pitch • Micro Tiger Eye™ Header

TEM - 1

**NO. OF POSITIONS**

- 02 - DH1 - PLATING OPTION - D - OPTION

- TEM-DH

**Board Mates:**

SEM, SEML

**Specifications**

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating:** 2.9 A per pin (2 pins powered)
- **Voltage Rating:** 235 VAC/330 VDC
- **Operating Temp Range:** -35 °C to +125 °C

**Processing**

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max.

View complete specifications at: samtec.com?TEM

TEM-L1

**Cable Mates:**

SESDT

**Specifications**

- **Insulator Material:** Natural Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au over 50 µ" (1.27 µm) Ni
- **Current Rating:** 1.9 A per pin (2 pins powered)
- **Voltage Rating:** 235 VAC/330 VDC
- **Operating Temp Range:** -35 °C to +125 °C

**Processing**

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max.

View complete specifications at: samtec.com?TEM

**Note:**

Some lengths, styles and options are non-standard, non-returnable

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### Series

**PMSD**
- Double Row PVC Cable
- PINs per Row: -02, -03, -04, -05, -08, -10, -15 (Standard sizes)
- Wire Gauge: -16
- K: -K
- Assembled Length: "XX.XX" = Wire length in inches (88.90 mm) 03.50" min.
- End Option: -S
- Latch Option: -LUS

**PMSDT**
- Double Row Blue "Teflon™ Fluoropolymer Cable (24 AWG only)

**PMSS**
- Single Row PVC Cable
- PINs per Row: -22
- Wire Gauge: -24

**PMSST**
- Single Row Blue "Teflon™ Fluoropolymer Cable (24 AWG)

### Specifications

- **Insulator Material:** Valox 457
- **Contact Material:** Phosphor Bronze
- **Plating:** Sn over 50 μ" (1.27 μm) Ni
- **Operating Temp Range:**
  - PVC: -10 °C to +105 °C
  - Teflon™ Fluoropolymer: -40 °C to +105 °C

### Wire Gauges and Ratings

**PMSD/IPBT**

<table>
<thead>
<tr>
<th>WIRE GAUGE</th>
<th>CURRENT RATING (PER PIN)</th>
<th>VOLTAGE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 AWG</td>
<td>*10.3 A</td>
<td>424 VAC/600 VDC (PVC)</td>
</tr>
<tr>
<td>18 AWG</td>
<td>*8.8 A</td>
<td>300 VAC/424 VDC (PVC)</td>
</tr>
<tr>
<td>22 AWG</td>
<td>*5.7 A</td>
<td>300 VAC/424 VDC (PVC)</td>
</tr>
<tr>
<td>24 AWG</td>
<td>*5.2 A</td>
<td>300 VAC/424 VDC (PVC)</td>
</tr>
</tbody>
</table>

*2 PINS POWERED

**NOTE:** Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.

### Notes
- Some lengths, styles and options are non-standard, non-returnable.
- Contact Samtec for solderable cable applications.
- For wiring option information refer to drawing on web.

### miniMATE®

**Series** - **Pins Per Row** - **Wire Gauge** - **Plating Option** - **Assembly Length** - **End Option** - **K** - **Latch Option**

<table>
<thead>
<tr>
<th>Series</th>
<th>Pins Per Row</th>
<th>Wire Gauge</th>
<th>Plating Option</th>
<th>Assembly Length</th>
<th>End Option</th>
<th>K</th>
<th>Latch Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMSD</td>
<td>–02, –03, 04, 05, 06, 08, 10, 12, 15, 16, 20, 25</td>
<td>–20</td>
<td>–L (0.25 µm) Gold on contact, Tin on tail</td>
<td>–XX.XX“ Assembly Length in Inches (82.55 mm) 03.25” min.</td>
<td>–S Single Ended</td>
<td>–K Keyed Polarization</td>
<td></td>
</tr>
<tr>
<td>MMSDT</td>
<td>–22, –24</td>
<td>–20C</td>
<td>–20C Color Coded Cable (MMSD &amp; MMSS only)</td>
<td>–“XX.XX” Assembly Length in Inches (82.55 mm) 03.25” min.</td>
<td>–D Double Ended (Latch Required)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMSS</td>
<td>–26, –28</td>
<td>–24C</td>
<td>–24C Color Coded Cable (MMSD &amp; MMSS only)</td>
<td>–“XX.XX” Assembly Length in Inches (82.55 mm) 03.25” min.</td>
<td>–S Single Ended</td>
<td>–K Keyed Polarization</td>
<td></td>
</tr>
<tr>
<td>MMSSS</td>
<td>–30</td>
<td>–28C</td>
<td>–28C Color Coded Cable (MMSD &amp; MMSS only)</td>
<td>–“XX.XX” Assembly Length in Inches (82.55 mm) 03.25” min.</td>
<td>–D Double Ended (Latch Required)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specifications**

- Insulator Material: Nylon 66
- Contact Material: Phosphor Bronze
- Plating: Au or Sn over 50 µ” (1.27 µm) Ni
- Voltage Rating: 300 VAC

*“Teflon™” is a trademark of The Chemours Company FC, LLC used under license by Samtec.*

Teflon™ Fluoropolymer cable is intended for crimp only. Contact Samtec for solderable cable applications.

**Board Mates:**
- IPL1 (Does not mate with IPT1)
- MMTD(T), MMTS(T)

**Cable Mates:**
- MMTD(T), MMTS(T)

**Tooling**

- Mini Applicator: CAT-MC-179-2630 XX-01 (26-30 AWG)
- Extraction Tool: CAT-EX-179-01


---

**IPD1** - **Positions Per Row** - **Row Option** - **K** - **Latch Option** - **Series** - **Wire Gauge** - **01** - **Plating Option**

<table>
<thead>
<tr>
<th>IPD1</th>
<th>Positions Per Row</th>
<th>Row Option</th>
<th>K</th>
<th>Latch Option</th>
<th>Series</th>
<th>Wire Gauge</th>
<th>01</th>
<th>Plating Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>–02, 03, –04, –05, –06, –08, –10, –12, –15, –16, –20, –25</td>
<td>–S Single Row</td>
<td>–K Keyed Polarization</td>
<td>–M Metal Latch (Metal for more rugged environments) (~02, ~05 &amp; ~10 positions only) (Leave blank for plastic latch)</td>
<td>CC79L Contact, Loose</td>
<td>–2630 26 to 30 AWG</td>
<td>–L 10 µ” (0.25 µm) Gold on contact, Tin on tail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–02, 03, –04, –05, –06, –08, –10, –12, –15, –16, –20, –25</td>
<td>–D Double Row</td>
<td>–M Keyed Polarization</td>
<td>–CC79R Contact, Full Reel (12,000 Parts per Reel)</td>
<td>CC79L Contact, Loose</td>
<td>–2024 20 to 24 AWG</td>
<td>–L 10 µ” (0.25 µm) Gold on contact, Tin on tail</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Not:**

Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com/IPD1, samtec.com/CC79L & samtec.com/CC79R

---

F-224 (Rev 10NOV23)
**miniMATE®**

(2.54 mm) • .100” PITCH • DISCRETE WIRE TERMINAL

**IPL1** - 1

<table>
<thead>
<tr>
<th>PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>TAIL OPTION</th>
<th>K</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>02, 03, 04, 05, 06, 08, 10, 12, 15, 16, 20, 25</td>
<td>–01 = Through-hole</td>
<td>–L = 10 µ (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td>–S = Single Row</td>
<td>–RA = Right-angle (–01 lead style only)</td>
<td>–K = Keyed Polarization</td>
<td>–TR = Tape &amp; Reel (–02 lead style only) Comes with Polyimide Pick &amp; Place Pad</td>
</tr>
<tr>
<td>(Standard sizes)</td>
<td>–02 = Surface Mount</td>
<td>–SH &amp; –RE1 = No. of positions x (2.54) .100 + (4.06) .160</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IPL1**

Cable Mates:
MMSD, MMSS, MMSDT, MMSST

**SPECIFICATIONS**

- **Insulator Material:** Natural LCP
- **Terminal Material:** Phosphor Bronze
- **Plating:** Sn or Au over 50 µ (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 675 VAC/954 VDC

**PROCESSING**

- **Lead–Free Solderable:** Yes
- **–S & –D (–02 Lead Style)**
- **SMT Lead Coplanarity:**
  - (0.10 mm) .004” max (02-05)
  - (0.13 mm) .005” max (06-10)“
  - (0.15 mm) .006” max (11-25)“
  - *(.004” stencil solution may be available; contact IPG@samtec.com)*
- **–SH SMT Lead Coplanarity:**
  - (0.15 mm) .006” max (02-25)“
  - *(.004” stencil solution may be available; contact ipg@samtec.com)*

**ALSO AVAILABLE**

- Other sizes
- With or without plug polarization
- Guide post holes
- Other platings
- Weld tab

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: samtec.com?IPL1

samtec.com/minimate

F-224

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
MPSS

Board Mates:
MPT

SPECIFICATIONS

Insulator Material:
Nylon 6/6

Contact Material:
Copper Alloy

Plating:
Au or Sn over 50 µ" (1.27 µm) Ni

Latch:
Nylon 6/6

Operating Temp Range:
-30 °C to +105 °C

Voltage Rating:
600 VAC/848 VDC

Wire:
14 or 16 AWG

TOOLING

Hand Tool: CAT-HT-246-1416-14 (14-16 AWG)

Mini Applicator: CAT-MC-246-1416-XX-02 (14-16 AWG)

Extraction Tool: CAT-EX-MPSS-01

View complete specifications at: samtec.com/MPSS
30 SIGNAL/POWER COMBO CABLE ASSEMBLY/COMPONENTS

**SPECIFICATIONS**

- **Insulator Material:** Black LCP
- **Contact Material:**
  - **Signal:** BeCu
  - **Power:** Copper Alloy
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Current Rating:**
  - **Signal Pin (24 AWG):** 3.4 A per pin (4 adjacent pins powered)
  - **Power Pin (14 AWG):** 23.2 A per pin (1 pin powered)
- **Operating Temp Range:** -10 °C to +105 °C
- **Voltage Rating:** 250 VAC
- **Assembled Length:** (10.16) .400

**TOOLING**

- **Hand Tool:** CAT-HT-281-2430-13 (Signal: 24-30 AWG)
- **Extraction Tool:** CAT-EX-169-01 (Signal)
- **Mini Applicator:** CAT-MC-246-1416-XX-01 (Power 14-16 AWG)

**Note:** Some lengths, styles and options are non-standard, non-returnable.

View complete specifications at: [samtec.com/IMSC5](https://samtec.com/IMSC5), [samtec.com/CC81R](https://samtec.com/CC81R) & [samtec.com/CC81L](https://samtec.com/CC81L)
### PESS Board Mates:

**PET**

#### SPECIFICATIONS

- **Insulator Material:** Nylon Black
- **Contact Material:** Copper Alloy
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -30 °C to +105 °C
- **Voltage Rating:** 600 VAC, 846 VDC
- **Wire:** 10 or 12 AWG

#### PESS/PET

- **WIRE GAUGE**
- **CURRENT RATING (PER PIN)**
  - 10 AWG: 34.5 A
  - 12 AWG: 29.7 A

#### IPS6

- **POSITIONS PER ROW**
- **LATCH**
  - -02, -04, -06, -08
  - -L = Latch

#### SERIES

- **WIRE GAUGE**
- **PLATING OPTION**
  - **CC10R** = Contact, Full Reel
  - **CC10L** = Contact, Loose

#### TOOLING

- **Hand Tool:** CAT-HT-310-1012-14
- **Mini Applicator:** CAT-MC-310-1012-XX-02

FLEXIBLE STACKING

VARIETY OF PITCHES, CONTACT SYSTEMS & ORIENTATIONS • HIGHLY CUSTOMIZABLE

### ONE-PIECE INTERFACES

- 1.00 mm (.0394") Pitch (FSI) .................................................................................................................. 254
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- Floating Contact Systems (FT5, FS5) ......................................................................................................... 257
- Basic Blade & Beam Systems (BXH, BXS, BXE) ......................................................................................... 258-261

### MICRO PIN & SOCKET

- 0.80 mm (.0315") Pitch Headers & Sockets (FTE, CLE, AW) ........................................................................ 262-263
- 1.00 mm (.0394") Pitch Headers, Stackers & Sockets (FTMH, FTM, MW, CLM, MLE) ................................. 264-266
- Quad Row Headers & Sockets (SOLC, TOLC) ............................................................................................. 267
- .050" (1.27 mm) Pitch Headers, Stackers & Sockets (FTSH, FTS, FW, CLP, FLE) ........................................ 268-273
- .050" (1.27 mm) x 100" (2.54 mm) Pitch Headers, Stackers & Sockets (TMS, HTMS, TML, ZML, DWM, FTR, RSM, SLM, SMS) ................................................................. 274-278

### BOARD-TO-BOARD

- 2.00 mm (.0787") Pitch Headers & Stackers (TMM, MMT, MTMM, TMMH, LTMM, ZTMM, TMM, TSH, TW) ............................................................................... 279-286
- 2.00 mm (.0787") Pitch Press-Fit Headers & Sockets (PTT, PTF, PTHF, ESQT-368) ................................. 287-288
- 2.00 mm (.0787") Pitch Sockets (SQW, SQT, MMS, TLE, CLT) ................................................................. 289-291
- 2.00 mm (.0787") Pitch Self Mating Hermaphroditic Strips (LS2) ............................................................. 292
- .100" (2.54) Pitch Square Post Headers & Stackers (PHT, PHF, TSW, HTSW, TSM, MTSW, HMTSW, TLW, MTLW, HW, DW, EW, ZW, TSS, HTSS, ZSS) ................................. 293-303
- .100" (2.54 mm) Pitch Square Post Sockets (SSW, SSQ, SSM, ESW, ESQ, HLE, BCS, BSW, SLW, CES) ........................................................................................................ 304-311
- Shunts & Jumpers (SNT, MNT, 2SN, SNM, JL) ......................................................................................... 312
With the largest variety of board-to-board interconnects, Samtec makes it easy to find boardstackers for any application. Header and socket systems are available in a variety of pitch, density, stack height, orientation and many more standard or custom options.

**FLEXIBLE STACKING**

*INCREIBLE FLEXIBILITY*
- Post height: Adjustable in .005" (0.13 mm) increments
- Body positions: Adjustable in .005" (0.13 mm) increments
- Board stacking distance: 1.65 mm (.065") – 48.51 mm (1.910")
- Number of pins: 2-300
- Number of rows: 1-6

*CUSTOMIZABLE*
- Mix-and-match headers and sockets to find the right solution
- Quick and easy custom parts are available.
  Contact asp@samtec.com

*VARIETY OF PITCHES*
- 0.80 mm (.0315")
- 1.00 mm (.0394")
- .050" (1.27 mm)
- .050" x .050" (1.27 x 1.27 mm)
- .050" x .100" (1.27 x 2.54 mm)
- 2.00 mm (.0787")
- .100" (2.54 mm)
- .156" (3.96 mm)
- .200" (5.08 mm)

**BUILD IT YOURSELF**

Check out Solutionator® to quickly build a mated set for your specific application. Visit samtec.com/solutionator

samtec.com/flexiblestacking

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
VARIETY OF CONTACTS

**TIGER EYE CONTACT**
- High-reliability
- High mating cycles
- Multi-finger contact

**TIGER CLAW CONTACT**
- Pass-through
- Ultra-low profile
- Dual wipe contact

**TIGER BUY CONTACT**
- High-retention
- Cost-effective
- Tuning fork contact

**TIGER BEAM CONTACT**
- Best cost
- Reliable performance
- Post & beam contact

VARIETY OF ORIENATIONS/APPLICATIONS

**Standard**
- Choice of contact system
- Single, double and triple row designs
- Largest variety

**Low Profile**
- Down to 1.65 mm (.065") stack height
- Tiger Claw™ contacts
- Space saving

**Elevated**
- Up to 48.51 mm (1.910") stack height
- Design flexibility
- Clearance, air flow

**Pass-Through**
- Connect three or more boards
- Tiger Claw™ & Tiger Beam™ contact systems
- Surface mount or offset through-hole

**Right-Angle**
- Design flexibility
- Tiger Claw™ & Tiger Buy™ contacts
- Through-hole, surface mount

**Coplanar**
- 1-4 row designs
- Surface mount, through-hole or mixed technology
- Tiger Claw™ & Tiger Beam™ contacts

**Bottom Entry**
- Tiger Claw™ contacts
- Access to components when mated
- Space savings

**Self-Nesting**
- Tiger Buy™ contacts
- Press-fit or through-hole tails
- PC/104-Plus™ embedded applications
# BOARD STACKING REFERENCE

Focused/most popular series in charts. For all flexible stacking solutions, visit samtec.com/connectors

## ONE-PIECE, 0.80 mm (.0315”) & 1.00 mm (.0394”) PITCH

<table>
<thead>
<tr>
<th>SERIES</th>
<th>FSI</th>
<th>SEI</th>
<th>SIB</th>
<th>CLE</th>
<th>FTE</th>
<th>CLM</th>
<th>FTMH/FTM</th>
<th>MLE</th>
<th>MW</th>
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<tbody>
<tr>
<td>PITCH</td>
<td>1.00 mm (.0394”)</td>
<td>.100” (2.54 mm)</td>
<td>0.80 mm (.0315”)</td>
<td>1.00 mm (.0394”)</td>
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<tr>
<td>ORIENTATION</td>
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<td>V &amp; RA</td>
<td>V</td>
<td>V &amp; RA</td>
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<td>Tiger Claw™</td>
<td>Tiger Beam™</td>
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<td>One-Piece</td>
<td>FTE, AW</td>
<td>CLE</td>
<td>FTM, FTMh, MW</td>
<td>CLM, MLE</td>
<td>FTM, FTMh, MW</td>
<td>CLM, MLE</td>
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<td>254</td>
<td>See Website</td>
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## .050” (1.27 mm) PITCH HEADERS & SOCKETS

<table>
<thead>
<tr>
<th>SERIES</th>
<th>CLP</th>
<th>FLE</th>
<th>FTS</th>
<th>FTSH</th>
<th>FW</th>
<th>SOLC</th>
<th>TOLC</th>
<th>DWM/HDWM</th>
<th>FTR</th>
<th>RSM</th>
<th>SLM</th>
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<tbody>
<tr>
<td>PITCH</td>
<td>.050” x .050” (1.27 mm x 1.27 mm)</td>
<td>.050” x .100” (1.27 mm x 2.54 mm)</td>
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<td>V &amp; RA</td>
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<tr>
<td>BOARD STACKING (MM)</td>
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<td>5.82</td>
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<td>5.18</td>
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<td>Tiger Beam™</td>
<td>Tiger Buy™</td>
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<td>TOLC</td>
<td>SOLC</td>
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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
## 2.00 mm (.0787") PITCH HEADERS & SOCKETS

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<th>MMT</th>
<th>TMM/MTMM</th>
<th>TMMH</th>
<th>TW</th>
<th>ZLTMM</th>
<th>CLT</th>
<th>ESQT/368</th>
<th>MMS</th>
<th>SMM</th>
<th>SQT</th>
<th>SQW</th>
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<td>V</td>
<td>V &amp; RA</td>
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<tr>
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<td>T/H &amp; SMT</td>
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## .100" (2.54 mm) PITCH HEADERS & SOCKETS

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<th>TSW/HTSW</th>
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<td>Tiger Beams™</td>
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<td>302</td>
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LOW PROFILE AND ELEVATED ONE-PIECE

(1.00 mm) .0394" PITCH • FSI SERIES

SPECIFICATIONS

Insulator Material: Liquid Crystal Polymer
Contact Material: BeCu
Current Rating: 2.8 A per pin (2 pins powered)
Operating Temp Range: -55 °C to +125 °C
Plating: Au over 50 µ" (1.27 µm) Ni

PROCESSING

Lead-Free Solderable: Yes
SMT Lead Coplanarity:
-0.10 mm .004” max (05-30)
(0.15 mm).006” max (50) *
*(.004” stencil solution may be available; contact ipg@samtec.com)
Compression Board:
Gold Pads required

OTHER SOLUTIONS

Low Profile
See www.samtec.com?SEI

.050" (1.27 mm)
Pitch
See www.samtec.com?SIBF

ALSO AVAILABLE

MOQ Required
No alignment pin
Top side alignment pin
Bottom side alignment pin
Other platings

Notes:
Applications requiring 40-50 positions without threaded inserts, please contact Samtec Interconnect Processing Group.
Some lengths, styles and options are non-standard, non-returnable.

INSPECTOR

F-224

samtec.com?FSI

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
## ONE-PIECE INTERFACES

**(2.54 mm) .100" PITCH • SIB/SIR1 SERIES**

### SPECIFICATIONS

**SIB**
- **NO. OF POSITIONS**: 02 thru 30 (Per Row)
- **PLATING OPTION**: -F = Gold flash on contact, Matte Tin on tail
- **OPTION**: -LC = Locking Clip (Manual placement required)

### PROCESSING

**Lead-Free Solderable**: Yes

**SMT Lead Coplanarity**:
- 02-19: 0.10 mm (.004") max
- 20-30*: 0.15 mm (.005") max
* (.004" stencil solution may be available; contact ipg@samtec.com)

### SIR1
- **NO. OF POSITIONS**: -03, -05, -10, -15 (Per Row)
- **PLATING OPTION**: -L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **OPTION**: -A = Alignment Pin

### PROCESSING

**Lead-Free Solderable**: Yes

**SMT Lead Coplanarity**:
- 0.10 mm (.004") max

### Notes:
- Some lengths, styles and options are non-standard, non-returnable.

---

**SPECIFICATIONS**

**Insulator Material**: Black Liquid Crystal Polymer

**Contact Material**: Phosphor Bronze

**Plating**: Au or Sn over 50 µ" (1.27 µm) Ni

**Current Rating**: 2.6 A per pin (1 pin powered)

**Operating Temp Range**: -55 °C to +125 °C

---

**SPECIFICATIONS**

**Insulator Material**: Black LCP

**Contact Material**: Phosphor Bronze

**Weld Tab**: Phosphor Bronze

**Plating**: Au or Sn over 50 µ" (1.27 µm) Ni

**Current Rating**: 2.8 A per pin (1 pin powered)

---

**Notes:**
- The SIB Series is intended for vertical mating only.
- Some lengths, styles and options are non-standard, non-returnable.
LOW PROFILE BLADE AND BEAM

(0.50 mm) .0197" PITCH • LTH/LSH SERIES

## SPECIFICATIONS

<table>
<thead>
<tr>
<th>LTH Mates:</th>
<th>LSH</th>
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</thead>
<tbody>
<tr>
<td>LSH</td>
<td>LTH</td>
</tr>
</tbody>
</table>

**Insulator Material:** Liquid Crystal Polymer

**Terminal Material:** Phosphor Bronze

**Contact Material:** BeCu

**Plating:**
- Au over 50 µ" (1.27 µm) Ni
- Gold
- Polyimide film Pick & Place Pad

**Current Rating:**
- 2.6 A per pin
- (2 pins powered)

**Operating Temp Range:**
- -55 °C to +125 °C

**Lead-Free Solderable:** Yes

**SMT Lead Coplanarity:**
- (0.10 mm) .004" max

**Board Stacking:**
For applications requiring more than two connectors per board, contact ipg@samtec.com

**PROCESSING**

<table>
<thead>
<tr>
<th>Lead-Free Solderable:</th>
<th>Yes</th>
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<tbody>
<tr>
<td>SMT Lead Coplanarity:</td>
<td>(0.10 mm) .004&quot; max</td>
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</table>

**Board Stacking:**
For applications requiring more than two connectors per board, contact ipg@samtec.com

## MATED HEIGHT

### LEAD STYLE MATED HEIGHT

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>LTH</th>
<th>LSH</th>
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<tbody>
<tr>
<td>-01</td>
<td>(2.31 mm) .091&quot;</td>
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*Processing conditions will affect mated height.

**Current Rating:**
- 2.6 A per pin
- (2 pins powered)

**Operating Temp Range:**
- -55 °C to +125 °C

**Lead-Free Solderable:** Yes

**SMT Lead Coplanarity:**
- (0.10 mm) .004" max

**Board Stacking:**
For applications requiring more than two connectors per board, contact ipg@samtec.com

**PROCESSING**

<table>
<thead>
<tr>
<th>Lead-Free Solderable:</th>
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<tbody>
<tr>
<td>SMT Lead Coplanarity:</td>
<td>(0.10 mm) .004&quot; max</td>
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**Board Stacking:**
For applications requiring more than two connectors per board, contact ipg@samtec.com

Note:
Some lengths, styles and options are non-standard, non-returnable.

samtec.com?LTH or samtec.com?LSH

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
## SPECIFICATIONS

- **Insulator Material:** Black Liquid Crystal Polymer
- **Contact Material:** Phosphor Bronze (FT5), BeCu (FS5)
- **Weld Tab:** Phosphor Bronze
- **Plating:**
  - Au or Sn over 50 µ" (1.27 µm) Ni
  - Gold on contact, Matte Tin on tail
- **Current Rating:** 1.8 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C
- **Lead-Free Solderable:** Yes

### FT5
- **NO. OF POSITIONS:** 15, –30 (Per Row)
- **LEAD STYLE:**
  - 01.0 = 1 mm Body Height
  - 03.0 = 3 mm Body Height
  - 04.0 = 4 mm Body Height
- **PLATING OPTION:**
  - L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
  - DV = Vertical
  - RA = Right-angle
- **ROW OPTION:**
  - TH = Through-hole weld tab
- **OPTION:**
  - Leave blank for RA
  - Required callouts

### FS5
- **NO. OF POSITIONS:** 15, –30 (Per Row)
- **LEAD STYLE:**
  - 03.0 = 3 mm Body Height
- **PLATING OPTION:**
  - L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
  - DV = Vertical
  - RA = Right-angle
- **ROW OPTION:**
  - TH = Through-hole weld tab
- **OPTION:**
  - Leave blank for RA
  - Required callouts

### MATED HEIGHT *

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
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<th>FT5 LEAD STYLE</th>
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<td>.125&quot;</td>
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<tr>
<td>–03.0</td>
<td>(5.72)</td>
<td>.225</td>
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<tr>
<td>–04.0</td>
<td>(7.00 mm)</td>
<td>.276</td>
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</table>

*Processing conditions will affect mated height.

### Notes:
- Floating contact system provides 0.50 mm float in X and Y directions.
- Some lengths, styles, and options are non-standard, non-returnable.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.

samtec.com?FT5 or samtec.com?FS5
BTH Mates:
BSH

**SPECIFICATIONS**

- **Insulator Material:** Black LCP
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating:** 2.0 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 175 VAC
- **Max Cycles:** 100

**PROCESSING**

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - **Vertical:** (0.10 mm) .004" max (030-090), (0.15 mm) .006" max (120-150)*
  - **Right-angle:** (0.15 mm) .006" max (030-090)*
  - *(0.004" stencil solution may be available; contact ipg@samtec.com)
- **Board Stacking:** For applications requiring more than two connectors per board or 90 positions or higher, contact ipg@samtec.com

**ALSO AVAILABLE**

- **MOQ Required**
  - 30 µ" (0.76 µm) Gold Edge Mount Capability
  - 8 mm, 11 mm, 16 mm, 19 mm and 22 mm Stack Height (Caution: Some automatic placement/inspection machines may have component height restrictions. Please consult machinery specifications.)
  - (11 mm, 16 mm, 19 mm and 22 mm not available with 50 positions)

**MATED HEIGHT**

- **LEAD STYLE**
  - **MATED HEIGHT**
    - –01 (5.00 mm) .1971"

*Processing conditions will affect mated height.

**Note:**
- Some lengths, styles and options are non-standard, non-returnable.

---

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### Specifications

**BSH Mates:**
- BTH

**BSH - No. of Positions Per Row - 01 - Plating Option - D - A - Other Option**

<table>
<thead>
<tr>
<th>No. of Positions</th>
<th>Plating Option</th>
<th>D</th>
<th>A</th>
<th>Other Option</th>
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<tr>
<td>-030, -050, -060, -090, -120, -150</td>
<td>-F</td>
<td>-L</td>
<td>-</td>
<td>–GP</td>
</tr>
<tr>
<td>-030, -060, -090</td>
<td>= Gold Flash on contact, Matte Tin on tail</td>
<td>= 10 μ&quot; (0.25 μm) Gold on contact, Matte Tin on tail</td>
<td>= Electro-Polished Selective 50 μ&quot; (1.27 μm) min Au over 150 μ&quot; (3.81 μm) Ni on Signal Pins in contact area, Matte Tin over 50 μ&quot; (1.27 μm) min Ni on all solder tails (*–C Plating passes 10 year MFG testing)</td>
<td>= Guide Post</td>
</tr>
</tbody>
</table>

#### Insulator Material:
- Black LCP

#### Contact Material:
- Phosphor Bronze

#### Plating:
- Au or Sn over 50 μ" (1.27 μm) Ni
- Current Rating:
  - 2 A per pin (2 pins powered)
- Operating Temp Range:
  - -25 °C to +125 °C
- Voltage Rating:
  - 175 VAC
- Max Cycles:
  - 100

### Processing

**Lead-Free Solderable:**
- Yes

**SMT Lead Coplanarity:**
- (0.10 mm) .004" max (030-090)
- (0.15 mm) .006" max (120-150)*

*1.004" stencil solution may be available; contact ipg@samtec.com

**Board Stacking:**
- For applications requiring more than two connectors per board or 90 positions or higher, contact ipg@samtec.com

### Also Available

**MOQ Required**
- 30 μ" (0.76 μm) Gold Edge Mount Capability
- 8 mm, 11 mm, 16 mm, 19 mm and 22 mm Stack Height

(Caution: Some automatic placement/inspection machines may have component height restrictions. Please consult machinery specifications.)

(11 mm, 16 mm, 19 mm and 22 mm not available with 50 positions)

### Mated Height

**Lead Style**
- D-224

**Mated Height**
- (5.00 mm) .1971" + (10.88) .428

*Processing conditions will affect mated height.

**F-224**

samtec.com/BSH

Note:
- Some lengths, styles and options are non-standard, non-returnable.

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### BTS

<table>
<thead>
<tr>
<th>Mates:</th>
<th>BSS</th>
</tr>
</thead>
</table>

#### NO. OF POSITIONS PER ROW

-01, -025, -050, -075, -100

#### PLATING OPTION

- **D** = Gold Flash on contact, Matte Tin on tail
- **A** = Other options

#### OTHER OPTION

- **K** = (7.00 mm) .275” Dia Polyimide Film Pick & Place Pad
- **TR** = Tape & Reel (-100 positions max.)
- **FR** = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (-100 positions max.)

---

### BSS

<table>
<thead>
<tr>
<th>Mates:</th>
<th>BTS</th>
</tr>
</thead>
</table>

#### NO. OF POSITIONS PER ROW

-01, -025, -050, -075, -100

#### PLATING OPTION

- **D** = Gold Flash on contact, Matte Tin on tail
- **A** = Other options

#### OTHER OPTION

- **K** = (7.00 mm) .275” Dia Polyimide Film Pick & Place Pad
- **TR** = Tape & Reel (-100 positions max.)
- **FR** = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (-100 positions max.)

---

### SPECIFICATIONS

- **Insulator Material:** Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ” (1.27 µm) Ni
- **Current Rating:** 1.8 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C

---

### PROCESSING

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004” max
- **Board Stacking:** For applications requiring more than two connectors per board or 100 positions or higher, contact ipg@samtec.com

---

### ALSO AVAILABLE

- **MOQ Required:**
  - 30 µ” (0.76 µm) Gold
  - Other platings
  - Other positions

### MATED HEIGHT

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>MATED HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(.050 mm) .197”</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.
BASIC BLADE & BEAM HEADER & SOCKET

(0.80 mm) .0315" PITCH • BTE/BSE SERIES

### Specifications

- **Insulator Material:** Liquid Crystal Polymer
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating:** 2 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C
- **Voltage Rating:** 225 VAC with 5 mm Stack Height
- **Max Cycles:** 100

### Processing

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - (0.10 mm) 0.004" max (020-080)
  - (0.15 mm) 0.006" max (100-120)*
  - 0.004" stencil solution may be available; contact ipg@samtec.com
- **Board Stacking:**
  - For applications requiring more than two connectors per board or 80 positions or higher, contact ipg@samtec.com

### Also Available

- **MOQ Required**
- 30 µ" (0.76 µm) Gold
- Edge Mount Capability
- Friction Lock option
- 11 mm, 14 mm, 16.10 mm, 19.10 mm, 22 mm, 25 mm and 30 mm Stack Height (Caution: Some automatic placement/inspection machines may have component height restrictions. Please consult machinery specifications.)

### Note

Some lengths, styles and options are non-standard, non-returnable.

### Extended Life Product

10 YEAR MFG WITH 50 µ" GOLD
HIGH MATING CYCLES

### Note

Some lengths, styles and options are non-standard, non-returnable.

### LEAD STYLE

**BTE**

Mates: BSE

- **020, 040, 060, 080, 100, 120**

Specify LEAD STYLE from chart

- **D**
  - Specify from chart

- **A**
  - Specify from chart

- **OTHER OPTION**
  - 

**BSE**

Mates: BTE

- **020, 040, 060, 080, 100, 120**

- **F**
  - Gold Flash on contact, Matte Tin on tail

- **L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail

- **C**
  - Electro-Polished Selective 50 µ" (1.27 µm) min Au over 150 µ" (3.81 µm) Ni on Signal Pins in contact area, Matte Tin over 50 µ" (1.27 µm) min Ni on all solder tails (–C Plating passes 10 year MFG testing)

### Mated Height

**LEAD STYLE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>MATED HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(5.00 mm) .1971*</td>
</tr>
<tr>
<td>-02</td>
<td>(8.00 mm) .315</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

**OTHER OPTION**

- **TR**
  - Tape & Reel (80 positions maximum)

- **FR**
  - Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (80 positions maximum)

---

samtec.com/BTE or samtec.com/BSE

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
SMT MICRO HEADER & SOCKET

(0.80 mm) .0315" PITCH • FTE/CLE SERIES

FTE
Mates:
CLE

CLE
Mates:
FTE, AW

SPECIFICATIONS

Insulator Material:
Black Liquid Crystal Polymer
Terminal Material:
Phosphor Bronze
Contact Material:
BeCu
Plating:
Au over 50 µ" (1.27 µm) Ni
Current Rating (FTE/CLE): 2.7 A per pin
(2 pins powered)
Operating Temp Range:
-55 °C to +125 °C
Insertion Depth (CLE):
Top Entry = (1.73 mm) .068" to (3.18 mm) .125"
wipe, or pass-through
Bottom Entry = (3.23 mm) .127" minimum plus board thickness
Max Cycles (CLE):
100 with 10 µ" (0.25 µm) Au

PROCESSING

Lead-Free Solderable:
Yes
SMT Lead Coplanarity (FTE):
-DV: (0.01 mm) .004" max (04-25)
(0.15 mm) .006" max (26-50)*
*(0.004" stencil solution may be available; contact ipg@samtec.com)
SMT Lead Coplanarity (CLE):
(0.10 mm) .004" max (04-65)
(0.15 mm) .006" max (66-90)*
*(0.004" stencil solution may be available; contact ipg@samtec.com)

Note:
Some lengths, styles and options are non-standard, non-returnable.
SMT MICRO BOARD STACKER

(0.80 mm) .0315" PITCH • AW SERIES

AW Mates:
CLE

**SPECIFICATIONS**

- **Insulator Material:**
  - Top: Black LCP
  - Bottom: Natural LCP

- **Terminal Material:**
  Phosphor Bronze

- **Plating:**
  Au over 50 µ" (1.27 µm) Ni

- **Operating Temp Range:**
  -55 °C to +125 °C

**PROCESSING**

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - (0.10 mm) .004" max (05-40)
  - (0.15 mm) .006" max (41-90)*
  *(.004" stencil solution may be available, contact ipg@samtec.com)

**OPTIONS**

- **-EP OPTION**
- **-P OPTION**
- **-ES OPTION**

Notes:
- For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.
- Some lengths, styles and options are non-standard, non-returnable.

samtec.com?AW

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
SMT MICRO BOARD HEADER

(1.00 mm) .0394" PITCH • MW SERIES

MW Mates:
CLM, MLE

SPECIFICATIONS
Insulator Material:
Top: Black LCP
Bottom: Natural LCP
Terminal Material:
Phosphor Bronze
Plating:
Au over 50 µ" (1.27 µm) Ni
Operating Temp Range:
-55 °C to +125 °C

PROCESSING
Lead-Free Solderable:
Yes
SMT Lead Coplanarity:
(0.10 mm) .004" max (02-30)
(0.15 mm) .006" max (31-50)*
* .004" stencil solution may be available; contact ipg@samtec.com

APPLICATION
SMT MICRO BOARD HEADER
(1.00 mm) .0394" PITCH • MW SERIES

MW Mates:
CLM, MLE

NOTES
For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

This Series is non-standard, non-returnable.

End shrouds
End shrouds with guide posts

Examples:
LEAD STYLE MATED HEIGHT
MW CLM
163-065 3.65 mm .144"
233-065 4.35 mm .171"

*Processing conditions will affect mated height.

samtec.com?MW
RUGGED RELIABLE MICRO SOCKETS

(1.00 mm) .0394" PITCH • CLM/MLE SERIES

CLM
Mates:
FTM, FTMH, MW

MLE
Mates:
FTM, FTMH, MW

SPECIFICATIONS

Insulator Material: Black LCP
Contact Material:
CLM: Phosphor Bronze
MLE: BeCu
Plating:
CLM: Au or Sn over 50 µ" (1.27 µm) Ni
MLE: Au over 10 µ" (0.25 µm) Ni
Current Rating (CLM/FTM):
3.1 A per pin (2 pins powered)
Current Rating (MLE/FTM):
2.9 A per pin (2 pins powered)
Operating Temp Range:
-55 °C to +125 °C
Max Cycles:
CLM: 100 with 10 µ" (0.25 µm) Au
Voltage Rating:
CLM: 270 VAC
MLE: 310 VAC
Insertion Depth:
CLM:
Top Entry = (1.40 mm) .055" min.,
Bottom Entry = (2.41 mm) .095" min.
(Add board thickness for correct post OAL)
MLE:
(1.63 mm) .064" to (3.18 mm) .125" with
(0.38 mm) .015" wipe, pass-through, or (2.44 mm) .096" minimum for bottom entry

PROCESSING

Lead-Free Solderable:
Yes
SMT Lead Coplanarity:
(0.10 mm) .004" max (02-25)
(0.19 mm) .006" max (26-50)
* .004" stencil solution may be available; contact ipg@samtec.com

ALSO AVAILABLE

MOQ Required
Alignment pin
Other Gold plating options

Note:
Some lengths, styles and options are non-standard, non-returnable.

CLM

- 1

- 02 thru 50

- D

- OPTIONS

- F

= Gold flash on contact, Matte Tin on tail

- L

= 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail

- BE

= Bottom Entry
(Required for bottom entry)

- K

= (3.50 mm) .138" DIA Polymide film Pick & Place Pad
(7 positions minimum)

- P

= Pick & Place Pad
(7 positions minimum)

- PA

= Pick & Place Pad with integral Alignment Pin

- TR

= Tape & Reel

- FR

= Full Reel Tape & Reel
(must order maximum quantity per reel; contact Samtec for quantity breaks)

MLE

- 1

- 02 thru 50

- DV

- OPTIONS

- G

= 10 µ" (0.25 µm) Gold

- A

= Alignment Pin
(3 positions minimum)
Metal or plastic at Samtec discretion

- K

= (4.00 mm) .1575" DIA Polymide film Pick & Place Pad
(5 positions minimum)

- P

= Metal Pick & Place Pad
(5 positions minimum)

- TR

= Tape & Reel

- FR

= Full Reel Tape & Reel
(must order maximum quantity per reel; contact Samtec for quantity breaks)
# QUAD ROW SMT TERMINAL & SOCKET

**TOLC**

- **Mates:** SOLC

**SOLC**

- **Mates:** TOLC

## SPECIFICATIONS

**Insulator Material:** Black Liquid Crystal Polymer

**Contact Material:** Phosphor Bronze

**Plating:** Au over 50 µ" (1.27 µm) Ni

**Current Rating:** 2.4 A per pin (6 adjacent pins powered)

**Operating Temp Range:** -55 °C to +125 °C

**Insertion Depth (SOLC):** (1.68 mm) 0.066" to (3.61 mm) 0.142" with (0.38 mm) 0.015" wipe

**Max Cycles (SOLC):** 100+

## PROCESSING

**Lead-Free Solderable:** Yes

**SMT Lead Coplanarity:**
- (0.10 mm) 0.004" max (05-35)
- (0.15 mm) 0.006" max (40-50)*
*0.004" stencil solution may be available; contact ipg@samtec.com

## ALSO AVAILABLE

**MOQ Required**

<table>
<thead>
<tr>
<th>Styles</th>
<th>-12, -22, -32</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD</td>
<td>A</td>
</tr>
<tr>
<td>0.02</td>
<td>(2.54)</td>
</tr>
<tr>
<td>-12</td>
<td>(7.24)</td>
</tr>
<tr>
<td>-22</td>
<td>(9.25)</td>
</tr>
<tr>
<td>-32</td>
<td>(11.28)</td>
</tr>
</tbody>
</table>

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**QUAD ROW SMT TERMINAL & SOCKET (1.27 mm).050” PITCH • TOLC/SOLC SERIES**

**TOLC**

- **Mates:** SOLC

**SOLC**

- **Mates:** TOLC

## ALSO AVAILABLE

**MOQ Required**

<table>
<thead>
<tr>
<th>Styles</th>
<th>-12, -22, -32</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD</td>
<td>A</td>
</tr>
<tr>
<td>0.02</td>
<td>(2.54)</td>
</tr>
<tr>
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</tr>
<tr>
<td>-22</td>
<td>(9.25)</td>
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<td>-32</td>
<td>(11.28)</td>
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</tbody>
</table>

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**specifications**

<table>
<thead>
<tr>
<th>Spec</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insulator Material:</strong></td>
<td>Black Liquid Crystal Polymer</td>
</tr>
<tr>
<td><strong>Contact Material:</strong></td>
<td>Phosphor Bronze</td>
</tr>
<tr>
<td><strong>Plating:</strong></td>
<td>Au over 50 µ&quot; (1.27 µm) Ni</td>
</tr>
<tr>
<td><strong>Current Rating:</strong></td>
<td>2.4 A per pin (6 adjacent pins powered)</td>
</tr>
<tr>
<td><strong>Operating Temp Range:</strong></td>
<td>-55 °C to +125 °C</td>
</tr>
<tr>
<td><strong>Insertion Depth (SOLC):</strong></td>
<td>(1.68 mm) 0.066&quot; to (3.61 mm) 0.142&quot; with (0.38 mm) 0.015&quot; wipe</td>
</tr>
<tr>
<td><strong>Max Cycles (SOLC):</strong></td>
<td>100+</td>
</tr>
</tbody>
</table>

**PROCESSING**

**Lead-Free Solderable:** Yes

**SMT Lead Coplanarity:**
- (0.10 mm) 0.004" max (05-35)
- (0.15 mm) 0.006" max (40-50)*
*0.004" stencil solution may be available; contact ipg@samtec.com

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**QUAD ROW SMT TERMINAL & SOCKET (1.27 mm).050” PITCH • TOLC/SOLC SERIES**

**TOLC**

- **Mates:** SOLC

**SOLC**

- **Mates:** TOLC

## ALSO AVAILABLE

**MOQ Required**

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</tr>
<tr>
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<td>(11.28)</td>
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**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**QUAD ROW SMT TERMINAL & SOCKET (1.27 mm).050” PITCH • TOLC/SOLC SERIES**

**TOLC**

- **Mates:** SOLC

**SOLC**

- **Mates:** TOLC

## ALSO AVAILABLE

**MOQ Required**

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</tr>
<tr>
<td>0.02</td>
<td>(2.54)</td>
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<tr>
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<tr>
<td>-22</td>
<td>(9.25)</td>
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<td>(11.28)</td>
</tr>
</tbody>
</table>

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**QUAD ROW SMT TERMINAL & SOCKET (1.27 mm).050” PITCH • TOLC/SOLC SERIES**

**TOLC**

- **Mates:** SOLC

**SOLC**

- **Mates:** TOLC

## ALSO AVAILABLE

**MOQ Required**

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>LEAD</td>
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<tr>
<td>-22</td>
<td>(9.25)</td>
</tr>
<tr>
<td>-32</td>
<td>(11.28)</td>
</tr>
</tbody>
</table>

**Note:** Some lengths, styles and options are non-standard, non-returnable.
**FTSH**

**Board Mates:** CLP, FLE

**Cable Mates:** FFSD, FFTP

**Specifications**

- Insulator Material: Black Liquid Crystal Polymer
- Terminal Material: Phosphor Bronze
- Plating: Sn or Au, over 50 µ" (1.27 µm) Ni
- Current Rating (FTSH/CLP): 3.4 A per pin (2 pins powered)
- Operating Temp Range: -55 °C to +125 °C

**Processing**

- Lead-Free Solderable: Yes
- SMT Lead Coplanarity:
  - MT & -DV Tail Option: (0.10 mm) .004" max (02-25)
  - MT & -DH Tail Option: (0.15 mm) .006" max (26-50)*
  *(.004" stencil solution may be available; contact igp@samtec.com)

**Also Available**

- Molded Pick & Place pads
- Latches
- Other platings

---

**Notes:**

Severe Environment Testing qualified; aligns with MIL-DTL-55302.

Visit samtec.com/set

Some sizes, styles and options are non-standard, non-returnable.

See SFM/TFM for positive alignment feature.

---

**FTSH**

<table>
<thead>
<tr>
<th>NO. PINS</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>TAIL OPTION</th>
<th>OPTION</th>
<th>FLEX SHROUD OPTIONS</th>
<th>OTHER OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 thru 50</td>
<td>01 = (3.05 mm) .120&quot; Post (Mates with FFSD)</td>
<td>-F = Gold flash on post, Matte Tin on tail</td>
<td>-DV = Double Vertical</td>
<td>Leave Blank for -DH &amp; -MT</td>
<td>-EX = Polarized Shroud (Specify position of omitted pin) for non-standard applications)</td>
<td>-K = Keying Shroud for mating with FFSD (Style –01 only, 05 thru 25) &amp; 13, 17, 20 &amp; 25 only with –EJ option (-DV only)</td>
</tr>
<tr>
<td>02</td>
<td>02 = (1.91 mm) .075&quot; Post (Mates with FLE)</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on post, Matte Tin on tail</td>
<td>-DH = Double Horizontal (Styles –01, –02 &amp; –04 only)</td>
<td></td>
<td></td>
<td>-A = Alignment Pin (-DV 3 positions minimum) (-DH 5 positions minimum) (Metal or plastic at Samtec discretion)</td>
</tr>
<tr>
<td>03</td>
<td>03 = (1.65 mm) .065&quot; Post (Mates with CLP–D)</td>
<td>-MT = Mixed Technology (Styles –01, –02 &amp; –04 only)</td>
<td></td>
<td></td>
<td></td>
<td>-C = (5.00 mm) .197&quot; DIA Polyimide film Pick &amp; Place Pad (-DH only)</td>
</tr>
<tr>
<td>04</td>
<td>04 = (3.81 mm) .150&quot; Post (Mates with CLP-DH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-P = Pick &amp; Place Pad (-DV 4 positions minimum) (-DH &amp; -MT not available)</td>
</tr>
<tr>
<td>05</td>
<td>05 = (4.32 mm) .170&quot; Post (Mates with CLP–BE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-TR = Tape &amp; Reel (Flex Shroud options not available except –ES &amp; –EJ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-FR = Full Reel Tape &amp; Reel (must order maximum quantity per reel; contact Samtec for quantity breaks)</td>
</tr>
</tbody>
</table>

---

**Surface Mount Micro Header**

(1.27 mm) .050" Pitch • FTSH Series

---

**Notes:**

Severe Environment Testing qualified; aligns with MIL-DTL-55302.

Visit samtec.com/set

Some sizes, styles and options are non-standard, non-returnable.

See SFM/TFM for positive alignment feature.
**SPECIFICATIONS**

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Current Rating (FTSH/CLP):** 3.4 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C

**PROCESSING**

- **Lead-Free Solderable:** Yes

**LOCKING CLIP**

- For single mating cycle with the FFSD. Specify -CL after tail option. Lead Style -01 and 10 pins/row minimum. 5-9 pins/row not available in combination with keying shroud (-K).

**ALSO AVAILABLE**

- Mated Pick & Place pads
- Other platings

**NOTES:**

- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/sets
- Some sizes, styles and options are non-standard, non-returnable.
- See SFM/TFM for positive alignment feature.

**EXTENDED LIFE PRODUCT**

- 10 YEAR MFG WITH INP. GOLD
- HIGH MATING CYCLES

**OTHER OPTIONS**

- **-ES** = End Shroud (Style –02 & –03) 9 pins/row minimum
- **-EP** = End Shroud with Guide Post (Style –02 & –03) 9 pins/row minimum
- **-EL** = End Shroud with Board Lock (Style –02 & –03) 9 pins/row minimum
- **-EJ** = Ejector Shroud (Style –01 only) 10 pins/row minimum 25 pins/row maximum –RA not available
- **-K** = Keying Shroud for mating with FFSD (Style –01 only, 05 thru 25 pins/row only; 13, 17, 20 & 25 only with -EJ option)

**LEAD STYLE A MATES WITH**

- **-01 (3.05)** FFSD
- **-02 (1.91)** FLE
- **-03 (1.65)** CLP-D
- **-04 (3.81)** N/A

**FTSH - 1 NO. PINS PER ROW LEAD STYLE PLATING OPTION D OPTION TAIL OPTION OTHER OPTIONS**

<table>
<thead>
<tr>
<th>NO. PINS</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>OPTION</th>
<th>TAIL OPTION</th>
<th>OTHER OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 thru 50</td>
<td>Specify LEAD STYLE from chart</td>
<td>-F = Gold flash on post, Matte Tin on tail</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on post, Matte Tin on tail</td>
<td>Leave blank for Right-angle</td>
<td>Leave blank for straight tail</td>
<td>–ES = End Shroud (Style –02 &amp; –03) 9 pins/row minimum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–EP = End Shroud with Guide Post (Style –02 &amp; –03) 9 pins/row minimum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–EL = End Shroud with Board Lock (Style –02 &amp; –03) 9 pins/row minimum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–EJ = Ejector Shroud (Style –01 only) 10 pins/row minimum 25 pins/row maximum –RA not available</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>–K = Keying Shroud for mating with FFSD (Style –01 only, 05 thru 25 pins/row only; 13, 17, 20 &amp; 25 only with -EJ option)</td>
</tr>
</tbody>
</table>

**OPTION Z**

<table>
<thead>
<tr>
<th>OPTION</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ES</td>
<td>(1.55) .061</td>
</tr>
<tr>
<td>-EJ</td>
<td>(5.77) .211</td>
</tr>
<tr>
<td>-EP</td>
<td>(5.87) .231</td>
</tr>
<tr>
<td>-EL</td>
<td>(6.53) .257</td>
</tr>
</tbody>
</table>

**FTSH Board Mates:** CLP, FLE

**Cable Mates:** FFSD, FFTP
**MICRO LOW PROFILE TERMINAL STRIPS**

(1.27 mm) .050" PITCH • FTS SERIES

**FTS**
- **Board Mates:** CLP, FLE
- **Cable Mates:** FFSD

**SPECIFICATIONS**
- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Operating Temp Range:** -55 °C to +125 °C
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Current Rating:** 3.4 A per pin (2 pins powered)

**PROCESSING**
- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** .004" (0.10 mm) max

**ALSO AVAILABLE**
- **Alignment pin** (MOQ Required)

**OPTIONS**
- **–TR OPTION**
- **–SA OPTION**
- **–P OPTION**
- **–S OPTION**

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

**LEAD STYLE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>–01</td>
<td>(3.05) .120</td>
</tr>
<tr>
<td>–02</td>
<td>(1.91) .075</td>
</tr>
<tr>
<td>–03</td>
<td>(1.65) .065</td>
</tr>
<tr>
<td>–04</td>
<td>(3.81) .150</td>
</tr>
</tbody>
</table>

**PLATING OPTION**

- **–F** = Gold flash on post, Matte Tin on tail
- **–L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **–D** = Double Through-hole
- **–DV** = Double Vertical SMT
- **–S** = Single Through-hole
- **–SV** = Single Vertical SMT

**ROW OPTION**

- **–D** = Double Through-hole
- **–DV** = Double Vertical SMT
- **–S** = Single Through-hole
- **–SV** = Single Vertical SMT

**OTHER OPTION**

- **–SA** = End Shroud with Alignment Pin
- **–P** = Pick & Place Pad
- **–TR** = Tape & Reel
- **–FR** = Full Reel Tape & Reel

**Note:**
- **–S** and **–SA** options are non-standard, non-returnable.
- **–02 thru 50** (except –S & –SA option = 05 thru 46)

**Note:**
- **–01** = (3.05 mm) 120° Post (Mates with FFSD)
- **–02** = (1.91 mm) 90° Post (Mates with FLE)
- **–03** = (1.65 mm) 65° Post (Mates with CLP)
- **–04** = (3.81 mm) 150° Post (–D & –DV only)

**Alignment pin** (MOQ Required)

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

**samtec.com?FTS**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**FW Board Mates:**
CLP, FLE

**Cable Mates:**
FFSD

---

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Insulator Material:</th>
<th>Black Liquid Crystal Polymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Material:</td>
<td>Phosphor Bronze</td>
</tr>
<tr>
<td>Plating:</td>
<td>Sn or Au over 50 µ&quot; (1.27 µm) Ni</td>
</tr>
<tr>
<td>Operating Temp Range:</td>
<td>-55 °C to +125 °C</td>
</tr>
</tbody>
</table>

---

### PROCESSING

**Lead-Free Solderable:**
Yes

**SMT Lead Coplanarity:**
(0.10 mm) .004" max (02-30)
(0.15 mm) .006" max (31-50)*

* (.004" stencil solution may be available; contact igp@samtec.com)

---

### MATED HEIGHT

<table>
<thead>
<tr>
<th>FW LEAD STYLE</th>
<th>CLP LEAD STYLE</th>
<th>MATED HEIGHT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW-XX-03-X-X-233-065</td>
<td>-02</td>
<td>8.13 mm) .325&quot;</td>
</tr>
<tr>
<td>FW-XX-03-X-X-303-065</td>
<td>-02</td>
<td>9.91 mm) .390&quot;</td>
</tr>
</tbody>
</table>

*Processing conditions will affect mated height.

---

### ALSO AVAILABLE

**Smaller stack heights**
(MOQ Required)

---

**Notes:**
For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact igp@samtec.com for more information.

This Series is non-standard, non-returnable.

---

**samtec.com?FW-SM or samtec.com?FW-TH**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
## Low Profile Dual Wipe Socket

**(1.27 mm) .050" Pitch • CLP Series**

### CLP

**Mates:**
- FTSH, FTS, FW

### Specifications

<table>
<thead>
<tr>
<th>Insulator Material:</th>
<th>Black Liquid Crystal Polymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Material:</td>
<td>Phosphor Bronze</td>
</tr>
<tr>
<td>Plating:</td>
<td>Sn or Au over 50 µ&quot; (1.27 µm) Ni</td>
</tr>
<tr>
<td>Current Rating (CLP/FTSH):</td>
<td>3.4 A per pin (2 pins powered)</td>
</tr>
<tr>
<td>Voltage Rating:</td>
<td>280 VAC/395 VDC</td>
</tr>
<tr>
<td>Operating Temp Range:</td>
<td>-55 °C to +125 °C</td>
</tr>
</tbody>
</table>
| Insertion Depth:    | Top Entry = (1.40 mm) .055" minimum
                      | Bottom Entry = (2.41 mm) .095" minimum
                      | DH Entry = (2.31 mm) .091" to (2.67 mm) .105" |
| Max Cycles:         | 100 with 10 µ" (0.25 µm) Au |

### Processing

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max (02-35)
  - (0.15 mm) .006" max (36-50)
  - *0.004" stencil solution may be available; contact ipg@samtec.com*

### Extended Life Product

10 Year MFG with 30 µ" Gold

### Notes

- **Severe Environment Testing qualified, aligns with MIL-DTL-55302.**
- **Visit samtec.com/set**
- **Some lengths, styles and options are non-standard, non-returnable.**

### MOQ Required

- **Single row**
- **Other platings**

---

### Table: CLP - NO. PINS PER ROW - PLATING OPTION - ROW OPTION - OTHER OPTIONS

<table>
<thead>
<tr>
<th>NO. PINS</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>OTHER OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 thru 50</td>
<td>02</td>
<td>02</td>
<td>02</td>
</tr>
</tbody>
</table>

- **F** = Gold flash on contact, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **G** = 10 µ" (0.25 µm) Gold (-D only)
- **D** = Double Row
- **DH** = Double Horizontal

### Options

- **–BE** = Bottom Entry (Required for bottom entry applications)
- **–A** = Alignment Pin
  - (Not available with –PA option)
  - (05, 06, 07, 08, 10, 12, 15, 20, 25, 30, 40 positions only)
  - (–DH option and other sizes. Contact Samtec.)
- **–K** = (4.00 mm) .157" DIA Polyimide film Pick & Place Pad
- **–P** = Pick & Place Pad
  - (5 positions min. –D only)
  - (Not always necessary for auto placement. See Flex Processing.)
- **–PA** = Pick & Place Pad with Alignment Pin
  - (–D only)
  - (Not available with –A option)
- **–TR** = Tape & Reel
- **–FR** = Full Reel Tape & Reel
  - (must order maximum quantity per reel; contact Samtec for quantity breaks)

---

SMT Lead Coplanarity: **(0.10 mm) .004" max (02-35)**

---

**Notes:**

- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set

---

**MOQ Required**

- **PIN/ROW**
- **A**

---

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
FLE
Board Mates:
FTSH, FTS, FW

Cable Mates:
FFMD*, FMTP

*Note:
Standard FFMD callout will not
mate with FLE, SFMC. Must
use gold plated callouts.
(See drawing on web.)

SPECIFICATIONS
Insulator Material:
Black Liquid Crystal Polymer
Contact Material:
Phosphor Bronze
Plating:
Au over 50 µ" (1.27 µm) Ni
Current Rating:
2.9 A per pin
(2 pins powered)
Operating Temp Range:
-55 °C to +125 °C
Insertion Depth:
(1.83 mm) .072" to (4.37 mm)
.172" or pass-through
Max Cycles:
100+

PROCESSING
Lead-Free Solderable:
Yes
SMT Lead Coplanarity:
(0.10 mm) .004" max

ALSO AVAILABLE
Other Plating
(MOQ Required)

Note:
Some lengths, styles and
options are non-standard,
non-returnable.

samtec.com?FLE

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
## THROUGH-HOLE MICRO HEADER

### (1.27 mm) 0.050" PITCH • TMS/HTMS SERIES

### TMS/HTMS

- **Mates:** SMS, SLM, RSM

### SPECIFICATIONS

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating (TMS/EMS):** 5 A per pin
- **Operating Temp Range:**
  - -55 °C to +105 °C with Sn
  - -55 °C to +125 °C with Gold

### PROCESSING

- **Lead-Free Solderable:** Yes

#### ALSO AVAILABLE

- **MOQ Required**

### IMPORTANT NOTE

- **Style -02 does not mate with SMS Series.**

### TABLE

<table>
<thead>
<tr>
<th>T/H LEAD STYLE</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>11.43</td>
<td>5.84</td>
<td>3.05</td>
</tr>
<tr>
<td>-02</td>
<td>8.13</td>
<td>5.84</td>
<td>3.05</td>
</tr>
<tr>
<td>-21</td>
<td>12.83</td>
<td>5.05</td>
<td>1.75</td>
</tr>
<tr>
<td>-51</td>
<td>10.41</td>
<td>4.83</td>
<td>1.75</td>
</tr>
<tr>
<td>-52</td>
<td>10.80</td>
<td>4.25</td>
<td>1.75</td>
</tr>
<tr>
<td>-53</td>
<td>12.83</td>
<td>5.05</td>
<td>1.75</td>
</tr>
<tr>
<td>-54</td>
<td>14.10</td>
<td>5.55</td>
<td>3.35</td>
</tr>
<tr>
<td>-55</td>
<td>15.49</td>
<td>6.10</td>
<td>3.35</td>
</tr>
<tr>
<td>-56</td>
<td>15.88</td>
<td>6.62</td>
<td>10.29</td>
</tr>
<tr>
<td>-57</td>
<td>16.51</td>
<td>6.50</td>
<td>10.92</td>
</tr>
<tr>
<td>-58</td>
<td>17.91</td>
<td>7.05</td>
<td>12.32</td>
</tr>
<tr>
<td>-59</td>
<td>19.18</td>
<td>7.55</td>
<td>13.59</td>
</tr>
<tr>
<td>-60</td>
<td>20.14</td>
<td>8.25</td>
<td>15.37</td>
</tr>
</tbody>
</table>

### Important Note:

- Some lengths, styles and options are non-standard, non-returnable.

### Note:

- Some lengths, styles and options are non-standard, non-returnable.
**SHROUDED HEADERS & STACKERS**

(1.27 mm) .050" PITCH • TML/ZML SERIES

---

**TML/ZML**

**Mates:**
- SMS, RSM

---

**SPECIFICATIONS**

**TML**
- **Insulator Material:** Black Liquid Crystal Polymer
- **Insulation Resistance:** 5000 MΩ min
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:**
  - -55 °C to +105 °C with Tin;
  - -55 °C to +125 °C with Gold

**ZML**
- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:**
  - -55 °C to +105 °C with Tin;
  - -55 °C to +125 °C with Gold

---

**PROCESSING**

**TML**
- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - (0.10 mm) .004" max (05-20)
  - (0.15 mm) .006" max (32)*
  - *(.004" stencil solution may be available; contact IPG@samtec.com)*

**ZML**
- **Same as TML except:**
  - **SMT Lead Coplanarity:**
  - (0.15 mm) .006" max*
  - *(.004" stencil solution may be available; contact ipg@samtec.com)*

---

**ALSO AVAILABLE**

**MOQ Required**
- Other sizes
- Other platings

---

**NOTES**

For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

Some sizes, styles and options are non-standard, non-returnable.

---

**TML/ZML Mates:** SMS, RSM

---

**TML**

<table>
<thead>
<tr>
<th>TML</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>05, 08, 10, 20, 32</td>
<td>Specify LEAD STYLE from chart</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on post, Matte Tin on tail</td>
<td>–G = 10 µ&quot; (0.25 µm) Gold on post, Gold flash on tail</td>
<td>–“XXX” = Polarized position (Specify position of omitted pin)</td>
</tr>
</tbody>
</table>

---

**ZML**

<table>
<thead>
<tr>
<th>ZML</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>BODY HEIGHT</th>
<th>TAIL OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>05, 08, 10, 20, 32</td>
<td>Specify LEAD STYLE from chart</td>
<td>–L = 10 µ&quot; (0.25 µm) Gold on post, Matte Tin on tail</td>
<td>–G = 10 µ&quot; (0.25 µm) Gold on post, Gold flash on tail</td>
<td>–“XXX” = SM Body Height (Specify board space “B” in inches from lead style charts.)</td>
<td>–SM = Surface Mount</td>
</tr>
</tbody>
</table>

---

**THROUGH-HOLE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>POST HEIGHT (A)</th>
<th>BODY HEIGHT (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–01</td>
<td>(3.05) .120</td>
<td>(12.83) .505</td>
</tr>
<tr>
<td>–02</td>
<td>(3.84) .230</td>
<td>(14.22) .560</td>
</tr>
<tr>
<td>–03</td>
<td>(4.32) .170</td>
<td>(16.64) .655</td>
</tr>
<tr>
<td>–04</td>
<td>(4.99) .775</td>
<td>(19.69) .775</td>
</tr>
</tbody>
</table>

---

**SURFACE MOUNT**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>POST HEIGHT (A)</th>
<th>BODY HEIGHT (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–53</td>
<td>(3.05) .120</td>
<td>(13.46) .530</td>
</tr>
<tr>
<td>–54</td>
<td>(5.84) .230</td>
<td>(17.40) .530</td>
</tr>
</tbody>
</table>

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.

samtec.com/TML or samtec.com/ZML

F-224
**Micro Board Stacker**

(1.27 mm) .050" Pitch • DWM/HDWM Series

**DWM/HDWM**

Mates:
SMS, SLM, RSM

**Specifications**

- **Insulator Material:** Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +105 °C with Tin
- **-55 °C to +125 °C with Gold**

**Processing**

- **Lead-Free Solderable:** Yes
- **SMT Lead Planarity:** (0.15 mm), 0.004" max
  *(0.004" stencil solution may be available; contact ipg@samtec.com)*

**Also Available**

Other Platings (MOQ Required)

**Notes:**

- For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

This Series is non-standard, non-returnable.

**DWM**

- **NO. PINS PER ROW**
- **LEAD STYLE**
- **PLATING OPTION**
- **ROW OPTION**
- **STACKER HEIGHT**
- **OTHER OPTION**

Specify LEAD STYLE from chart

- “L” = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- “G” = 10 µ" (0.25 µm) Gold on contact, Gold flash on tail
- “S” = Single Row
- “D” = Double Row
- “XXX” = Stacker Height Example: –200 = (5.08 mm) .200"
- “XXX” = Polarized Position (Specify position of omitted pin)

**HDWM**

- **NO. PINS PER ROW**
- **LEAD STYLE**
- **PLATING OPTION**
- **ROW OPTION**
- **STACKER HEIGHT**
- **OTHER OPTION**

Specify LEAD STYLE from chart

- “L” = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- “G” = 10 µ" (0.25 µm) Gold on contact, Gold flash on tail
- “S” = Single Row
- “D” = Double Row
- “XXX” = Stacker Height Example: –250 = (6.35 mm) .250"
- “XXX” = Polarized Position (Specify position of omitted pin)
- “SM” = Surface Mount (02 thru 40 positions only)
- “A” = Alignment Pin (6 positions minimum –D only) Metal or plastic at Samtec discretion (Not available with –LC)
- “LC” = Locking Clip (5 positions minimum –D only) (Not available with –A) (Manual placement required)
- “P” = Pick & Place Pad

**Notes:**

- For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

This Series is non-standard, non-returnable.

**Notes:**

**For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.**

This Series is non-standard, non-returnable.
# SMT MICRO HEADER & SOCKET

## FTR/RSM SERIES

### FTR

**Mates:**
- RSM, SMS, SLM

### RSM

**Mates:**
- FTR, HTMS, HDWM, DWM, TML, ZML, TMS

### Specifications

<table>
<thead>
<tr>
<th>Insulator Material:</th>
<th>Black Liquid Crystal Polymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Material:</td>
<td>RSM: Phosphor Bronze</td>
</tr>
<tr>
<td>Terminal Material:</td>
<td>FTR: Phosphor Bronze</td>
</tr>
<tr>
<td>Plating:</td>
<td>Au or Sn over 50 µ&quot; (1.27 µm) Ni</td>
</tr>
<tr>
<td>Operating Temp Range:</td>
<td>FTR: -55 °C to +105 °C with Tin; FTR: -55 °C to +125 °C with Gold RSM: -55 °C to +125 °C</td>
</tr>
<tr>
<td>Current Rating (FTR/RSM):</td>
<td>3.8 A per pin</td>
</tr>
<tr>
<td>Voltage Rating:</td>
<td>290 VAC</td>
</tr>
<tr>
<td>Lead Size Accepted:</td>
<td>RSM: (0.46 mm) .018&quot; SQ</td>
</tr>
</tbody>
</table>

### Processing

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - RSM: (0.10 mm) .004" +0.004 max (02-20)
  - FTR: (0.15 mm) .006" max (21-40)* *0.004" stencil solution may be available; contact ipg@samtec.com

### Notes
- Some lengths, styles and options are non-standard, non-returnable.

---

### Connecting Options

#### FTR

- **02 thru 40** Specify LEAD STYLE from chart
- **L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **G** = 10 µ" (0.25 µm) Gold on post, Gold flash on tail
- **S** = Single Row
- **D** = Double Row
- **A** = Alignment Pin
- **-LC** = Locking Clip (6 positions min. for –D) (Not available with -A)
- **-P** = Plastic Pick & Place Pad (5 positions min. for –D) (8 positions min. for –S)
- **-TR** = Tape & Reel (4 positions min. for –S)
- **-FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

#### RSM

- **02 thru 36**
- **L** = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **S** = Single Row
- **D** = Double Row
- **-K** = (6.25 mm) .246" DIA Polyimide film Pick & Place Pad (5 positions minimum for –D) (7 positions minimum for –S)
- **-P** = Plastic Pick & Place Pad (5 positions minimum for –D) (6 positions minimum for –S)
- **-TR** = Tape & Reel (4 positions min. for –S)
- **-FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

---

### Other Platings

- Locking clips

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
# THROUGH-HOLE MICRO SOCKETS

## SLM
**Mates:**
HTMS, TMS, MTMS, DWM, HDWM, FTR, HMTMS

## SMS
**Mates:**
HTMS, TMS, MTMS, DWM, HDWM, FTR, TML, ZML, HMTM

### SPECIFICATIONS

**Insulator Material:**
SLM: Black Glass Filled Polyester  
SMS: Black LCP

**Contact Material:**
Phosphor Bronze

**Plating:**
Au or Sn over  
50 µ" (1.27 µm) Ni

**Current Rating (SLM/TMS):**
5.2 A per pin  
(2 pins powered)

**Current Rating (SMS/TMS):**
5.0 A per pin  
(2 pins powered)

**Operating Temp Range:**
-55 °C to +125 °C with Gold  
-55 °C to +105 °C with Tin

**Insertion Depth:**
SLM: (2.03 mm) .080" to (3.05 mm) .120"  
SMS: (3.43 mm) .135" to (6.35 mm) .250" with  
(0.38 mm) .015" wipe

### PROCESSING

**Lead-Free Solderable:**
SLM: No, Lead Wave Only  
SMS: Yes

### ALSO AVAILABLE

Other Platings  
(MOQ Required)

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**samtec.com?SLM or samtec.com?SMS**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
LOW PROFILE SMT HEADER

(2.00 mm) .0787" PITCH • TMM SERIES

TMM
Board Mates:
CLT, SQT, SQW, ESQT, TLE, SMM, MMS

Cable Mates:
TCSD

LEAD STYLE
Specify LEAD STYLE from chart

PLATING OPTION
Specify LEAD STYLE from chart

ROW OPTION
Specify LEAD STYLE from chart

SM
Specify LEAD STYLE from chart

OTHER OPTION
Specify LEAD STYLE from chart

SPECIFICATIONS
Insulator Material:
Black Liquid Crystal Polymer
Terminal Material:
Phosphor Bronze
Plating:
Sn or Au over 50 µ" (1.27 µm) Ni
Current Rating:
3.2 A per pin (2 pins powered)
Operating Temp Range:
-55 °C to +105 °C with Tin;
-55 °C to +125 °C with Gold
Voltage Rating:
281 VAC mated with SQW;
250 VAC mated with SQT

PROCESSING
Lead–Free Solderable:
Yes
SMT Lead Coplanarity:
(0.15 mm) .006" max*
*(.004" stencil solution may be available; contact ipg@samtec.com)

ALSO AVAILABLE
Other plating (MOQ Required)

Note:
Some lengths, styles and options are non-standard, non-returnable.

samtec.com/TMM

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
THROUGH-HOLE LOW PROFILE HEADER

(2.00 mm) .0787" PITCH • TMM SERIES

**TMM**

- **Board Mates:** CLT, SQT, SQW, ESQT, TLE, SMM, MMS
- **Cable Mates:** TCSD

**SPECIFICATIONS**

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Current Rating (SMM/TMM):** 3.2 A per row (2 pins powered)
- **Operating Temp Range:** -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold
- **Voltage Rating:** 281 VAC mated with SQW; 250 VAC mated with SQT

**PROCESSING**

- **Lead–Free Solderable:** Yes

**APPLICATION**

- Retention Clip Option (–RC)

**ALSO AVAILABLE**

- MOQ Required
- Other Platings

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

**LEAD STYLE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>(1.97) .078</td>
<td>(1.80) .072</td>
<td>(1.70) .065</td>
</tr>
<tr>
<td>L</td>
<td>(3.44) .135</td>
<td>(3.28) .126</td>
<td>(3.10) .118</td>
</tr>
<tr>
<td>S</td>
<td>(6.00) .315</td>
<td>(5.80) .299</td>
<td>(5.60) .282</td>
</tr>
<tr>
<td>T</td>
<td>(1.50) .059</td>
<td>(1.40) .051</td>
<td>(1.30) .043</td>
</tr>
</tbody>
</table>

**OTHER OPTIONS**

<table>
<thead>
<tr>
<th>OTHER OPTION</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA &amp; RE</td>
<td>(1.27) .050</td>
</tr>
<tr>
<td>Q - RA</td>
<td>(3.56) .140</td>
</tr>
<tr>
<td>-RC</td>
<td>(3.56) .140</td>
</tr>
<tr>
<td>-S</td>
<td>(1.27) .050</td>
</tr>
<tr>
<td>-D</td>
<td>(1.27) .050</td>
</tr>
<tr>
<td>-Q</td>
<td>(1.27) .050</td>
</tr>
</tbody>
</table>

**Extended Life Product:**

10 Year MFG with 30 µ" Gold
**HORIZONTAL & MODIFIED HEADERS**

*(2.00 mm) .0787" PITCH • MMT/MTMM SERIES*

**MMT/MTMM**
- **Board Mates:** CLT, SQT*, SQW, ESQT, TLE, SMM, MMS
- **Cable Mates:** TCSD

*Important Note: SQT will not mate to the MMT–02 lead style.

**SPECIFICATIONS**
- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold

**PROCESSING**
- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity (MMT):** (0.10 mm), 0.006" max [02-25] (0.15 mm), 0.006" max [26-36]*
- **Alignment pins**
- **Locking clips**
- **Molded pick & place pads**

ALSO AVAILABLE
- **MOQ Required**
- **Horizontal & Modified Headers**
  - (2.00 mm) .0787" Pitch • MMT/MTMM Series

**LEAD STYLE OAL**
- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold post, Matte Tin on tail
- **T** = Matte Tin

**POST HEIGHT**
- **S** = Single Row
- **D** = Double Row
- **Q** = Quad Row

**STENCIL SOLUTION**
- (.004" stencil solution may be available; contact ipg@samtec.com)

**Note:** Some lengths, styles and options are non-standard, non-returnable.

**samtec.com/MMT or samtec.com/MTMM**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
# Flexible SMT Header

**TMMH** - (2.00 mm) .0787” Pitch • TMMH Series

## Specifications

**Insulator Material:** Black Liquid Crystal Polymer  
**Terminal Material:** Phosphor Bronze  
**Plating:** Sn or Au over 50 µ" (1.27 µm) Ni  
**Current Rating (TMMH/ESQT):** 4.5 A per pin  
(2 pins powered)  
**Current Rating (TMMH/SQT):** 5.1 A per pin  
(2 pins powered)  
**Operating Temp Range:** -55 °C to +105 °C with Tin;  
-55 °C to +125 °C with Gold  
**Voltage Rating:** 281 VAC mated with SQW;  
250 VAC mated with SQT

## Processing

**Lead-Free Solderable:** Yes  
**SMT Lead Coplanarity:** (0.10 mm) .004” max

## Extended Life Product

10 Year MFG WITH 30 µ” GOLD HIGH MATING CYCLES

## Also Available

Other Plating Options

## Other Options

- **“XXX”** = Polarized Position. Specify position of omitted pin  
- **A** = Alignment Pin (3 positions minimum)  
  (Not available with –LC)  
- **LC** = Locking Clip (5 positions minimum)  
  (Not available with –A)  
  (Manual placement required)  
- **M** = Pick & Place Pad (5 positions minimum)  
- **TR** = Tape & Reel Packaging (36 positions maximum)  
  (Flex Shroud options not available except –ES, –EP & –EL)  
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)  
  (36 positions maximum)  
  (Flex Shroud options not available except –ES, –EP & –EL)

## Mates With

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>MATES WITH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SQT, SOW, ESQT, TLE, SMM, MMS, TCSD</td>
</tr>
<tr>
<td>–01</td>
<td>(3.20) .126</td>
<td></td>
</tr>
<tr>
<td>–04</td>
<td>(1.91) .075</td>
<td>CLT</td>
</tr>
<tr>
<td>–05</td>
<td>(1.65) .065</td>
<td></td>
</tr>
</tbody>
</table>

## Lead Style Options

- **-EL**: End Shroud with Guide Post  
- **-ES**: End Shroud  
  (For best cost also see TSH Series)  
- **-EC**: End Shroud with Locking Clip  
  (For best cost also see TSH Series)  
  (Manual placement required)  
- **-EP**: End Shroud with Guide Post  
- **-EL**: End Shroud with Locking Clip  
  (Boards are positively locked and cannot be unmated)  
- **-EBC**: End Shroud with Board Lock and Locking Clip  
  (Manual placement required)  
- **-EPC**: End Shroud with Guide Post and Locking Clip  
  (Manual placement required)  
- **-A**: Alignment Pin  
  (3 positions minimum)  
  (Not available with –LC)  
- **LC**: Locking Clip  
  (5 positions minimum)  
  (Not available with –A)  
  (Manual placement required)  
- **M**: Pick & Place Pad  
  (5 positions minimum)  
- **TR**: Tape & Reel Packaging  
  (36 positions maximum)  
  (Flex Shroud options not available except –ES, –EP & –EL)  
- **FR**: Full Reel Tape & Reel  
  (must order max. quantity per reel; contact Samtec for quantity breaks)  
  (36 positions maximum)  
  (Flex Shroud options not available except –ES, –EP & –EL)

## Note

Some lengths, styles and options are non-standard, non-returnable.
**FLEXIBLE THROUGH-HOLE HEADER**

(2.00 mm) .0787" PITCH • TMMH SERIES

**TMMH**

| Board Mates: |
| CLT, SQT, SQW, ESQT, TLE, SMM, MMS |

| Cable Mates: |
| TCSD |

**SPECIFICATIONS**

| Insulator Material: |
| Black Liquid Crystal Polymer |

| Terminal Material: |
| Phosphor Bronze |

| Current Rating (TMMH/ESQT): |
| 4.5 A per pin |

| Current Rating (TMMH/SQT): |
| 5.1 A per pin |

| Operating Temp Range: |
| -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold |

| Voltage Rating: |
| 281 VAC mated with SQW; 250 VAC mated with SQT |

**PROCESSING**

| Lead–Free Solderable: |
| Yes |

**APPLICATION**

| Retention Clip Option (–RC) |

**ALSO AVAILABLE**

| MOQ Required |

**Other Platings**

| ALSO AVAILABLE Platings |

| Note: |
| Some lengths, styles and options are non-standard, non-returnable. |

**FLEX SHROUD OPTIONS**

| Flex Shroud requires -D row & 9 pins/row minimum (For board-to-board interfaces. Will not mate with TCSD) |

| -ES = End Shroud |
| -EC = End Shroud with Locking Clip (Manual placement required) |
| -EP = End Shroud with Guide Post |
| -EL = End Shroud with Board Lock (Boards are positively locked and cannot be unlated) |
| -EBC = End Shroud with Board Lock and Locking Clip (Boards are positively locked and cannot be unlated) |
| -EPC = End Shroud with Guide Post and Locking Clip (Manual placement required) |

**OTHER OPTIONS**

| “XXX” = Polarized Position (Specify position of omitted pin) |
| –RC = Retention Clip (Mates to TCSD) (Double row only, minimum position 4 and available only –06 lead style) |

**LEAD STYLE A B C D E F G**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>–01</td>
<td>(7.67)</td>
<td>(3.20)</td>
<td>(1.20)</td>
<td>(2.46)</td>
<td>(2.34)</td>
<td>(6.60)</td>
<td>(5.84)</td>
</tr>
<tr>
<td>–04</td>
<td>(6.45)</td>
<td>(1.91)</td>
<td>(0.75)</td>
<td>(2.57)</td>
<td>(2.62)</td>
<td>(5.28)</td>
<td>(4.59)</td>
</tr>
<tr>
<td>–05</td>
<td>(6.45)</td>
<td>(1.66)</td>
<td>(0.65)</td>
<td>(2.29)</td>
<td>(3.12)</td>
<td>(5.28)</td>
<td>(4.59)</td>
</tr>
<tr>
<td>–06</td>
<td>(8.74)</td>
<td>(3.20)</td>
<td>(1.20)</td>
<td>(3.53)</td>
<td>(3.26)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**LEAD–FREE SOLDERABLE:**

| Yes |

**RETENTION CLIP OPTION (–RC):**

| Shrouded option requires –D |

**SHROUDED OPTIONS**

| Shrouded options removed for clarity |

**EXTENDED LIFE PRODUCT**

| 10 YEAR MFG WITH 31 µ" GOLD |

**HIGH MATING CYCLES**

| samtec.com?TMMH | F-224 |

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**SHROUDED HEADER & STACKER**

**(2.00 mm) .0787” PITCH • LTMM/ZLTMM SERIES**

### Specifications

**LTMM/ZLTMM**

- **Mates:** SQT, SQW, ESQT, SMM
- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Operating Temp Range:**
  - -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold
- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004” max
- **PROCESSING**
  - **Lead–Free Solderable:** Yes
  - **SMT Lead Coplanarity:** (0.10 mm) .004” max

**ZLTMM**

- **MOQ Required**
  - Other sizes
  - Other plating
  - **Note:** This Series is non-standard, non-returnable.

**Plating Options**

- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ” (0.25 µm) Gold on post, Matte Tin on tail
- **T** = Matte Tin

**Body Height Options**

<table>
<thead>
<tr>
<th>Lead Style</th>
<th>B (OAL)</th>
<th>Max Body Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>-75</td>
<td>19.38</td>
<td>21.38</td>
</tr>
<tr>
<td>-62</td>
<td>20.07</td>
<td>20.73</td>
</tr>
<tr>
<td>-65</td>
<td>19.38</td>
<td>20.73</td>
</tr>
<tr>
<td>-75</td>
<td>19.38</td>
<td>21.38</td>
</tr>
<tr>
<td>-73</td>
<td>19.38</td>
<td>21.38</td>
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<tr>
<td>-73</td>
<td>19.38</td>
<td>21.38</td>
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<td>-74</td>
<td>19.38</td>
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<tr>
<td>-70</td>
<td>19.38</td>
<td>21.38</td>
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<tr>
<td>-71</td>
<td>21.08</td>
<td>21.08</td>
</tr>
<tr>
<td>-72</td>
<td>21.62</td>
<td>21.62</td>
</tr>
</tbody>
</table>

**Note:**

For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact jpp@samtec.com for more information.

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# SHROUDED HEADERS

(2.00 mm) 0.0787" PITCH • TSH/TMMS SERIES

**TSH**

**Mates:**
CLT, SQT, SQW, ESQT, TLE, SMM, MMS, PTF

**NO. PINS PER ROW**
- 05, 10, 15, 20, 25, 30, 35, 40, 45
  (Standard sizes)

**PLATING OPTION**
- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **T** = Matte Tin

**ROW OPTION**
- **D** = Vertical Through-hole
- **DV** = Vertical Surface Mount
- **RA** = Right-angle Through-hole
- **DH** = Horizontal Surface Mount

**OTHER OPTION**
- **A** = Alignment Pin
- **LC** = Locking Clip
- **RA** = Right-angle Through-hole
- **SL** = Solder Locks
- **TR** = Tape & Reel
- **FR** = Full Reel

**SPECIFICATIONS**

**Insulator Material:** Black Liquid Crystal Polymer
**Terminal Material:** Phosphor Bronze
**Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
**Operating Temp Range:** -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold

**PROCESSING**

**Lead–Free Solderable:** Yes
**SMT Lead Coplanarity (TSH):** (0.067 mm) .0025" max*
  *0.004" stencil solution may be available; contact ipg@samtec.com

**ALSO AVAILABLE**

**MOQ Required**

Other sizes
Other plating

---

**TMMS**

**Mates:**
SQT, SQW, ESQT

**NO. PINS PER ROW**
- 05, 10, 15, 20, 30, 40, 50

**PLATING OPTION**
- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail

**OPTION**
- **Q**
- **RA** = Right-angle

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.

---

samtec.com/TSH or samtec.com/TMMS

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### SMT & THROUGH-HOLE BOARD STACKERS

**TW Series**

<table>
<thead>
<tr>
<th>TW</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>STACKER HEIGHT</th>
<th>SM</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO. PINS</td>
<td>PER ROW</td>
<td>LEAD STYLE</td>
<td>PLATING OPTION</td>
<td>ROW OPTION</td>
<td>STACKER HEIGHT</td>
<td>SM</td>
<td>OTHER OPTION</td>
</tr>
<tr>
<td>02 thru 36</td>
<td>Specify LEAD STYLE from chart</td>
<td>–F = Gold flash on post, Matte Tin on tail</td>
<td>–S = Single Row</td>
<td>–“XXX” = Stacker Height in inches (0.13 mm) .005” increments Example: -250 = (6.35 mm) .250”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 thru 50</td>
<td>Specify LEAD STYLE from chart</td>
<td>–F = Gold flash on post, Matte Tin on tail</td>
<td>–S = Single Row</td>
<td>–“XXX” = Stacker Height in inches (0.13 mm) .005” increments Example: -250 = (6.35 mm) .250”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Specifications

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Sn or Au over 50 µ” (1.27 µm) Ni
- **Current Rating:** TW-SM = 4.9 A per pin (2 pins powered), TW-TH = 5.2 A per pin (2 pins powered)
- **Operating Temp Range:**
  - 55 °C to +105 °C with Tin
  - 55 °C to +125 °C with Gold
- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.15 mm) .006” max*

#### Notes:

- For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.
- This Series is non-standard, non-returnable.

**ALSO AVAILABLE**

**MOQ Required**

Other Platings

End shrouds with or without guide post

---

*Style –08 & –12 = S & D only
PRESS-FIT HEADERS & SOCKETS

(2.00 mm) .0787” PITCH • PTT/PTF SERIES

**PTT**
Mates:
PTF, ESQT, PTHF, SQW, SQT, SMM

**PTF**
Mates:
PTT, TMMH, TMM, MTMM, MMT, TW, LTMM, ZLTMM

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Insulator Material:</th>
<th>Black Liquid Crystal Polymer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Material:</td>
<td>Phosphor Bronze</td>
</tr>
<tr>
<td>Plating:</td>
<td>Au or Sn over 50 µ” (1.27 µm) Ni</td>
</tr>
<tr>
<td>Current Rating:</td>
<td>2.9 A per pin (2 pins powered)</td>
</tr>
<tr>
<td>Operating Temp Range:</td>
<td>-55 °C to +125 °C</td>
</tr>
<tr>
<td>Insertion Depth:</td>
<td>(2.57 mm) .105” to (3.56 mm) .140”</td>
</tr>
<tr>
<td>Max Cycles:</td>
<td>100 with 30 µ” (0.76 µm) Au</td>
</tr>
</tbody>
</table>

**ALSO AVAILABLE**

MOQ Required

Other Platings

**TOOLING**

Press-Fit
PHT: CAT-PT-PH-1XX-X-X
PHF: CAT-PT-PH-1XX-X-B
For more information, visit www.samtec.com/tooling

---

**LEAD STYLE**

Specify LEAD STYLE from chart

**PLATING OPTION**

Specify LEAD STYLE from chart

**OPTION**

“XXX” = Polarized Position

---

**LEAD STYLE**

Specify LEAD STYLE from chart

**PLATING OPTION**

Specify LEAD STYLE from chart

**OPTION**

“XXX” = Polarized Position

---

**Note:**
Some lengths, styles and options are non-standard, non-returnable.
FLEXIBLE ELEVATED & SELF-NESTING SOCKETS

ESQT

Board Mates:
TMMH, TM, MTMM, MMT, TW, LTMM, LTMM, ESQT, PTT, TSH, TMMS

Cable Mates:
TCMD

ESQT (-368)/PTHF

Mates:
ESQT, PTHF

**SPECIFICATIONS**

Insulator Material:
Black Liquid Crystal Polymer
ESQT-368
Black High Temp Nylon (PTHF)

Contact Material:
Phosphor Bronze

Plating:
Au or Sn over 50 µ" (1.27 µm) Ni

Current Rating (ESQT/TMMH):
4.5 A per pin (2 pins powered)

Operating Temp Range:
-55 °C to +125 °C

Max Cycles:
100 with 10 µ" (0.25 µm) Au

Lead-Free Solderable:
Yes, for -S, -D & -Q
(Wave only for -T, -5 & -6)

ESQT (-368) SERIES

Press-Fit CAT-PT-PT-130-A-4
For more information, visit www.samtec.com/tooling

Note:
This Series is non-standard, non-returnable.

---

**TOOLING**

**F-224 samtec.com?ESQT or samtec.com?PTHF**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**COST-EFFECTIVE RUGGED SOCKETS**

**(2.00 mm) .0787” PITCH • SQW/SQT SERIES**

### SQW/SQT

| **Board Mates:** | TMMH, TMMS, TMM, MTMM, MMT, TW, TSH, LTMM, ZLTMM, PTT |
| **Cable Mates:** | TCMD |

### SPECIFICATIONS

- **Insulator Material:** Black Liquid Crystal Polymer
- **Contact Material:** Phosphor Bronze
- **Plating:** Sn over Au or Au over 50 µ” (1.27 µm) Ni
- **SQW Current Rating (SQW/TMMH):** 3.8 A per pin (2 pins powered)
- **SQT Current Rating (TMMH/SQT):** 5.1 A per pin (2 pins powered)
- **Voltage Rating:** 281 VAC mated with TMM; 250 VAC mated with TMMH
- **Operating Temp Range:** -55 °C to +125 °C
- **SQW Insertion Depth:** (2.62 mm) .103” to (5.03 mm) .198” with (0.38 mm) .015” wipe
- **SQT Insertion Depth:** (2.62 mm) .103” to (5.03 mm) .198”
- **Max Cycles:** 100 with 10 µ” (0.25 µm) Au

### PROCESSING

- **SQW Lead–Free Solderable:** Yes, for –D & –D–VS (Wave only for –T, –Q, –5 & –6)
- **SQT Lead–Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004” max (0.10) (0.15 mm) .006” max (11-50)* (.004” stencil solution may be available; contact ipg@samtec.com)

### COST-EFFECTIVE RUGGED SOCKETS

<table>
<thead>
<tr>
<th><strong>NO. PINS PER ROW</strong></th>
<th><strong>PLATING OPTION</strong></th>
<th><strong>ROW OPTION</strong></th>
<th><strong>OPTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>02 thru 50</td>
<td>–F</td>
<td>–D</td>
<td>–“XXX”</td>
</tr>
<tr>
<td></td>
<td>= Gold flash on contact, Matte Tin on tail</td>
<td>= Double Row</td>
<td>= Polarized Position</td>
</tr>
<tr>
<td></td>
<td>–L</td>
<td>–D–VS</td>
<td>–D–VS only options:</td>
</tr>
<tr>
<td></td>
<td>= 10 µ” (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td>= Double Row Surface Mount</td>
<td>= Alignment Pin</td>
</tr>
<tr>
<td></td>
<td>–T</td>
<td>–Q</td>
<td>= 10 µ” (0.25 µm)</td>
</tr>
<tr>
<td></td>
<td>= Triple Row</td>
<td>= Four Row</td>
<td>= Gold flash on contact, Matte Tin on tail</td>
</tr>
<tr>
<td></td>
<td>–5</td>
<td>= Five Row</td>
<td>= Matte Tin on tail</td>
</tr>
<tr>
<td></td>
<td>= Six Row</td>
<td>= Six Row</td>
<td>= Gold flash on contact, Matte Tin on tail</td>
</tr>
</tbody>
</table>

### LEAD STYLES

- **SQW – 1:** Specify LEAD STYLE from chart
- **SQT – 1:** 02 thru 50

### LEAD–FREE SOLDERABLE

- **SQW Lead–Free Solderable:** Yes, for –D & –D–VS (Wave only for –T, –Q, –5 & –6)
- **SQT Lead–Free Solderable:** Yes

### OTHER OPTIONS

- **–RA** = Right-angle (–Q, –5 & –6 not available) (Lead Style –01 only)
- **–“XXX”** = Polarized Position (Indicate position number)

### Note:
Some lengths, styles and options are non-standard, non-returnable.

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
SPECIFICATIONS

Insulator Material:
Black LCP
Contact Material:
Phosphor Bronze
Plating:
Sn or Au over 50 µ" (1.27 µm) Ni
Current Rating (MMS/TMM):
3.9 A per pin (2 pins powered)
Operating Temp Range:
-55 °C to +125 °C with Gold
-55 °C to +105 °C with Tin
Insertion Depth:
DH = (2.13 mm) .084" to
(2.79 mm) .110"
SH = (2.13 mm) .084" minimum or pass-through
Top Entry DV/SV =
(2.13 mm) .084" to
(4.32 mm) .170"
Bottom Entry DV/SV =
(4.27 mm) .168" minimum

PROCESSING

Lead–Free Solderable:
Yes
SMT Lead Coplanarity:
(0.15 mm) .006" max*
(0.004" stencil solution may be available; contact ipg@samtec.com)

ALSO AVAILABLE

MOQ Required

Alignment Pin (–DV only)
Locking clips and Through-hole pass-through options
Other platings

Note:
Some lengths, styles and options are non-standard, non-returnable.

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
COST-EFFECTIVE & DUAL WIPE SOCKETS

(2.00 mm) .0787" PITCH • TLE/CLT SERIES

TLE
Mates: TMMH, TMM, MTMM, MMT, TW, LTMM, ZLTMM, TCMD, TSH

CLT
Mates: TMM, TMMH, MTMM, MMT, TW, TSH

SPECIFICATIONS

TLE
- Insulator Material: Black Liquid Crystal Polymer
- Contact Material: Phosphor Bronze
- Plating: Au over 50 µ" (1.27 µm) Ni
- Current Rating (TLE/TMMH): 3.2 A per pin
- Operating Temp Range: -55 °C to +125 °C
- Insertion Depth: (2.08 mm) .082" to (4.37 mm) .172" with (0.38 mm) .015" wipe, pass-through, or (3.35 mm) .132" min for bottom entry

CLT
- Same as TLE except:
- Plating: Sn or Au over 50 µ" (1.27 µm) Ni
- Current Rating (TMMH/CLT): 4.1 A per pin
- Insertion Depth:
  - Top Entry: (1.40 mm) .055" minimum
  - Bottom Entry: (2.57 mm) .101" minimum
  (add board thickness for correct post OAL)
- Max Cycles: 100 with 10 µ" (0.25 µm) Au

PROCESSING

TLE
- Lead–Free Solderable: Yes
- SMT Lead Coplanarity:
  - (0.10 mm) .004" max (02-26)
  - (0.15 mm) .006" max (27-50)
  - *0.004" stencil solution may be available; contact ipc@samtec.com

CLT
- Same as TLE except:
- SMT Lead Coplanarity:
  - (0.10 mm) .004" max (02-25)
  - (0.15 mm) .006" max (26-34)*
  - (0.20 mm) .008" max (35-50)*
  - *0.004" stencil solution may be available; contact ipg@samtec.com

Note: Some lengths, styles and options are non-standard, non-returnable.

samtec.com/TLE or samtec.com/CLT

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
## Specifications

<table>
<thead>
<tr>
<th>LS2</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>D</th>
<th>TAIL OPTION</th>
<th>OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS2 - 1</td>
<td>05, 10, 15, 20, 25, 30</td>
<td>-01 = Through-hole</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-01 only</td>
<td>-RA1 = Right-angle (Shroud Down)</td>
<td>-TR = Tape &amp; Reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-02 = Surface Mount</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td></td>
<td>-RA2 = Right-angle (Shroud Up)</td>
<td>-FR = Full Reel</td>
</tr>
</tbody>
</table>

**Insulator Material:**
Black Liquid Crystal Polymer

**Contact Material:**
Phosphor Bronze

**Plating:**
- Au or Sn over 50 µ" (1.27 µm) Ni
- Current Rating: 3.2 A per pin (6 adjacent pins powered)
- Voltage Rating: 475 VAC mated with LS2
- Operating Temp Range: -55 °C to +125 °C

**Processing**

- Lead-Free Solderable: Yes
- SMT Lead Coplanarity: 0.15 mm .006" max*
- (.004" stencil solution may be available; contact ipg@samtec.com)

**Application**

- Through-Hole (.005") (.05 mm) .380
- Surface Mount (.00") (.127 mm) .540

**Also Available**

- Alignment pin
- Other platings
- Other stack heights

**Note:** Some lengths, styles and options are non-standard, non-returnable.
# PRESS-FIT HEADERS & SOCKETS

## PHT
### Board Mates:
- SSW, SSQ, ESQ, BCS, BSW, CES, SLW, PHF, SSM

### Cable Mates:
- IDSD, IDSS

## PHF
### Board Mates:
- TSW, MTSW, MTLW, EW, ZW, TSS, ZSS, TSM, TSSH, PHT, DW, HW

## SPECIFICATIONS

- **Insulator Material:** Liquid Crystal Polymer
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating (PHT/PHF):** 4.8 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C with Gold
- **(PHF) Insertion Depth:** (3.68 mm) .145" to (6.35 mm) .250"

## PROCESSING

Contact ipg@samtec.com

## ALSO AVAILABLE

Other Platings (MOQ Required)

## TOOLING

Press-Fit
- PHT: CAT-PT-PH-1XX-X-X
- PHF: CAT-PT-PH-1XX-X-B

For more information, visit www.samtec.com/tooling

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**Note:**
Some lengths, styles and options are non-standard, non-returnable.

---

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
<th>MOQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(2.54) .100</td>
<td></td>
</tr>
<tr>
<td>-02</td>
<td>(5.08) .200</td>
<td></td>
</tr>
<tr>
<td>-03</td>
<td>(7.62) .300</td>
<td></td>
</tr>
<tr>
<td>-04</td>
<td>(10.16) .400</td>
<td></td>
</tr>
</tbody>
</table>

**LEAD STYLE A**
- 01 (2.54) .100
- 02 (5.08) .200
- 03 (7.62) .300
- 04 (10.16) .400

---

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(8.50) .335</td>
</tr>
<tr>
<td>-02</td>
<td>(11.00) .435</td>
</tr>
<tr>
<td>-03</td>
<td>(13.59) .535</td>
</tr>
<tr>
<td>-04</td>
<td>(16.13) .635</td>
</tr>
</tbody>
</table>

**LEAD STYLE**
- 01
- 02
- 03
- 04

---

**Press-Fit**
- PHT: CAT-PT-PH-1XX-X-X
- PHF: CAT-PT-PH-1XX-X-B

For more information, visit www.samtec.com/tooling

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samtec.com?PHT or samtec.com?PHF

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
THROUGH-HOLE
.025" SQ POST HEADER

(2.54 mm) .100" PITCH • TSW/HTSW SERIES

SERIES

- TSW = Standard Strip
- HTSW = Hi-Temp Strip

PIN CENTERS

-1 = .100" (2.54 mm) Centers, (All positions filled)
-2 = .200" (5.08 mm) Centers, (Every other position filled)

NO. PINS PER ROW

- 01 thru 50 = .100" (2.54 mm) Center Version
- 02 thru 25 = .200" (5.08 mm) Center Version

LEAD STYLE

Specify LEAD STYLE from chart

SPECIFICATIONS

TSW/HTSW
Board Mates:
- SSW, SSQ, SSM, ESW, ESQ, BCS, BSW, CES, SLW
Cable Mates:
- IDSD, IDSS

Insulator Material:
- TSW: PBT
- HTSW: Natural LCP

Terminal Material:
- Phosphor Bronze

Plating:
- Au or Sn over 50 μ" (1.27 μm) Ni

Operating Temp Range:
- -55 °C to +125 °C with Gold
- -55 °C to +105 °C with Tin

Voltage Rating:
- 550 VAC mated with SSW;
- 500 VAC mated with BCS;
- 515 VAC mated with ESQ;
- 450 VAC mated with BCS or SSM;
- 400 VAC mated with CES

Lead–Free Solderable:
- HTSW: Yes
- TSW: No, Lead Wave Only

CURRENT RATING
(PER PIN)

TSW mated with:
- ESW SSW SLW SSQ SSM BCS SNT

5.2 A 5.7 A 5.2 A 6.3 A 5.2 A 4.6 A 4.3 A

2 POSITIONS POWERED

ALSO AVAILABLE
MOQ Required

OTHER SOLUTIONS

Elevated Right-angle option
Shunts

STRAIGHT PIN VERSIONS

LEAD STYLE A B C
-05 (8.51) .335 (3.30) .130 (2.67) .105
-06 (7.62) .300 (2.41) .095 (2.67) .105
-07 (10.92) .430 (2.54) .100
-08 (13.46) .530 (5.08) .200
-09 (18.54) .730 (10.16) .400
-10 (21.08) .830 (12.70) .500
-11 (23.62) .930 (15.24) .600
-12 (26.16) 1.030 (17.78) .700
-13 (31.24) 1.230 (22.86) .900
-14 (31.24) .530 (5.08) .200 (8.13) .320
-15 (18.54) .730 (2.41) .095 (13.21) .520
-16 (21.08) .830 (2.41) .095 (15.74) .420
-17 (23.62) .930 (2.41) .095 (18.29) .720
-18 (26.16) 1.030 (2.79) .110 (8.13) .320
-19 (26.16) 1.030 (2.79) .110 (20.83) .820
-20 (31.24) 1.230 (2.79) .110 (25.91) 1.020
-21 (36.32) 1.430 (2.79) .110 (30.99) 1.220
-22 (16.00) .630 (7.62) .300 (7.62) .300 (5.84) .230
-23 (11.30) .445 (2.92) .115 (1.27) .050 (8.13) .265
-24 (12.15) .480 (6.73) .265
-25 (16.00) .630 (5.33) .210 (8.13) .320
-26 (11.58) .456 (3.20) .126 (5.84) .230
-27 (13.78) 1.330 (20.40) 1.000 (8.13) .320
-28 (28.70) 1.130 (23.11) 1.110 (20.83) .820
-29 (33.78) 1.330 (23.11) 1.110 (25.91) 1.020
-30 (28.70) 1.130 (18.03) .710 (8.13) .320
-41 (9.27) .365 (0.89) .035 (5.84) .230
-42 (11.94) .470 (1.27) .050 (8.13) .320

STRAIGHT PIN VERSIONS

LEAD STYLE A B C
-41 (9.27) .365 (0.89) .035 (5.84) .230
-42 (11.94) .470 (1.27) .050 (8.13) .320

* Available with –LL (Locking Lead) Option
Specify -07 for best mate with IDXX Series IDC Cable

Note:
- Some lengths, styles and options are non-standard, non-returnable.

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
PLATING OPTION

- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **G** = 10 µ" (0.25 µm) Gold on post, Gold flash on balance
- **T** = Matte Tin

ROW OPTION

- **S** = Single Row
- **D** = Double Row
- **T** = Triple Row
- **Q** = Double Row (5.08 mm) row space

OTHER OPTION

- **RA** or **RE** = Right-angle
- **NA** = Right-angle (Using straight body for coplanar mating with SSW-RA series)
- **LL** = Locking Lead
  - See charts for available styles.
  - Not available with single row
  - 1 or 2 positions.
  - Recommended hole size (1.02 mm ± 0.03 mm ; 0.040" ± .001)
- **LC** = Locking Clip
  - (Styles –08 thru –13 & –22 only)
  - Requires 4 pin minimum
  - Not available with **T**, **Q**, **RA** or **RE**
- **LA** = –RA Option with –LL Option
- "**XXX**" = Polarized Position

Right-Angle Versions

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA</td>
<td>(1.52) .060</td>
</tr>
<tr>
<td>RE</td>
<td>(0.06) .160</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEFT ANGLE VERSIONS</th>
<th>SINGLE</th>
<th>DOUBLE</th>
<th>TRIPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEFT ANGLE VERSIONS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RA LEAD STYLE</th>
<th>SINGLE (–S)</th>
<th>DOUBLE (–D)</th>
<th>TRIPLE (–T &amp; –Q)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>–08</td>
<td>(2.29) .090</td>
<td>(2.29) .090</td>
<td>(2.29) .090</td>
</tr>
<tr>
<td>–09</td>
<td>(7.37) .290</td>
<td>(7.37) .290</td>
<td>(7.37) .290</td>
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<tr>
<td>–10</td>
<td>(9.91) .390</td>
<td>(9.91) .390</td>
<td>(9.91) .390</td>
</tr>
<tr>
<td>–11</td>
<td>(12.43) .490</td>
<td>(12.43) .490</td>
<td>(12.43) .490</td>
</tr>
<tr>
<td>–12</td>
<td>(14.99) .590</td>
<td>(14.99) .590</td>
<td>(14.99) .590</td>
</tr>
<tr>
<td>–13</td>
<td>(20.07) .790</td>
<td>(20.07) .790</td>
<td>N/A</td>
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<tr>
<td>–16</td>
<td>(5.08) .200</td>
<td>(5.08) .200</td>
<td>(5.08) .200</td>
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<tr>
<td>–21</td>
<td>(25.15) .990</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>–22</td>
<td>(4.83) .190</td>
<td>(4.83) .190</td>
<td>(4.83) .190</td>
</tr>
<tr>
<td>–25</td>
<td>(2.54) .100</td>
<td>(2.54) .100</td>
<td>(2.54) .100</td>
</tr>
<tr>
<td>–27</td>
<td>(22.61) .890</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>–28</td>
<td>(17.53) .690</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>–29</td>
<td>(20.32) .800</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>–30</td>
<td>(15.24) .600</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Available with **LA** (Locking Lead) Option

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.**
**SURFACE MOUNT .025" SQ POST HEADER**

(2.54 mm) .100" PITCH • TSM SERIES

**TSM**

**Board Mates:**
SSW, SSQ, SSM, BSW, ESW, ESQ, BCS, SLW, CES, HLE

**Cable Mates:**
IDSS, IDSD

**SPECIFICATIONS**

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +105 °C with Tin; -55 °C to +125 °C with Gold
- **Voltage Rating:** 495 VAC -SV/-DV mated with the BCS
- **475 VAC -SV/-DV mated with the SSM**

**PROCESSING**

- **Lead-Free Solderable:** Yes
- **-DH/-SH/-SV Lead Coplanarity:**
  - (0.06") max (02-36)*
  - (0.06") max (02-05)
  - (0.06") max (06-10)*
  - (0.15 mm) .006" max (11-36)*
- **+(0.004" stencil solution may be available; contact ipg@samtec.com)**

**MATES CURRENT RATING (PER PIN)**

<table>
<thead>
<tr>
<th>MATES</th>
<th>CURRENT RATING (PER PIN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSM/SSW</td>
<td>4.7 A</td>
</tr>
<tr>
<td>TSM/SSM</td>
<td>5.4 A</td>
</tr>
<tr>
<td>TSM/HLE</td>
<td>4.1 A</td>
</tr>
<tr>
<td>TSM/BCS</td>
<td>5.0 A</td>
</tr>
</tbody>
</table>

**SH Row Option**

- (2.54 x No. of positions)
  - (No. of positions x (2.54) .100) – (5.08) .200

**DV Row Option**

- (2.54 x No. of positions)
  - (No. of positions -2) x (2.54) .100

**Notes:**
Severe Environment Testing qualified; aligns with MIL-DTL-55302.
Visit samtec.com/set

Some sizes, styles and options are non-standard, non-returnable.

**LEAD STYLE**

- **SV Row Option**
- **SH Row Option**
- **DV Row Option**

**LEAD STYLE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>POST HEIGHT</th>
<th>MATES WITH</th>
</tr>
</thead>
<tbody>
<tr>
<td>-01</td>
<td>(5.84) .230</td>
<td>SSW, BCS, SSM, IDSS, IDSD</td>
</tr>
<tr>
<td>-02</td>
<td>(9.13) .320</td>
<td>SSM -DH</td>
</tr>
<tr>
<td>-03</td>
<td>(10.67) .420</td>
<td>Bottom Mount &amp; Pass Through</td>
</tr>
<tr>
<td>-04</td>
<td>(3.05) .120</td>
<td>SLW, CES, HLE</td>
</tr>
</tbody>
</table>

**Notes:**
Severe Environment Testing qualified; aligns with MIL-DTL-55302.
Visit samtec.com/set

Some sizes, styles and options are non-standard, non-returnable.

**F-224**

samtec.com?TSM

 Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
PLATING OPTION

- \( \text{F} \) = Gold flash on post, Matte Tin on tail
- \( \text{L} \) = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- \( \text{S} \) = 30 µ" (0.76 µm) Gold on post, Matte Tin on tail
- \( \text{T} \) = Matte Tin

ROW OPTION

- \( \text{SV} \) = Single Row Vertical Pin
- \( \text{DV} \) = Double Row Vertical Pin
- \( \text{SH} \) = Single Row Horizontal Pin
- \( \text{DH} \) = Double Row Horizontal Pin (Style –01 only)
- \( \text{TM} \) = Triple Row Vertical Mixed Technology (Style –01 only) (02 thru 30 positions only)
- \( \text{MT} \) = Mixed Technology Pin (Style –01, –02 or –03 only)

OTHER OPTIONS

- \( \text{“XXX”} \) = Polarized Position
- \( \text{A} \) = Alignment Pin metal or plastic at Samtec discretion (Not available with –TM or –MT) (02 positions minimum) (Not available with –LC)
- \( \text{LC} \) = Locking Clip (Not available with –TM) (3 positions minimum) (Manual placement required)
- \( \text{K} \) = (6.50 mm) .256" DIA Polyimide Film Pick & Place Pad (–SH: 4 positions minimum without –TR; 2 & 3 positions available with –TR) (–DH: 4 positions minimum without –TR)
- \( \text{P} \) = Plastic Pick & Place Pad (–DV: 4 positions minimum without –TR; 2 & 3 positions available with –TR) (–SH: 4 positions minimum without –TR; 2 & 3 positions available with –TR)
- \( \text{TR} \) = Tape & Reel (–SV: 02-22 positions, –DV: 02-28 positions, –SH: 02-30 positions, –DH: 02-29 positions (Not available with –MT or –TM)
- \( \text{FR} \) = Full Reel Tape & Reel (must order maximum quantity per reel; contact Samtec for quantity breaks) (–SV: 02-22 positions, –DV: 02-28 positions, –SH: 02-30 positions, –DH: 02-29 positions (Not available with –MT or –TM)

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
# MTSW/HMTSW Series

## Board Mates:
- SSW, S SQ, ESW, ESQ, BCS, BSW
- CES, SLW, HLE, S SM

## Cable Mates:
- IDSD, IDSS

### Insulator Material:
- MTSW: Black Glass Filled Polyester
- HMTSW: Natural Liquid Crystal Polymer

### Terminal Material:
- Phosphor Bronze

### Operating Temp Range:
- -55 °C to +125 °C with Gold
- -55 °C to +105 °C with Tin

### Lead-Free Solderable:
- MTSW: No, Lead Wave Only
- HMTSW: Yes

## Specifications

### Lead Style

#### OAL

- **01 thru 50**
  - 100" (2.54 mm) Center Version
  - 01 thru 50 = .100" (2.54 mm) Center Version

- **02 thru 25**
  - 200" (5.08 mm) Center Version
  - 02 thru 25 = .200" (5.08 mm) Center Version

### Processing

- Specifications can be found on the Samtec website: samtec.com

---

**Note:**
These Series are non-standard, non-returnable.

---

**SERIES**

- MTSW = Modified Strip
- HMTSW = Hi-Temp Modified Strip

**PIN CENTERS**

- **01 thru 50**
  - (2.54 mm) .100" Pitch
  - (All positions filled)

- **02 thru 25**
  - (5.08 mm) .200" Pitch
  - (Every other position filled)

**NO. PINS PER ROW**

- Specify LEAD STYLE from chart

---

**LEAD STYLE**

- **MTSW**
  - 06 = (2.54 mm) .100" Pitch
  - 07 = (2.54 mm) .100" Pitch
  - 08 = (2.54 mm) .100" Pitch
  - 09 = (2.54 mm) .100" Pitch
  - 10 = (2.54 mm) .100" Pitch
  - 11 = (2.54 mm) .100" Pitch
  - 12 = (2.54 mm) .100" Pitch
  - 13 = (2.54 mm) .100" Pitch
  - 21 = (2.54 mm) .100" Pitch
  - 22 = (2.54 mm) .100" Pitch
  - 23 = (2.54 mm) .100" Pitch
  - 24 = (2.54 mm) .100" Pitch
  - 27 = (2.54 mm) .100" Pitch
  - 28 = (2.54 mm) .100" Pitch

- **HMTSW**
  - 06 = (2.54 mm) .100" Pitch
  - 07 = (2.54 mm) .100" Pitch
  - 08 = (2.54 mm) .100" Pitch
  - 09 = (2.54 mm) .100" Pitch
  - 10 = (2.54 mm) .100" Pitch
  - 11 = (2.54 mm) .100" Pitch
  - 12 = (2.54 mm) .100" Pitch
  - 13 = (2.54 mm) .100" Pitch
  - 21 = (2.54 mm) .100" Pitch
  - 22 = (2.54 mm) .100" Pitch
  - 23 = (2.54 mm) .100" Pitch
  - 24 = (2.54 mm) .100" Pitch
  - 27 = (2.54 mm) .100" Pitch
  - 28 = (2.54 mm) .100" Pitch

---

**FOR “A” = (2.29) .090**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>OAL</th>
<th>C MAXIMUM STRAIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>7.62 .300</td>
<td>2.79 .110</td>
</tr>
<tr>
<td>07</td>
<td>10.92 .430</td>
<td>6.13 .240</td>
</tr>
<tr>
<td>08</td>
<td>13.46 .530</td>
<td>8.64 .340</td>
</tr>
<tr>
<td>09</td>
<td>18.54 .730</td>
<td>13.72 .540</td>
</tr>
<tr>
<td>10</td>
<td>21.08 .830</td>
<td>16.26 .640</td>
</tr>
<tr>
<td>11</td>
<td>23.62 .930</td>
<td>18.80 .740</td>
</tr>
<tr>
<td>12</td>
<td>26.16 1.030</td>
<td>21.34 .840</td>
</tr>
<tr>
<td>13</td>
<td>31.24 1.230</td>
<td>26.42 .940</td>
</tr>
<tr>
<td>21</td>
<td>36.32 1.430</td>
<td>31.50 .1240</td>
</tr>
<tr>
<td>22</td>
<td>16.00 .630</td>
<td>11.18 .440</td>
</tr>
<tr>
<td>23</td>
<td>21.30 .445</td>
<td>6.48 .255</td>
</tr>
<tr>
<td>24</td>
<td>12.19 .480</td>
<td>7.37 .290</td>
</tr>
<tr>
<td>27</td>
<td>23.78 .130</td>
<td>28.96 .1140</td>
</tr>
<tr>
<td>28</td>
<td>28.70 .130</td>
<td>23.88 .940</td>
</tr>
</tbody>
</table>

---

**Note:**
These Series are non-standard, non-returnable.
**PLATING OPTION**

- **F** = Gold flash on post, Matte Tin on tail
- **L** = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **G** = 10 µ" (0.25 µm) Gold on post, Gold flash on balance
- **T** = Matte Tin

**ROW OPTION**

- **S** = Single Row
- **D** = Double Row
- **T** = Triple Row
- **Q** = Double Row .200" (5.08 mm) row space

**POST HEIGHT**

“XXXX” = “C” Dimension (Specify post height in INCHES .005" (0.13 mm) increments)

**OTHER OPTION**

- **RA or –RE** = Right-angle (HMTSW – S & –D = 36 positions maximum)

- **LL** = Locking Lead (not available with –RE, not available in single row 1 or 2 positions) (Available on tails from (2.29 mm), .090” to (10.16 mm), .400” only)

- **LA** = –RA option with –LL Option (Maximum “C” = (13.46 mm), .530”)

**POLARIZED OPTION**

“XXX” = Polarized (Specify ‘XXX’ as position number)

---

**RX OPTION**

- **RA** = (1.52), .060
- **RE** = (4.06), .160

---

**FOR “E” = (2.29), .090 MIN FOR –RA & –RE**

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>OAL</th>
<th>C MAXIMUM with/–RA</th>
<th>C MAXIMUM with/–RE</th>
</tr>
</thead>
<tbody>
<tr>
<td>–06</td>
<td>(7.62), 300</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>–07</td>
<td>(10.92), 430</td>
<td>(3.30), 130</td>
<td>(3.30), 130</td>
</tr>
<tr>
<td>–08</td>
<td>(13.46), 530</td>
<td>(5.84), 230</td>
<td>(3.30), 130</td>
</tr>
<tr>
<td>–09</td>
<td>(18.54), 730</td>
<td>(10.92), 430</td>
<td>(8.38), 330</td>
</tr>
<tr>
<td>–10</td>
<td>(21.08), 830</td>
<td>(13.46), 530</td>
<td>(10.92), 430</td>
</tr>
<tr>
<td>–11</td>
<td>(23.62), 930</td>
<td>(16.00), 630</td>
<td>(13.46), 530</td>
</tr>
<tr>
<td>–12</td>
<td>(26.16), 1,030</td>
<td>(18.54), 730</td>
<td>(16.00), 630</td>
</tr>
<tr>
<td>–13</td>
<td>(31.24), 1,230</td>
<td>(23.62), 930</td>
<td>(21.08), 830</td>
</tr>
<tr>
<td>–14</td>
<td>(36.32), 1,430</td>
<td>(28.70), 1,130</td>
<td>(26.16), 1,030</td>
</tr>
<tr>
<td>–15</td>
<td>(41.40), 1,630</td>
<td>(33.88), 1,330</td>
<td>(28.70), 1,130</td>
</tr>
<tr>
<td>–16</td>
<td>(46.48), 1,830</td>
<td>(39.06), 1,530</td>
<td>(33.88), 1,330</td>
</tr>
<tr>
<td>–17</td>
<td>(51.56), 2,030</td>
<td>(44.24), 1,730</td>
<td>(39.06), 1,530</td>
</tr>
<tr>
<td>–18</td>
<td>(56.64), 2,230</td>
<td>(50.42), 1,930</td>
<td>(44.24), 1,730</td>
</tr>
<tr>
<td>–19</td>
<td>(61.72), 2,430</td>
<td>(56.60), 2,130</td>
<td>(50.42), 1,930</td>
</tr>
<tr>
<td>–20</td>
<td>(66.80), 2,630</td>
<td>(62.78), 2,330</td>
<td>(56.60), 2,130</td>
</tr>
<tr>
<td>–21</td>
<td>(71.88), 2,830</td>
<td>(68.96), 2,530</td>
<td>(62.78), 2,330</td>
</tr>
<tr>
<td>–22</td>
<td>(76.96), 3,030</td>
<td>(75.14), 2,730</td>
<td>(68.96), 2,530</td>
</tr>
<tr>
<td>–23</td>
<td>(82.04), 3,230</td>
<td>(81.32), 2,930</td>
<td>(75.14), 2,730</td>
</tr>
<tr>
<td>–24</td>
<td>(87.12), 3,430</td>
<td>(87.50), 3,130</td>
<td>(81.32), 2,930</td>
</tr>
<tr>
<td>–25</td>
<td>(92.20), 3,630</td>
<td>(93.68), 3,330</td>
<td>(87.50), 3,130</td>
</tr>
<tr>
<td>–26</td>
<td>(97.28), 3,830</td>
<td>(100.00), 3,530</td>
<td>(93.68), 3,330</td>
</tr>
</tbody>
</table>

* Styles –21, –23, –24, –27 not available with –D Right-angle
* Styles –13, –21, –23, –24, –27, –28 not available with –T or –Q Right-angle

---

- **RX OPTIONS**: E=OAL-C– (5.33), .210”
- **RX OPTIONS** Single Row Only: E=OAL-C– (7.87), .310”

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**LOW PROFILE .025" SQ POST HEADERS**

*(2.54 mm) .100" PITCH • TLW/MTLW SERIES*

### TLW/MTLW

**Board Mates:**
BSW, CES, SLW, HLE

#### FEATURES

These headers provide the ultimate low profile (0.64 mm) .025" square post board stacking system. The high quality Phosphor Bronze terminals are available with a standard short post height (TLW Series) for mating with low profile sockets, or the post height can be Modified (MTLW Series) to accommodate IDC assemblies and other applications.

#### SPECIFICATIONS

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Current Rating (TLW/SLW):** 5.2 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +105 °C with Tin
  -55 °C to +125 °C with Gold

#### PROCESSING

- **Lead–Free Solderable:** Yes

---

### ALSO AVAILABLE

Other platings
Notch option

---

#### Note:

Some lengths, styles and options are non-standard, non-returnable. MTLW Series is non-standard, non-returnable.

---

#### TLW

<table>
<thead>
<tr>
<th>TLW</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 thru 40</td>
<td>Single Row</td>
<td>Specify LEAD STYLE from chart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 thru 36</td>
<td>Double Row</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### PLATING OPTIONS

- **F:** Gold flash on post, Matte Tin on tail
- **G:** 10 µ" (0.25 µm) Gold on post, Gold flash on tail
- **T:** Matte Tin

#### ROW OPTION

- **S:** Single Row
- **D:** Double Row

#### OTHER OPTION

- **RA:** Right-angle (-01 Lead Style only)
- **"XX":** Polarized Position Specify position for omitted pin.

---

### MTLW

<table>
<thead>
<tr>
<th>MTLW</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>POST HEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 thru 40</td>
<td>Single Row</td>
<td>Specify LEAD STYLE from chart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 thru 36</td>
<td>Double Row</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### PLATING OPTIONS

- **F:** Gold flash on post, Matte Tin on tail
- **L:** 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- **G:** 10 µ" (0.25 µm) Gold on post, Gold flash on tail
- **T:** Matte Tin

#### ROW OPTION

- **S:** Single Row
- **D:** Double Row

#### POST HEIGHT

- **"XXX":** Post Height Dimension (In inches)

---

#### LEAD STYLE

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>OAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>(5.84) .230</td>
</tr>
<tr>
<td>D</td>
<td>(5.03) .198</td>
</tr>
<tr>
<td>RA</td>
<td>(5.03) .198</td>
</tr>
<tr>
<td>&quot;XX&quot;</td>
<td>(5.03) .198</td>
</tr>
</tbody>
</table>

---

**ALSO AVAILABLE**

MOQ Required

---

**Note:**

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FLEX STACK

FLEXIBLE .025" SQ BOARD STACKERS
(2.54 mm) .100" PITCH • HW SERIES

HW
Board Mates:
SSW, SSQ, ESW, ESQ,
CES, SLW, BSW, BCS,
SSM, HLE, PHF

Cable Mates:
IDSS, IDSQ

SPECIFICATIONS
Insulator Material:
HW-SM Top = Natural LCP
HW-SM Bottom = Black LCP
HW-TH = Natural LCP

Terminal Material:
Phosphor Bronze

Plating:
Au or Sn over
50 µ" (1.27 µm) Ni

Operating Temp Range:
-55 °C to +125 °C with Gold
-55 °C to +105 °C with Tin

PROCESSING
Lead–Free Solderable:
Yes

SMT Lead Coplanarity:
(0.15 mm) .006" max*
*(.004" stencil solution
may be available; contact
ipg@samtec.com)

Notes:
For added mechanical
stability, Samtec recommends
mechanical board spacers be
used in applications with gold or
selective gold plated connectors.
Contact ipg@samtec.com for
more information.

This Series is non-standard,
non-returnable.

01 thru 50 (Through-hole)
02 thru 36 (Surface mount)

Specify LEAD STYLE from chart

LEAD STYLE OAL (TH)

- F = Gold flash on contact, Matte Tin on tail
- L = 10 µ" (0.25 µm) Gold on contact area of longer tail, Matte Tin on tail
- G = 10 µ" (0.25 µm) Gold on contact area of longer tail, Gold flash on balance
- T = Matte Tin

STACKER HEIGHT
Leave blank for Through-hole

-”XXX” = Stack Height (in inches)
Through-hole = (5.08 mm)
.200” Min.
Surface mount = (6.35 mm)
.250” Min.

OTHER OPTION
-”XXX” = HW-TH Tail Length
(in inches)
.200” Min.

= Stacker Height (in inches)
Through-hole = (5.08 mm)
.200” Min.
Surface mount = (6.35 mm)
.250” Min.

= Locking Lead
(Through-hole only)
(Shortest dimension between the tail and the post is the end that will be crimped.
Available on tails from (2.29 mm)
.090” to (7.87 mm)
.310” only.)

Single row, 01 & 02 positions & –Q
row not available

= Polarized
(Specify omitted pin position)

- A = Alignment Pin
(Metal or plastic
at Samtec discretion)

- TR = Tape & Reel
(Not Available on Lead Styles
10, 11, 12 & 20)

- FR = Full Reel
(Tape & Reel
must order max.
quantity per reel;
contact Samtec
for quantity
breaks)
(4–27 pins
per row only)
(Not Available on Lead Styles
10, 11, 12 & 20)

ALSO AVAILABLE
MOQ Required

Other platings

Locking Clip available with
double row HW-SM
(Manual placement required)

Notes:
For added mechanical
stability, Samtec recommends
mechanical board spacers be
used in applications with gold or
selective gold plated connectors.
Contact ipg@samtec.com for
more information.

This Series is non-standard,
non-returnable.

samtec.com?HW-TH or samtec.com?HW-SM

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
## FLEXIBLE .025" SQ BOARD STACKERS

(2.54 mm) .100" PITCH • DW/EW/ZW SERIES

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>STACKER HEIGHT</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DW</td>
<td>(2.79 mm) .110&quot; Tail</td>
<td>01 thru 50</td>
<td>Specify LEAD STYLE from chart</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-S = Single Row</td>
<td>-“XXX” = ZW Tail Length (in inches) (1.40 mm) .055&quot; minimum</td>
</tr>
<tr>
<td>EW</td>
<td>(8.38 mm) .330&quot; Tail</td>
<td></td>
<td></td>
<td>-L = 10 µ” (0.25 µm) Gold on contact area of longer tail, Matte Tin on tail</td>
<td>-D = Double Row</td>
<td>Example: -250 (6.35 mm) .250&quot;</td>
</tr>
<tr>
<td>ZW</td>
<td>Custom Tail</td>
<td></td>
<td></td>
<td>-G = 10 µ” (0.25 µm) Gold on contact area of longer tail, Gold flash on balance</td>
<td>-T = Triple Row</td>
<td>-“XXX” = Polarized (Specify omitted pin position)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-T = Matte Tin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specifications**

- **Insulator Material**: Black Glass Filled Polyester
- **Terminal Material**: Phosphor Bronze
- **Plating**: Gold flash on contact, Matte Tin over 50 µ” (1.27 µm) Ni
- **Operating Temp Range**: -55 °C to +125 °C with Gold
  - -55 °C to +105 °C with Tin

**PROCESSING**

- Lead-Free Solderable: No, Lead Wave Only

For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact igp@samtec.com for more information.

This Series is non-standard, non-returnable.

---

**DW/EW/ZW**

<table>
<thead>
<tr>
<th>Board Mates:</th>
<th>SSW, SQ, ESW, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable Mates:</td>
<td>IDSS, IDSD</td>
</tr>
</tbody>
</table>

**FLEXIBLE .025" SQ BOARD STACKERS**

(2.54 mm) .100" PITCH • DW/EW/ZW SERIES

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>STACKER HEIGHT</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DW</td>
<td>(2.79 mm) .110&quot; Tail</td>
<td>01 thru 50</td>
<td>Specify LEAD STYLE from chart</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-S = Single Row</td>
<td>-“XXX” = ZW Tail Length (in inches) (1.40 mm) .055&quot; minimum</td>
</tr>
<tr>
<td>EW</td>
<td>(8.38 mm) .330&quot; Tail</td>
<td></td>
<td></td>
<td>-L = 10 µ” (0.25 µm) Gold on contact area of longer tail, Matte Tin on tail</td>
<td>-D = Double Row</td>
<td>Example: -250 (6.35 mm) .250&quot;</td>
</tr>
<tr>
<td>ZW</td>
<td>Custom Tail</td>
<td></td>
<td></td>
<td>-G = 10 µ” (0.25 µm) Gold on contact area of longer tail, Gold flash on balance</td>
<td>-T = Triple Row</td>
<td>-“XXX” = Polarized (Specify omitted pin position)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-T = Matte Tin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact igp@samtec.com for more information.

This Series is non-standard, non-returnable.
### SHROUDED .025" SQ POST HEADERS

**(2.54 mm) .100" PITCH • TSS/HTSS/ZSS SERIES**

#### TSS/HTSS/ZSS

- **Mates:**
  - SSW, SSQ, ESW, ESQ, SSM, BCS

- **SPECIFICATIONS**
  - **Insulator Material:**
    - TSS, ZSS=Black Glass Filled Polyester
    - HTSS=Natural PCT
  - **Insulation Resistance:**
    - 5000 MΩ min
  - **Terminal Material:**
    - Phosphor Bronze
  - **Plating:**
    - Au or Sn over 50 µ" (1.27 µm) Ni
  - **Operating Temp Range:**
    - -55 °C to +125 °C with Gold
    - -55 °C to +105 °C with Tin
  - **Withstanding Voltage:**
    - 1000 VRMS

#### PROCESSING

- **Lead–Free Solderable:**
  - HTSS=Yes
  - TSS, ZSS=No, Lead Wave only
- **SMT Lead Coplanarity:**
  - .006" max
  - (.004" stencil solution may be available; contact ipg@samtec.com)

#### ALSO AVAILABLE

- **MOQ Required**
- Other sizes
- Other platings
- Alignment Pins
- Single Row
- Locking Leads
- Polarized

#### Note:
Some lengths, styles and options are non-standard, non-returnable. TSS and HTSS are non-standard, non-returnable.

#### Lead Style Specifications

<table>
<thead>
<tr>
<th>SERIES</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS</td>
<td>03 (TSS only)</td>
<td>-F</td>
<td>Gold flash on post, Matte Tin on tail (Not available on -DV)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-L</td>
<td>10 µ&quot; (0.25 µm) Gold on post, Matte Tin on tail</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-T</td>
<td>Matte Tin</td>
<td></td>
</tr>
<tr>
<td>HTSS</td>
<td>05, 07, 08, 10, 12, 13, 15, 17, 20, 25, 32, 36 (Standard sizes)</td>
<td>Specify LEAD STYLE from chart</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Note:
For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors.

Contact ipg@samtec.com for more information.

#### Lead Style Options

- **-D** = Double Row Through-hole (lead style –01, -02 & -03 only)
- **-D-V** = Double Row Surface Mount (lead style –01 only) (HTSS only)
- **-D-RA** = Double Row Right-angle (lead style –04 & -05 only)

#### Lead Height

<table>
<thead>
<tr>
<th>LEAD STYLE</th>
<th>T/H</th>
<th>RIGHT ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-04</td>
<td>(3.30, 130)</td>
</tr>
<tr>
<td></td>
<td>-05</td>
<td>(5.64, 230)</td>
</tr>
</tbody>
</table>

#### Also Available

- **SHROUDED .025" SQ POST HEADERS**
  - MOQ Required
  - Other sizes
  - Other platings
  - Alignment Pins
  - Single Row
  - Locking Leads
  - Polarized

#### Note:
Some lengths, styles and options are non-standard, non-returnable. ZSS is non-standard, non-returnable.

---

**samtec.com?TSS, samtec.com?HTSS or samtec.com?ZSS**

**F-224**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**THROUGH-HOLE**

**.025" SQ POST SOCKET**

(2.54 mm) .100" PITCH • SSW/SSQ SERIES

**SSW/SSQ**
- Mates: TSW, MTSM, MTLW, DW, EW, ZW, TSS, ZSS, TSM, TSSH, HTSS

---

**SPECIFICATIONS**
- **Insulator Material:** Black Liquid Crystal Polymer (-S & -D) or Black High Temperature Thermoplastic (-T)
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over
- **Current Rating (SSW/TSM):** 4.7 A per pin (2 pins powered)
- **Current Rating (SSQ/TSW):** 6.3 A per pin (2 pins powered)
- **Operating Temp Range:** -55 °C to +125 °C with Gold, -55 °C to +105 °C with Tin
- **Insertion Depth:** (3.68 mm) .145" to (6.35 mm) .250"
- **Max Cycles:** 100 with 10 µ" (0.25 µm) Au, 465 VAC / 655 VDC
- **Lead-Free Solderable:** Yes: -S and -D row option
  - No, Lead Wave only: -P, -T and -Q row option

**PROCESSING**
- **Lead-Free Solderable:** Yes: -S and -D row option
  - No, Lead Wave only: -P, -T and -Q row option

---

**F-224** samtec.com?SSW or samtec.com?SSQ
### Specifications

**Insulator Material:**
Black LCP

**Contact Material:**
Phosphor Bronze

**Plating:**
Au or Sn over 50 µ" (1.27 µm) Ni

**Current Rating (SSW/TSM):**
4.7 A per pin (2 pins powered)

**Operating Temp Range:**
-55 °C to +125 °C with Gold
-55 °C to +105 °C with Tin

**Insertion Depth:**
(3.68 mm) .145" to (6.35 mm) .250"

**Max Cycles:**
100 with 10 µ" (0.25 µm) Au

**Voltage Rating:**
465 VAC / 655 VDC

### Processing

**Lead–Free Solderable:**
Yes

**SMT Lead Coplanarity:**
(0.10 mm) .004" max

### Also Available

**MOQ Required**
- Notch option

**Other Platings Required**

### Note

Some lengths, styles and options are non-standard, non-returnable.

---

### Surface Mount

**.025" SQ Post Socket**

**SSW Series**

**Mates:**
TSW, MTSW, HTSW, HMTSW, MTLW, EW, ZW, TSS, HTSS, ZSS, TSM, TSSH, DW, HW

**NO. PINS PER ROW**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSW</td>
<td>02 thru 36</td>
<td></td>
</tr>
</tbody>
</table>

**Plating Option**

- F = Gold flash on contact, Matte Tin on tail
  - 02 thru 36 –F = Gold flash on contact, Matte Tin on tail
  
- L = 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
  
- G = 20 µ" (0.51 µm) Gold on contact, Gold flash on tail

**Row Option**

- S = Single Row

**VS**

- D = Double Row

**Other Option**

- “XX” = Polarized Position
  
- K = –S: (3.50 mm) .138” DIA, –D: (6.50 mm) .256” DIA
  
- P = Pick & Place Pad (05 positions min.)
  
- TR = Tape & Reel (–02 thru –28)
  
- FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks) (–02 thru –28)

---

**Samtec.com**?SSW

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
### TIGER CLAW™ SURFACE MOUNT SOCKET

**(2.54 mm) .100" PITCH • SSM SERIES**

#### SSM Mates:
- TSW, MTSW, TST, TS, ZST, ZS, DW, EW, ZW, TSM, HMTSW, HTSW, TSSH, BST, HTSS, TLW, MTLW

#### SPECIFICATIONS

**Insulator Material:** Black Liquid Crystal Polymer

**Contact Material:** Phosphor Bronze

**Plating:** Au or Sn over 50 µ" (1.27 µm) Ni

**Current Rating (SSM/TSW):**
- 5.2 A per pin
- (2 pins powered)

**Voltage Rating:**
- 405 VAC / 572 VDC

**Operating Temp Range:**
- -55 °C to +125 °C with Gold
- -55 °C to +105 °C with Tin

**Insertion Depth:**
- SV/DV = (4.34 mm) .171" to (7.24 mm) .285" or pass-through from top; (5.56 mm) .219" plus board thickness minimum from bottom; SH/DH = (4.34 mm) .171" to (6.35 mm) .250"

### PROCESSING

**Lead–Free Solderable:** Yes

**-DH Coplanarity:**
- Less than 28 positions (0.15 mm) .006" max*
- More than 27 positions (0.20 mm) .008" max*

**-SH, -SV, -DV Coplanarity:**
- (0.15 mm) .006" max*
- (0.20 mm) .008" max*

---

#### ALSO AVAILABLE

- **Alignment pin**
- **MOQ Required**

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### Extended Life Product

- High Mating Cycles 10 Year MFG WITH 30 µ" GOLD

---

#### EXTENDED LIFE PRODUCT

- **10 YEAR MFG**

---

#### PROCESSING

- **Lead–Free Solderable:** Yes

#### ALSO AVAILABLE

- **Alignment pin**
- **MOQ Required**

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### OTHER OPTION

- **“XXX”**
- Polarized Position (–BE not available)

---

#### PLATING OPTION

- **–F**
  - Gold flash on contact, Matte Tin on tail
- **–L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **–S**
  - 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail

---

#### ROW OPTION

- **–SV**
  - Single Row Vertical Pin
- **–DV**
  - Double Row Vertical Pin
- **–SH**
  - Single Row Horizontal Pin
- **–DH**
  - Double Row Horizontal Pin

---

#### PROCESSING

- **-DH Coplanarity:**
  - Less than 28 positions (0.15 mm) .006" max*
  - More than 27 positions (0.20 mm) .008" max*

- **-SH, -SV, -DV Coplanarity:**
  - (0.15 mm) .006" max*
  - (0.20 mm) .008" max*

---

#### ALSO AVAILABLE

- **MDP**
- **P**
- **M**

---

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### EXTENDED LIFE PRODUCT

- High Mating Cycles 10 Year MFG WITH 30 µ" GOLD

---

#### PROCESSING

- **Lead–Free Solderable:** Yes

#### ALSO AVAILABLE

- **Alignment pin**
- **MOQ Required**

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### OTHER OPTION

- **“XXX”**
- Polarized Position (–BE not available)

---

#### PLATING OPTION

- **–F**
  - Gold flash on contact, Matte Tin on tail
- **–L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **–S**
  - 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail

---

#### ROW OPTION

- **–SV**
  - Single Row Vertical Pin
- **–DV**
  - Double Row Vertical Pin
- **–SH**
  - Single Row Horizontal Pin
- **–DH**
  - Double Row Horizontal Pin

---

#### PROCESSING

- **-DH Coplanarity:**
  - Less than 28 positions (0.15 mm) .006" max*
  - More than 27 positions (0.20 mm) .008" max*

- **-SH, -SV, -DV Coplanarity:**
  - (0.15 mm) .006" max*
  - (0.20 mm) .008" max*

---

#### ALSO AVAILABLE

- **MDP**
- **P**
- **M**

---

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### EXTENDED LIFE PRODUCT

- High Mating Cycles 10 Year MFG WITH 30 µ" GOLD

---

#### PROCESSING

- **Lead–Free Solderable:** Yes

#### ALSO AVAILABLE

- **Alignment pin**
- **MOQ Required**

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### OTHER OPTION

- **“XXX”**
- Polarized Position (–BE not available)

---

#### PLATING OPTION

- **–F**
  - Gold flash on contact, Matte Tin on tail
- **–L**
  - 10 µ" (0.25 µm) Gold on contact, Matte Tin on tail
- **–S**
  - 30 µ" (0.76 µm) Gold on contact, Matte Tin on tail

---

#### ROW OPTION

- **–SV**
  - Single Row Vertical Pin
- **–DV**
  - Double Row Vertical Pin
- **–SH**
  - Single Row Horizontal Pin
- **–DH**
  - Double Row Horizontal Pin

---

#### PROCESSING

- **-DH Coplanarity:**
  - Less than 28 positions (0.15 mm) .006" max*
  - More than 27 positions (0.20 mm) .008" max*

- **-SH, -SV, -DV Coplanarity:**
  - (0.15 mm) .006" max*
  - (0.20 mm) .008" max*

---

#### ALSO AVAILABLE

- **MDP**
- **P**
- **M**

---

#### Notes:
- Severe Environment Testing qualified; aligns with MIL-DTL-55302.
- Visit samtec.com/set
- Some sizes, styles and options are non-standard, non-returnable.

---

#### EXTENDED LIFE PRODUCT

- High Mating Cycles 10 Year MFG WITH 30 µ" GOLD
SPECIFICATIONS

**ESW/ESQ**

**Mates:**
TSW, MTSW, EW, MTLW, TSS, ZSS, TSM, DW, ZW, HW, TSSH, HTSS

**SPECIFICATIONS**

**Insulator Material:**
Black Glass Filled Polyester

**Contact Material:**
Phosphor Bronze

**Plating:**
Au or Sn over 50 µ (1.27 µm) Ni

**Current Rating (ESW/TSW):**
5.2 A per pin (2 pins powered)

**Current Rating (ESQ/TSW):**
5.7 A per pin (2 pins powered)

**Voltage Rating:**
515 VAC mated with TSW or ESQ

**Operating Temp Range:**
-55 °C to +125 °C with Gold
-55 °C to +105 °C with Tin

**Insertion Depth:**
(3.68 mm) .145” to (6.35 mm) .250”

**Max Cycles:**
100 with 10 µ (0.25 µm) Au

**Lead-Free Solderable:**
No, Lead Wave only

**NOTE:**
Some lengths, styles and options are non-standard, non-returnable.

**PROCESSING**

**Lead-Free Solderable:**
No, Lead Wave only

**APPLICATIONS**

---

**PC/104™ J1/P1 “Stackthrough” Connectors**
Standard Insertion Force ESO-132-14-G-D
Low Insertion Force ESO-132-39-G-D

**PC/104™ J1 “Non-Stackthrough” Connectors**
Standard Insertion Force ESO-132-12-G-D
Low Insertion Force ESO-132-37-G-D

**PC/104™ J2/P2 “Stackthrough” Connectors**
Standard Insertion Force ESO-120-14-G-D
Low Insertion Force ESO-120-39-G-D

---

**Also Available**
MOQ Required

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

---

**PC/104 is a trademark of the PC/104 Consortium.**
### Cost-Effective Reliable Socket

**HLE**

**Board Mates:**
- TSW, MTSW, DW, EW, ZW, TLW, TSM, MTLW, HW

#### Specifications

| Insulator Material: | Black Liquid Crystal Polymer |
| Contact Material: | BeCu |
| Plating: | Au or Sn over 50 µ" (1.27 µm) Ni |
| Current Rating (HLE/TSM): | 4.1 A per pin |
| Voltage Rating: | 400 VAC |
| Operating Temp Range: | -55 °C to +125 °C |
| Insertion Depth: | (1.76 mm) .070" to (3.43 mm) .135" pass-through, or (2.59 mm) .102" min plus board thickness for bottom entry |

#### Processing

- **Lead-Free Solderable:** Yes
- **SMT Lead Coplanarity:**
  - (0.10 mm) .004" max (02-20)
  - (0.15 mm) .006" max (21-50)*
  - "*0.004" stencil solution may be available; contact ipg@samtec.com

#### Also Available

- **MOQ Required**
- **Other Platings**

---

**Note:** Some lengths, styles and options are non-standard, non-returnable.
**TIGER CLAW™ PASS-THROUGH SOCKET**

(2.54 mm) .100" PITCH • BCS SERIES

**BCS**

Mates: TSW, MTSW, HTSW, HMTSW, TSS, ZSS, DW, EW, 2W, HW, TSM, MTLW, PHT

**SPECIFICATIONS**

Insulator Material: Black Liquid Crystal Polymer
Contact Material: Phosphor Bronze
Plating: Au or Sn over 50 µ" (1.27 µm) Ni
Voltage Rating: 495 VAC (-TE/-DE/-PE mated with TSM)
450 VAC (-HE mated with TSW)
Operating Temp Range: -65 °C to +125 °C
Insertion Depth: (4.34 mm) .171" to (7.24 mm) .285" from top,
(5.64 mm) .222" plus board thickness minimum from bottom.
-HE is (4.34 mm) .171" to (6.35 mm) .250"

**PROCESSING**

Lead–Free Solderable: Yes

**MATES CURRENT RATING (PER PIN)**

<table>
<thead>
<tr>
<th>Mates</th>
<th>Current Rating (Per Pin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCS/TSW</td>
<td>4.6 A</td>
</tr>
<tr>
<td>BCS/TSM</td>
<td>5.0 A</td>
</tr>
</tbody>
</table>

2 POSITIONS POWERED

**ALSO AVAILABLE**

MOQ Required

Other Platings

Note: Some lengths, styles and options are non-standard, non-returnable.

samtec.com?BCS

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
### Bottom Mount Socket Strips

**BSW**
- **Mates:** TSW, MTSW, HTSW, MTLW, TSM, EW, ZW, HW, DW, PHT

#### Features
- Bottom mount socket strips accept .025” SQ terminals.
- Ideal for soldering and plugging from the same side of the board.
- For low profile connections and high temperature soldering.

#### Specifications
- **Insulator Material:** Black Thermoplastic
- **Insulation Resistance:** 5000 MΩ min
- **Contact Material:** Phosphor Bronze
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:**
  - -55 °C to +125 °C with Gold
  - -55 °C to +105 °C with Tin
- **Withstanding Voltage:** 1000 VRMS @ 60 Hz
- **Insertion Depth:** (3.68 mm) .145” to (6.35 mm) .250”

#### Processing
- **Lead-Free Solderable:** Wave only

#### Also Available
- **MOQ Required**
- **Other Platings** Required

### Applications
- **Bottom Mount Socket Strips**
  - (2.54 mm) .100” Pitch • BSW Series

#### Table

<table>
<thead>
<tr>
<th>BSW</th>
<th>NO. PINS PER ROW</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>02 thru 36</td>
<td>-04</td>
<td>-L</td>
<td>-S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= Standard</td>
<td>= 10 µ&quot; (0.25 µm) Gold contact, Matte Tin on tail</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-24</td>
<td>= Low Insertion Force</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>= 20 µ&quot; (0.51 µm) Gold contact, Gold Flash on tail</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>= Matte Tin (Not available with Low Insertion Force)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-D</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>= Double Row</td>
<td></td>
</tr>
</tbody>
</table>

#### Diagram
- BSW (Single Row)
- BSW (Double Row)
- TSW (Single Row)
- TSW (Double Row)
- EW (Single Row)
- PC Board

### Note
- Some lengths, styles and options are non-standard, non-returnable.

**samtec.com?BSW**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
## LOW PROFILE SOCKET STRIPS

**(2.54 mm) .100" PITCH • SLW/CES SERIES**

### SLW

**Mates:**
- TLW, TSW, MTLW, MTSW, HW, EW, ZW, HTSW, HMTSW, TSM

**Specifications**
- Insulator Material: Black G. F. Polyester
- Contact Material: Phosphor Bronze
- Plating: Au or Sn over 50 µ" (1.27 µm) Ni
- SLW Current Rating (SLW/TSW): 5.2 A per pin (2 pins powered)
- CES Current Rating (TSW/CES): 5.5 A per pin (2 pins powered)
- Voltage Rating: SLW: 406 VAC
- Operating Temp Range:
  - -55 °C to +125 °C with Gold
  - -55 °C to +105 °C with Tin
- Insertion Depth:
  - SLW: (2.16 mm) .085" to (2.92 mm) .115"
  - CES: (2.62 mm) .103" to (4.06 mm) .160"
- Lead-Free Solderable: No, Lead Wave only

### CES

**Mates:**
- TLW, TSW, MTLW, MTSW, HW, EW, ZW, DW, HTSW, PHT, HMTSW

**Specifications**
- Insulator Material: Black G. F. Polyester
- Contact Material: Phosphor Bronze
- Plating: Au or Sn over 50 µ" (1.27 µm) Ni
- SLW Current Rating (SLW/TSW): 5.2 A per pin (2 pins powered)
- CES Current Rating (TSW/CES): 5.5 A per pin (2 pins powered)
- Voltage Rating: SLW: 406 VAC
- Operating Temp Range:
  - -55 °C to +125 °C with Gold
  - -55 °C to +105 °C with Tin
- Insertion Depth:
  - SLW: (2.16 mm) .085" to (2.92 mm) .115"
  - CES: (2.62 mm) .103" to (4.06 mm) .160"
- Lead-Free Solderable: No, Lead Wave only

### Processing

- Lead-Free Solderable: No, Lead Wave only

### Also Available

- MOQ Required

### Other Platings

**Note:**
Some lengths, styles and options are non-standard, non-returnable.

---

**SLW - 1 NO. PINS PER ROW - 01 PLATING OPTION - ROW OPTION**

<table>
<thead>
<tr>
<th>NO.</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 thru 50</td>
<td>-F = Gold flash on contact, Matte Tin on tail</td>
<td>-S = Single Row</td>
</tr>
<tr>
<td></td>
<td>-L = 10 µ&quot; (0.25 µm) Gold on contact, Matte Tin on tail</td>
<td>-D = Double Row</td>
</tr>
<tr>
<td></td>
<td>-G = 20 µ&quot; (0.51 µm) Gold on contact, Gold flash on balance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-T = Matte Tin</td>
<td></td>
</tr>
</tbody>
</table>

**CES - 1 NO. PINS PER ROW - LEAD STYLE - PLATING OPTION - ROW OPTION - RA OPTION**

<table>
<thead>
<tr>
<th>NO.</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>ROW OPTION</th>
<th>RA OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 thru 50</td>
<td>Specify LEAD STYLE from chart</td>
<td>-L = 10 µ&quot; (0.25 µm) Gold contact, Matte Tin on tail</td>
<td>-S = Single Row</td>
<td>-RA = Right-angle version (Style –02 only Single Row only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-T = Matte Tin</td>
<td>-D = Double Row</td>
<td></td>
</tr>
</tbody>
</table>

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**samtec.com?SLW or samtec.com?CES**

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SHUNTS & JUMPERS**

(2.54 mm) .100” PITCH • SNT/MNT/2SN/SNM/PK/JL SERIES

**SNT/MNT**
- **Mates:** TSW, HTSW, MTSW, HMTSW, TLW, DW, EW, 2W, HW, TSM, BST, PHT

**2SN**
- **Mates:** TMMH, TMM, MTMM, MMT, TW, LTMM, ZLTMM, TSH, EHT

**SNM**
- **Mates:** TMS, MTMS, DWM

---

**SPECIFICATIONS**

**SNT**
- **Insulator Material:** Glass Filled Polyester
- **Contact Material:** Phosphor Bronze
- **Current Rating (SNT/TSW):** 4.3 A per pin (1 pin powered per row)
- **Operating Temp Range:** -55°C to +125°C
- **Insertion Depth:** (4.32 mm) 1.70” minimum
- **Lead Size accepted:** (0.64 mm) .025” SQ

**MNT**
- Same as SNT except:
  - **Current Rating (MNT/TSM):** 3.9 A per pin (1 pin powered per row)
  - **Working Voltage:** 450 VAC

**2SN**
- Same as SNT except:
  - **Insertion Depth:** (2.29 mm) 0.90” minimum
  - **Lead Size accepted:** (0.51 mm) .020” SQ

**SNM**
- Same as SNT except:
  - **Insertion Depth:** (3.43 mm) 1.35” minimum
  - **Max Processing Temp:** Not recommended for IR/VP

---

**PART NO.**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>JL–100–25–T</td>
<td>(2.54) 100</td>
</tr>
<tr>
<td>JL–250–25–T</td>
<td>(6.35) 250</td>
</tr>
<tr>
<td>JL–400–25–T</td>
<td>(10.16) 400</td>
</tr>
</tbody>
</table>

**Note:**
- For complete specifications see www.samtec.com?JL

---

**PK**

**PART NO.**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK–01–06</td>
<td>(0.64) .025</td>
</tr>
<tr>
<td>PK–01–07</td>
<td>(0.51) .020</td>
</tr>
</tbody>
</table>

**Note:**
- Order per wheel.
- 6 pins per wheel.

---

**2SN**

**PART NO.**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2SN-BK-G</td>
<td></td>
</tr>
</tbody>
</table>

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**SNM**

**PART NO.**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNM-100-BK-G</td>
<td></td>
</tr>
</tbody>
</table>

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**Note:**
- Other Gold plating options available.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
IDC/FLAT FLEXIBLE CABLE SYSTEMS

TIGER EYE™ CONTACTS • MULTIPLE PITCHES • LOW PROFILE • SHROUDED EJECTOR TERMINALS

314-325

IDC ASSEMBLIES AND HEADERS

.100" (2.54 mm) Pitch (IDSX, IDMX, EJH, TST, HTST, ZST) .......................................................... 314-317
2.00 mm (.0787") Pitch (TCSD, TCMD, EHT, EC2, STMM, ZSTMM, ETMM) .................................. 318-321
.050" (1.27 mm) Pitch (FFSD, FFMD, FFTP, FMTP, EHF, SHF, ESHF) ........................................... 322-325

326

FLEX JUMPERS

0.50 mm (.0197") Pitch FFC Jumper & Sockets (FJH, ZF5S) ......................................................... 326
SLIM BODY FLAT RIBBON IDC CABLES
(2.54 mm) .100" PITCH • IDSS/IDSD/IDMS/IDMD SERIES

IDSS/IDMS/IDMD
Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

IDS
Mates:
TST, HTST, ZST, EJH

SPECIFICATIONS
Insulator Material:
Black Glass Filled Polyester

Contact (IDSS/IDSD):
BeCu

Terminal (IDMS/IDMD):
Phosphor Bronze

Plating:
Au over 50 µ" (1.27 µm) Ni or Sn over 100 µ" (2.54 µm) Cu or 50 µ" (1.27 µm) Ni

Wire:
28 AWG 7/36 stranded
Tinned CopperWeb footer

Current Rating (IDMD):
3 A per pin
(2 pins powered)

Temperature Range:
-20 °C to +105 °C
(Rainbow Cable)
-40 °C to +105 °C
(Gray Cable)

Voltage Rating:
425 VAC/600 VDC

Lead Size Range:
(0.56 mm) .022" SQ to (0.71 mm) .028" SQ

Lead Insertion Depth:
(5.59 mm) .220" to (6.22 mm) .245"

DOUBLE
Full size (64 positions): (82.55) 3.250
Less than 64 positions: No. Positions/row X (2.54) .100 + (1.68) .066

SINGLE
Full size (32 positions): (81.53) 3.210
Less than 32 positions: No. Positions/row X (2.54) .100 + (0.71) .028

DOUBLE
Full size (72 positions): (92.71) 3.650
Less than 72 positions: No. Positions/row x (2.54) .100 + (1.50) .059

SINGLE
Full size (36 positions): (91.69) 3.610
Less than 36 positions: No. Positions/row x (2.54) .100 + (0.48) .019

FULL SIZE (82.55) 3.250
DOUBLE 72 POSITIONS (92.71) 3.650
SINGLE 36 POSITIONS (91.69) 3.610

ALSO AVAILABLE
Molded-To-Position IDC Assembles
Low Profile
Skinny side locks
Dual beam contacts
Single and double row
(6.35mm) .025" square and (5.84mm) .230" length tail available

Note:
This Series is non-standard, non-returnable.

IDMS/IDMD
= Standard Tail Male Plug
IDS
= Socket
S
= Single
D
= Double

—02 thru –32
= IDMS/IDMD
—02 thru –36
= IDSS/IDSD

(Color coded cable Not available for 31 thru 36 pins/row. See –G option.)

IDSS/IDMS/IDMD
Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

IDS
Mates:
TST, HTST, ZST, EJH

IDSS/IDSD/IDMS/IDMD Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

IDSS/IDSD/IDMS/IDMD
Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

IDSS/IDSD/IDMS/IDMD
Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

IDSS/IDSD/IDMS/IDMD
Mates:
TSW, MTSW, TSM, EJH, PHT, HMTSW, HTSW, HW, DW, EW, ZW, MTLW

ALSO AVAILABLE
Molded-To-Position IDC Assembles
Low Profile
Skinny side locks
Dual beam contacts
Single and double row
(6.35mm) .025" square and (5.84mm) .230" length tail available

Note:
This Series is non-standard, non-returnable.
- **S** = Single End
  (Socket or Male Plug on one end)

- **D** = Double End
  (Socket or Male Plug on each end)

- **T** = Transfer End
  (Male Plug on one end with socket on other.
  Begin part number with IDM)

- **“XX.XX”** = Assembled Length

- **T** = Tin Plating
  (Both Ends)

- **C** = Tin IDM,
  10 µ" (0.25 µm) Gold IDS
  (-T End Assembly Required)

- **A** = Tin IDS,
  10 µ" (0.25 µm) Gold IDM
  (-T End Assembly Required)

- **P “XX”** = Polarized
  Specify “XX” as position.
  For Double the same position will be polarized on both ends.
  (Not available on IDM unless transfer, then only the socket is polarized.)

- **G** = Gray Cable
  Specify -G for Gray cable.
  Gray cable has one red edge.
  IDSS and IDMS uses
  (2.54 mm) .100" centerline cable.
  IDSD and IDMD uses
  (1.27 mm) .050" centerline cable.
  Cable is 28 AWG 7/36 copper wire.
  Standard cable is same as above except color

- **ST “X”** = Stripped & Tinned
  (Specify Suffix from table)
  (All dimensions are ± 1/16" (1.59 mm)
  (Not available in 28 positions and higher)

- **B “XX”** = Breakout
  (Specify “XX” as number of conductors to be broken out)
  (Breakout starts with Number 1 lead indicated by brown wire or red stripe.
  Shown on top side)

- **RW** = Reverse Wiring
  (#1 wire opposite position #1)

- **S “XX”** = Daisy Chain, Single
  (When mating double row connector with two single row connectors, the outer most single will be connected to Conductor #1 and the inside single to Conductor #2)

- **D “XX”** = Daisy Chain, Double

- **W “XX”** = Wiring Reverse Daisy Chain, Single
  (Same as -S “XX” except outer strip connected to Conductor #2 and inside strip connected to Conductor #1)

- **R** = Reversed

- **M** = Middle Reversed
  (Requires –SXX, –WXX or –DXX)

- **O** = Outside Reversed
  (Requires –SXX, –WXX or –DXX)

**Assembled Length**

- ST8 1/8” (3.18)
- ST4 1/4” (6.35)
- ST2 1/2” (12.70)
- ST3 3/8” (9.53)

**Breakout**

- ST “X” starts with Number 1 lead indicated by brown wire or red stripe.
  Shown on top side.

**Daisy Chain Single –S “XX”**

- XX ± 1/6”

**Double Row Connectors**

IDSS or IDMD

**Reversed (—R)**

**Middle Reversed (—M)**

**Outside Reversed (—O)**
SHROUDED IDC EJECTOR HEADERS
(2.54 mm) .100" PITCH • EJH SERIES

EJH
Mates:
IDSD (EJH-01 Required),
HCSD (EJH-02 Required)

SPECIFICATIONS
Insulator Material:
-01=Black LCP
-02=Natural LCP
Terminal Material:
Phosphor Bronze
Plating:
Sn or Ag over 50 µ" (1.27 µm) Ni
Operating Temp Range:
-55 °C to +125 °C

PROCESSING
Lead–Free Solderable:
Yes
SMT Lead Coplanarity:
(0.10 mm) .004" max

ALSO AVAILABLE
MOQ Required
Other sizes
Other platings

Note:
Some lengths, styles and options are non-standard, non-returnable.

samtec.com?EJH

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SERIES**

- TST = Cable Strip
- HTST = High Temp Cable Strip

**LEAD STYLE**

- F = Gold flash on post, Matte Tin on tail
- L = 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
- T = Matte Tin

**PLATING OPTION**

- D = Double Row Through-hole (lead style –01, –02 & –03 only)
- DV = Double Row Surface Mount (lead style –01 only) (HTST only)
- D–RA = Double Row Right-angle (lead style –04 & –05 only)

**ROW OPTION**

- Surface Mount (lead style –DV only)
- -P = Pick & Place Pad
- -TR = Tape & Reel
- -FR = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

**BODY HEIGHT**

- "XXXX" = Body Height

**Note:**

For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

**SPECIFICATIONS**

- **Insulator Material:**
  - TST, ZST=Black Glass Filled Polyester
  - HTST=Natural LCP
- **Insulation Resistance:**
  - 5000 MΩ min
- **Terminal Material:** Phosphor Bronze
- **Plating:**
  - Au or Sn over 50 µ" (1.27 µm) Ni
  - 10 µ" (0.25 µm) Gold on post, Matte Tin on tail
  - Matte Tin
- **Voltage Rating:**
  - 425 VAC/600 VDC

**PROCESSING**

- **Lead-Free Solderable:**
  - HTST=Yes
  - TST, ZST= No, Lead Wave only
- **SMT Lead Coplanarity:**
  - (05-15) = .004" max (0.10 mm)
  - (17-36)* = .006" max (0.15 mm)
- *** (.004" stencil solution may be available; contact ipg@samtec.com)

**ALSO AVAILABLE**

- MOQ Required
- Other platings & sizes
- Alignment Pins
- Single Row
- Locking Leads
- Polarized

**TST/HTST/ZST**

Mates:
- IDSD, HCSD

**NO. PINS PER ROW**

- 05, 07, 08, 10, 12, 13, 15, 17, 20, 25, 32, 36

**SHROUDED .025" SQ POST IDC HEADERS**

**ZST**

- C (OAL)
- MAX BODY HEIGHT

**Note:**

Some lengths, styles and options are non-standard, non-returnable. ZST is non-standard, non-returnable.

**Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.**
### TCSD Mates:
- TMM, TMMH, STMM, MMT, TW, MTMM, EHT, ETMM (-SR), ZSTMM

### Insulator Material:
Black Glass Filled Polyester

### Contact:
BeCu

### Plating:
Au or Sn over 50 µ" (1.27 µm) Ni

### Wire:
28 AWG 7/36 Stranded, Tinned, Copper with Gray PVC Insulator

### Current Rating (TCSD/STMM):
2.8 A per pin (2 pins powered)

### Operating Temp Range:
-40 °C to +105 °C

### Lead Size Accepted:
(0.48 mm) .019" to (0.53 mm) .021"

### Insertion Depth:
(2.87 mm) .113" to (3.17 mm) .125"

### TCSD = Socket Strip
-04, -05, -07, -08, -10, -12, -13, -15, -17, -20, -22, -25

### SERIES
<table>
<thead>
<tr>
<th>NO. PINS PER ROW</th>
<th>END OPTION</th>
<th>OVERALL LENGTH</th>
<th>01</th>
<th>PLATING OPTION</th>
<th>N</th>
<th>OTHER OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-S = Single End</td>
<td>-“XX.XX” = Assembled Length</td>
<td>-F = Gold flash on contact</td>
<td>-P “XX” = Position Polarization</td>
<td>-N = Notch Polarization</td>
<td>-R = Reversed</td>
<td></td>
</tr>
<tr>
<td>-D = Double End</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-M = Middle Reversed</td>
<td></td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

- **Insulator Material:** Black Glass Filled Polyester
- **Contact:** BeCu
- **Plating:** Au or Sn over 50 µ" (1.27 µm) Ni
- **Wire:** 28 AWG 7/36 Stranded, Tinned, Copper with Gray PVC Insulator

### CURRENT RATING (TCSD/STMM):
- 2.8 A per pin (2 pins powered)

### OPERATING TEMP RANGE:
-40 °C to +105 °C

### LEAD SIZE ACCEPTED:
(0.48 mm) .019" to (0.53 mm) .021"

### INSERTION DEPTH:
(2.87 mm) .113" to (3.17 mm) .125"

### ALSO AVAILABLE
- Other sizes
- Other platings

### POLARIZING KEY

- **Single End (-S)**
- **Double End (-D)**
- **Position Polarization (-P “XX”)**
- **Assembled Length (“XX.XX”)**
- **Breakout (-B “XX”)**
- **Reverse Wiring (-RW)**
- **Daisy Chain (-D “XX”)**
- **Strain Relief (-SR)**
- **Reversed –R**
- **Middle Reversed –M**
- **Outside Reversed –O**

### Note:
TCSD Series assemblies are non-standard, non-returnable.

### ALSO AVAILABLE

- MOQ Required

### Note:
TCSD Series assemblies are non-standard, non-returnable.

### Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**TCMD Mates:**
SMM*, MMS*, ESQT, PTF, SQT, SQW, TLE

**SPECIFICATIONS**

- **Insulator Material:** Black Glass Filled Polyester
- **Terminal:** Phosphor Bronze
- **Plating:** Au or Sn over 50 μ" (1.27 μm) Ni
- **Wire:** 28 AWG 7/36 Stranded, Tinned, Copper with Gray PVC Insulator
- **Current Rating:** 2.6 A per pin
- **Operating Temp Range:** -40 °C to +105 °C

**ALSO AVAILABLE**

MOQ Required

- Single End (—S)
- Double End (—D)
- Transfer End (—T)
- Middle Reversed (—M)
- Reversed (—R)
- Reverse Wiring (—RW)
- Strain Relief (—SR)
- Outside Reversed (—O)
- Daisy Chain (—D XX)
- Breakout (—B XX)

**Note:**
- Standard TCMD callout will not mate with SMM, MMS. Must use gold plated callouts. (See drawing on web.) When mated with a socket, Wire 1 mates with Pin 2; Wire 2 mates with Pin 1, etc.
- TCMD Series assemblies are non-standard, non-returnable.

*Note:
Standard TCMD callout will not mate with SMM, MMS. Must use gold plated callouts. (See drawing on web.) When mated with a socket, Wire 1 mates with Pin 2; Wire 2 mates with Pin 1, etc.

**TCMD**

- **TCMD = Terminal Strip**
- **NO. PINS PER ROW**
- **END OPTION**
- **OVERALL LENGTH**
- **01**
- **TRANSFER OPTION**
- **OTHER OPTION**

- **SERIES**
- **-04, -05, -07**
- **-08, -10, -12**
- **-13, -15, -17**
- **-20, -22, -25**

- **-S = Single End**
- **-D = Double End**
- **-T = Transfer End**

- **Leave blank for –S and –D End Options. For –T End Option Specify –N**
  (Socket has notch polarization)

- **-P “XX” = Position Polarization**
  (Specify “XX” as position number. Requires Transfer End. Only Socket is polarized.)

- **B “XX” = Breakout**
  (Specify “XX” as number of conductors to be broken out)

- **-RW = Reverse Wiring**
  (Blue or black wire opposite position #1)

- **-D “XX” = Daisy Chain**

- **-SR = Strain Relief**
  (Not available with –O, –M, –R, –DXX or –BXX)

- **-R = Reversed**
- **-M = Middle Reversed**
  (Requires –DXX)
- **-O = Outside Reversed**
  (Requires –DXX)

**HIGH-RELIABILITY IDC HEADER CABLE**

(2.00 mm) .0787" PITCH • TCMD SERIES

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Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
SHROUDED IDC HEADERS

(2.00 mm) .0787" PITCH • ETMM/EHT/EC2 SERIES

ETMM
Mates:
TCSD, TCMD

EHT
Mates:
TCSD

SPECIFICATIONS
Insulator Material:
Black Liquid Crystal Polymer
Terminal Material:
Phosphor Bronze
Plating:
Sn or Au over 50 µ" (1.27 µm) Ni
Operating Temp Range:
-55 °C to +125 °C

PROCESSING
Lead-Free Solderable:
Yes
SMT Lead Coplanarity:
EHT = (0.10 mm) .004" max
ETMM = (0.13 mm) .005" max
*1,004" stencil solution may be available; contact ipg@samtec.com

Note:
Some lengths, styles and options are non-standard, non-returnable.

EJECTOR HEADER CAP
(Locks TCSD cable to EHT header)

EC2
NO. PINS PER ROW
05, 08, 10, 12, 13, 15, 17, 20, 22, 25

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
**FLEX STACK**

**SHROUDED IDC HEADER & STACKER**

(2.00 mm) .0787” PITCH • STMM/ZSTMM SERIES

---

**STMM/ZSTMM**

Mates:

TCSD (except –SR)

**SPECIFICATIONS**

**Insulator Material:**
Black Liquid Crystal Polymer

**Terminal Material:**
Phosphor Bronze

**Plating:**
Sn or Au over 50 µ” (1.27 µm) Ni

**Operating Temp Range:**
-55 °C to +105 °C with Tin;
-55 °C to +125 °C with Gold

**Lead-Free Solderable:**
Yes

**SMT Lead Coplanarity:**
(0.10 mm) .004” max

**PROCESSING**

**Notes:**
For added mechanical stability, Samtec recommends mechanical board spacers be used in applications with gold or selective gold plated connectors. Contact ipg@samtec.com for more information.

This Series is non-standard, non-returnable.

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**Also available**

MOQ Required

Other sizes
Other platings

---

**Also Available**

MOQ Required

Unlike otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
SERIES - NO. PINS PER ROW - END OPTION - OVERALL LENGTH - 01 - N - OTHER OPTION

**FFSD**

-04, -05, -06, -08, -10, -11, -12, -13, -15, -17, -20, -25 (Standard sizes)

- **S** = Single End
- **D** = Double End
- **N** = Notch Polarization (Notch option not available with -04 position)
- **RW** = Reverse Wiring (Red wire opposite position #1)
- **D”XX”** = Daisy Chain
- **SR** = Strain Relief (Mates only with ESHF Series) (Not available with -O, -M, -R or -DXX)
- **R** = Reversed
- **M** = Middle Reversed (Requires -DXX)
- **O** = Outside Reversed (Requires -DXX)

**SPECIFICATIONS**

- **Insulator Material:** PBT
- **Contact:** BeCu
- **Plating:** 10 µ" (0.25 µm) Au over 50 µ" (1.27 µm) Ni on contact area; Sn over 50 µ" (1.27 µm) Ni on balance
- **Wire:** 30 AWG

**Current Rating** (FFSD/FTSH): 2.3 A per pin (2 pins powered)

**Operating Temp Range:** -40 °C to +105 °C

**Lead Size Accepted:** (0.41 mm) .016” SQ

**Insertion Depth:** (2.64 mm) .104” to (3.17 mm) .125”

**Assembled Length** (~“XX.XX”)

**Note:** This Series is non-standard, non-returnable.
**TIGER EYE™ FLAT IDC WIRE CABLES**

(1.27 mm) .050” PITCH • FFMD SERIES

**FFMD**

**Mates:**
- FLE*, SFMC*

**TRANSFER END**

Mates:
- FTS, FTSH, EHF, SHF, ESHF

**SPECIFICATIONS**

**Insulator Material:**
- PBT

**Terminal:**
- Phosphor Bronze

**Contact:**
- BeCu (-T)

**Plating:**
- Sn over 50 µ” (1.27 µm) Ni

**Wire:**
- 30 AWG

**Current Rating:**
- 2.5 A per pin

**Operating Temp Range:**
- -40 °C to +105 °C

**Voltage Rating:**
- 215 VAC / 304 VDC

**ASSEMBLE LENGTH**

(“XX.XX”)

**Notes:**

- Standard FFMD callout will not mate with FLE, SFMC. Must use gold plated callouts. (See drawing on web.) When mated with a socket, Wire 1 mates with Pin 2; Wire 2 mates with Pin 1, etc.

- This Series is non-standard, non-returnable.

*Note:

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.

samtec.com?FFMD

F-224
**SHROUDED AND EJECTOR IDC HEADER**

(1.27 mm) .050" PITCH • SHF/ESHF/EHF/ECF SERIES

### SHF/ESHF

**Mates:**
- FFSD, FFTP (SHF)

**EHF**

**Mates:**
- FFSD*, FFTP

*Important Note: EHF will not mate to FFSD with strain relief (-SR option), see ESHF series.

### SPECIFICATIONS

- **Insulator Material:** Black Liquid Crystal Polymer
- **Terminal Material:** Phosphor Bronze
- **Plating:** Sn or Au over 50 µ" (1.27 µm) Ni
- **Operating Temp Range:** -55 °C to +125 °C

### PROCESSING

- **Lead–Free Solderable:** Yes
- **SMT Lead Coplanarity:** (0.10 mm) .004" max

### TYPE STRIP

<table>
<thead>
<tr>
<th>A</th>
<th>TYPE</th>
<th>STRIP</th>
<th>SHF</th>
<th>ESHF</th>
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</thead>
<tbody>
<tr>
<td>No. of pins x (1.27) .050 + (10.16) .400</td>
<td>TH</td>
<td>RA</td>
<td>SM</td>
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<tr>
<td>No. of positions x (1.27) .050 + (14.48) .570</td>
<td>No. of pins x (1.27) .050 + (6.35) .250</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### OTHER OPTION

- **K** = (7.50 mm) 295° DIA Polyimide Film Pick & Place Pad (-SM only)
- **LC** = Locking Clip (Manual placement required)
- **TR** = Tape & Reel (–LC not available)
- **FR** = Full Reel Tape & Reel (must order max. quantity per reel; contact Samtec for quantity breaks)

### EJECTOR HEADER CAP

-Locks FFSD cable to EHF header-

<table>
<thead>
<tr>
<th>ECF</th>
<th>NO. PINS PER ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>-SM-RA-TH</td>
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</tbody>
</table>

### Note:

Some lengths, styles and options are non-standard, non-returnable.

---

samtec.com?SHF, samtec.com?ESHF or samtec.com?EHF

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec's specifications which are subject to change without notice.
**SPECIFICATIONS**

**Insulator Material:**
- PBT

**Contact:**
- FFTP=BeCu

**Terminal:**
- FMPT=Phosphor Bronze

**Plating (FFTP):**
- FFTP=10 µ" (0.25 µm)
- Au over 50 µ" (1.27 µm)
- Ni on contact area; Sn over 50 µ" (1.27 µm)
- FMPT=Sn over 50 µ" (1.27 µm) Ni on balance

**Wire:**
- 30 AWG 7/38, Tinned
- Twisted Pair with PVC insulator

**Operating Temp Range:**
- -40 °C to +105 °C

**Lead Size Accepted:**
- (0.41 mm) .016” SQ

**Insertion Depth (FFTP):**
- FFTP=(2.64 mm) .104” to (3.17 mm) .125”

**ASSEMBLY LENGTH**

<table>
<thead>
<tr>
<th>No. of positions x (1.27)</th>
<th>.050” PITCH</th>
<th>FFTP/FMTP SERIES</th>
</tr>
</thead>
</table>

| -D = Double End            | -03.85      | 3.85” (97.79 mm) |
| -T = Transfer End          | -08.77      | 8.77” (222.76 mm)|
| -R = Reverse Connector     | -18.00      | 18.00” (457.20 mm)|

**Note:**
- Standard FMTP callout will not mate with FLE, SFMC. Must use gold plated callouts. (See drawing on web.)
- When mated with a socket, Wire 1 mates with Pin 2; Wire 2 mates with Pin 1, etc.

**Other sizes**

**ALSO AVAILABLE**

**MOQ Required**

*Note:*
- This Series is non-standard, non-returnable.

---

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
FLAT FLEXIBLE CABLE (FFC) JUMPER & SOCKET
(0.50 mm) .0197" PITCH • FJH/ZF5S SERIES

FJH

Mates:
ZF5S

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>STYLE</th>
<th>LENGTH</th>
<th>STRIP LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>–10, –15, –20, –25, –30, –40, –43, –50 (Standard sizes)</td>
<td>–D = Double End</td>
<td>–03.00 = (76.2 mm) 3.00&quot;</td>
<td>–4 = (4.00 mm) .157&quot;</td>
</tr>
<tr>
<td></td>
<td>–R = Reversed End</td>
<td>–06.00 = (152.4 mm) 6.00&quot;</td>
<td></td>
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</tbody>
</table>

- **D STYLE**
- **R STYLE**

**SPECSIFICATIONS**

Conductor:
Tin Plated Copper

Conductor Resistance:
1000 Ω/km max

Current Rating:
1.8 A per pin (1 pin powered)

Operating Temp Range:
-55 °C to +80 °C

Voltage Rating:
195 VAC

<table>
<thead>
<tr>
<th>NO. OF POSTIONS</th>
<th>A</th>
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</thead>
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<tr>
<td>–10 (5.50) .217</td>
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</tr>
<tr>
<td>–15 (8.00) .315</td>
<td></td>
</tr>
<tr>
<td>–20 (10.50) .413</td>
<td></td>
</tr>
<tr>
<td>–25 (13.00) .512</td>
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</tr>
<tr>
<td>–30 (15.50) .610</td>
<td></td>
</tr>
<tr>
<td>–40 (20.50) .807</td>
<td></td>
</tr>
<tr>
<td>–43 (22.00) .866</td>
<td></td>
</tr>
<tr>
<td>–50 (25.50) 1.00</td>
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</tbody>
</table>

**OTHER SOLUTIONS**

For 1.00 mm pitch flat flexible cable series, visit:
www.samtec.com?FJ
www.samtec.com?ZF1
www.samtec.com?FC1

ZF5S

Mates:
FJH

<table>
<thead>
<tr>
<th>NO. OF POSITIONS</th>
<th>LEAD STYLE</th>
<th>PLATING OPTION</th>
<th>WT</th>
<th>OPTION</th>
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</thead>
<tbody>
<tr>
<td>–10, –15, –20, –25, –30, –40, –43, –50 (Standard sizes)</td>
<td>–01 = Contact Bottom</td>
<td>–T = Matte Tin</td>
<td>–WT = Weld Tab</td>
<td>–K = (3.00 mm) .118&quot; DIA Polymide Film Pick &amp; Place Pad</td>
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<td></td>
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<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**PROCESSING**

Lead-Free Solderable:
Yes

SMT Lead Coplanarity:
(0.10 mm) .004" max (10-30)
(0.15 mm) .006" max (40-50)*
(0.004" stencil solution may be available; contact ipg@samtec.com)

Note:
Some sizes, styles and options are non-standard, non-returnable.

**ALSO AVAILABLE**

MOQ Required

**Notes:**
Stiffener color will be blue or black at Samtec’s discretion. Some sizes, styles and options are non-standard, non-returnable.

**ALSO AVAILABLE**

MOQ Required

Vertical
Contact top
Other positions

samtec.com?FJH or samtec.com?ZF5S

Unless otherwise approved in writing by Samtec, all parts and components are designed and built according to Samtec’s specifications which are subject to change without notice.
RUGGED FEATURES
OPTIONS FOR HIGH-RELIABILITY, HIGH-RETENTION AND HIGH-CYCLE LIFE

RUGGEDIZING OPTIONS

JACK SCREWS
Ideal for high normal force, zippering and other rugged applications

POSITIVE LATCHING
Manually activated latches increase unmating force by up to 200%

FRICITION LOCKS
Metal or plastic friction locks increase retention/withdrawal force

RETENTION PINS
Increase unmating force by up to 50%

BOARD LOCKS
Boards are mechanically locked together

WELD TABS
Significantly increase sheer resistance of connector to PCB

GUIDE POSTS
Easy and secure mating

SHELIDING
360° shielding reduces EMI

SCREW DOWNS
Secure mechanical attachment to the board

BOARD STANDOFFS
Precision machined standoffs for 5 mm to 30 mm board spacing

CONTACT SYSTEMS

TIGER™ EYE CONTACT
High-reliability
High Mating Cycles
Multi-finger Contact

TIGER™ CLAW CONTACT
Dual Wipe Contact
Pass-through Applications
Ultra-low Profile

BLADE & BEAM CONTACT
Mating/Alignment “Friendly”
Cost-effective
Micro Pitch

TIGER™ BEAM CONTACT
Best Cost
Reliable Performance
Post & Beam Contact

EDGE™ RATE CONTACT
Designed for Signal Integrity
Superior Impedance Control
Reduced Broadside Coupling

MICRO-HYPERBOLOID
High-reliability
Four Points of Contact
Extreme Mating Cycles
Samtec provides products that interact with many types of hardware and software. This drives our need to adhere to a variety of Industry Standards. The majority of Industry Standards we engage with address the following:

- Interconnection (cables & connectors)
- Sub-systems (typically daughter or carrier cards, which include functional compliance specifications defining electro-mechanicals and mechanicals)
- Transmission protocols (primarily software and firmware defining machine language to allow communication)
- Hardware (physical electro-mechanical devices)

Visit [samtec.com/standards](http://samtec.com/standards) to learn more or contact standards@samtec.com to discuss your application.

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>PRODUCT</th>
<th>SERIES</th>
<th>PAGE</th>
</tr>
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<tbody>
<tr>
<td>VITA 42 XMC</td>
<td>SamArray®</td>
<td>YFS/YFT, JSOM</td>
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<tr>
<td>VITA 57.1 FMC</td>
<td>SEARAY™</td>
<td>SEAM/SEAF, JSOM</td>
<td>25</td>
</tr>
<tr>
<td>VITA 57.4 FMC+</td>
<td>SEARAY™</td>
<td>SEAM/SEAF, JSOM</td>
<td>25</td>
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<tr>
<td>VITA 74 VNX</td>
<td>SEARAY™</td>
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<tr>
<td>VITA 88 XMC+</td>
<td>SEARAY™</td>
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<td>25</td>
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<tr>
<td>VITA 90 VNX+</td>
<td>SEARAY™</td>
<td>SEAM/SEAF-RA</td>
<td>25-26</td>
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<tr>
<td>COM-HPC®</td>
<td>AcceleRate® HP</td>
<td>APM6/APF6</td>
<td>19</td>
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<tr>
<td>PCI/104-EXPRESS® &amp; PCI/104-EXPRESS® ONEBANK</td>
<td>Q2™</td>
<td>QMS/QFS</td>
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<tr>
<td>COAXPRESS®</td>
<td>High-Density BNC/FireFly™</td>
<td>HDBNC-TH, HDBNC-BH, HDBNC-EM, ECUO-B04</td>
<td>131, 178</td>
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<td>QSFP</td>
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<td>FQSFP/QSFC</td>
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<td>USB/USBR</td>
<td>USB/AccliMate™</td>
<td>USB/USBR/MUSB/MUSB/S/BCU/BPCU/BRU/RCU/RPBU/RPU/SCPU/SCRU/SCRU</td>
<td>216-218, samtec.com/usb</td>
</tr>
</tbody>
</table>

For more industry standards and products that meet them, visit samtec.com/standards.
V42 XMC
Rugged Mezzanine System for High-Performance VPX Card Cages
• 3.125 Gbps performance rating
• 10 mm & 12 mm stack heights
• 96 total pins (6 x 16 configuration) with multiple points of contact
• Drop-in ready JSOM ejector jackscrews and mating high-density array cable assemblies available
• SOSA™ aligned connectors

V57.1 FMC
Leading VPX Mezzanine System for Advanced FPGA Integration
• FPGA Industry Standard connector for development applications
• 10 Gbps performance
• HPC & LPC versions (400 & 160 selectively loaded pins)
• 8.5 mm & 10 mm stack heights
• Many high-speed cable & loopback card options available
• Optional JSOM ejector jackscrews available
• SOSA™ aligned connectors

V57.4 FMC+
Advanced State-of-the-Art FPGA Mezzanine Integration
• HSPC Main Connector has 560 pins (14 x 40 configuration), 24 multi-gigabit interfaces, up to 28 Gbps
• HSPCe Extension Connector has 80 pins (4 x 20 configuration) adding 8 multi-gigabit interfaces, 32 in total
• 8.5 mm, 10 mm and 15.5 mm stack heights
• SOSA™ aligned connectors

V57.5 FMC+
Development Tools Aid with FMC+ Applications
• Board connectors for increased stack heights to 15.5 mm
• Standoffs, loopback cards and connector extender cards
• User friendly JSOM ejector jackscrews and mating high-density array cable assemblies available

V90 VNX+
VNX+ Small Form Factor Modules
• Rugged, high-performance, scalable, low power consumption embedded controllers
• 200, 240, 320 & 400 pin connector choices (Right-angle SEARAY™)
• Optimized pinout for improved SI performance and density
• VITA 90.2: Expanded optical and coaxial connectivity provides routing flexibility (FireFly™ and GPCC 50/75 Ω contacts)
• VITA 90.3: Specialized pinout for PSU and filter modules
• 12.5 mm & 19 mm stack heights
• Mating high-density array cable assemblies available
• SOSA™ aligned connectors

PCI/104-Express™ & PCI/104-Express™ OneBank
Rugged, Stackable & Scalable Embedded Computer Applications
• Q2™ connectors with ground planes
• 3-banks have 156 signal pins, OneBank has 52 pins
• 2.5 Gbps performance
• 15.24 mm & 22 mm stack heights
• Mating high-speed, high density cable assemblies available

COAXPRESS®
Industrial/Professional Application High-Speed Imaging Standard
• Coaxial cable combined with high-speed serial data technology
• Up to 12.5 Gbps data rate per cable
• High-Density BNC 75 Ω connectors and components
• Supports 12G-SDI protocol

QSFP
Compact, Hot-Pluggable Transceiver I/O Connector
• Flyover® solution for optimized signal integrity
• Cage and 38-pin connector
• 30 AWG 100 Ω twinax cable
• 4 high-speed Tx pairs, 4 high-speed Rx pairs
• 28 Gbps NRZ/56 Gbps PAM4 performance per channel
• Meets high-speed protocols including 40/200/400 Gb Ethernet, PCIe®, OIF-CEI-28G, SAS and SATA

USB/USBR
Standardized Connection, Communication & Power Supply
• Type A, Type B, Mini, high retention and sealed versions
• IP67/IP68 sealed circular and rectangular cable systems

COMPUTE EXPRESS LINK™ (CXL™)
Open Systems Interconnect Offering Memory-Semantic Access to Data and Devices Via Multiple Network Topologies
• High-speed, low-latency access to memory across the data center
• 0.60 mm pitch Edge Rate® high-speed edge card connectors

PCI-SIG®, PCI Express®, and the PCIe® design marks are registered trademarks and/or service marks of PCI-SIG.
EVALUATION & DEVELOPMENT KITS

From concept and prototype to development and production, Samtec-designed Evaluation and Development Kits simplify the design process and reduce time to market. Kits are available for many of our high-performance connector sets, standard high-speed cable assembly, and optical configurations. Custom kits are also available via our “mix-and-match” design approach. Visit samtec.com/kits or contact kitsandboards@samtec.com for a current list of kit availability.

OPTICS/FPGA DEVELOPMENT KITS

Visit samtec.com/kits for more information.

PRECISION RF EVALUATION KITS

Visit samtec.com/kits for more information.
SI EVALUATION KITS: BOARD-TO-BOARD

Visit samtec.com/kits for more information.

**ExaMAX® High-Speed Backplane**

- **Traditional Connectors (EBTF/EBTM)**

**AcceleRate® HP High-Performance Arrays (APM6/APF6)**

**AcceleRate® HD High-Density Arrays (ADM6/ADF6)**

**NovaRay™ Extreme Density Arrays (NVAM/NVAF)**

**LP Array™ Low Profile Arrays (LPAM/LPAF)**

**Edge Rate® 0.60 mm Pitch High-Speed Edge Card (HSEC6-DV)**

**Edge Rate® Differential Pair Edge Card (HSEC8-DP)**

**Edge Rate® 0.635 Pitch High-Speed Strips (ERM6/ERF6)**

**FireFly™ 20+ Gbps Edge Card Socket (UEC5-2)**

**SEARAY™ High-Density Arrays (SEAM/SEAM-RA & SEAF/SEAF-RA)**

**ExaMAX® High-Speed Backplane Traditional Connectors (EBTF/EBTM)**

**NovaRay™ Extreme Density Arrays (NVAM/NVAF)**

**LP Array™ Low Profile Arrays (LPAM/LPAF)**

**Edge Rate® Differential Pair Edge Card (HSEC8-DP)**

**Edge Rate® 0.635 Pitch High-Speed Strips (ERM6/ERF6)**

**AcceleRate® Flyover® Slim Cable Assembly (ARC6/ARF6)**

**Flyover® QSFP28 Cable System (FQSFP to ARC6 and other End 2 options)**

**Flyover® QSFP Double-Density Cable System (FQSFP-DD to NVAC/ARC6)**

**Novara® Flyover® Extreme Performance Cable Assembly (NVAC/NVAM-C)**

**Si-Fly™ Low Profile Cable System (CPC/CPI)**

**ExaMAX® Backplane Cable System (EBCM/EBTF-RA)**

**Visit samtec.com/kits for more information.**
Samtec uses a channel-based approach to estimate connector performance in a system. The result is a realistic one number designation for all of Samtec’s high-speed interconnects, called Channel Performance Metric (CPM).

This one number designation allows for a side-by-side comparison of Samtec components. Noise contributions from, and interactions with, other parts of a predefined channel are considered. An example of a predefined channel is shown below.

Samtec’s CPM reports connector capability that is more representative of actual performance in a system, replacing the connector only data of the past.

This real-world approach factors in all impairments, such as the crosstalk and reflections, inherent in a complete channel. Through Samtec’s use of a common set of channel assumptions, relative comparison can then be made across the entire Samtec offering which is practical and realizable. Because Samtec’s CPM is a function of necessary channel assumptions made, it is important to note that Samtec’s CPM can and will vary from a customer specific application.

Visit samtec.com or contact SIG@samtec.com for technical support prior to final connector selection in any specific application.

*Note: For speeds of 28 Gbps or less, NRZ encoding scheme is assumed.
### QUALITY ASSURANCE

<table>
<thead>
<tr>
<th>Specifications</th>
<th>ISO-9001 and/or IATF 16949</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Program Certifications</td>
<td></td>
</tr>
<tr>
<td>UL File Number</td>
<td>Visit samtec.com/quality</td>
</tr>
<tr>
<td>Sampling Procedures</td>
<td>ANSI/ASQ Z1.4</td>
</tr>
<tr>
<td>Calibration System Requirements</td>
<td>Per IATF 16949</td>
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</tbody>
</table>

### INSULATOR

#### Specifications

<table>
<thead>
<tr>
<th>Molding Plastics, Thermoplastic Polymers</th>
<th>MIL-M-24519 Rev E</th>
</tr>
</thead>
</table>

#### Applied Tests

- Dielectric Breakdown Voltage: ASTM/ISO
- AC Loss Characteristics: ASTM/ISO
- Impact Resistance of Plastics: ASTM/ISO
- DC Resistance: ASTM/ISO
- High-Voltage, Low-Current Arc Resistance: ASTM/ISO
- Water Absorption of Plastics: ASTM/ISO
- Test for Tensile Properties of Plastics: ASTM/ISO
- Deflection Temperature of Plastics: ASTM/ISO
- Compressive Properties of Plastics: ASTM/ISO
- Coefficient of Linear Thermal Expansion: ASTM/ISO
- Shear Strength of Plastics: ASTM/ISO
- Rockwell Hardness of Plastics: ASTM/ISO
- Flexural Properties of Plastics: ASTM/ISO
- Specific Gravity and Density of Plastics: ASTM/ISO

### PLATING

#### Specifications

- Gold: ASTM-8488
- Tin: ASTM-8545**

#### Under Plating Specifications

- Nickel: QQ-N-290**
- Copper: AMS 2418

#### Applied Tests


### CONTACT & TERMINAL

#### Specifications

- Brass: ASTM/ISO
- Phosphor Bronze: ASTM/ISO
- Beryllium Copper: ASTM/ISO

### ASSEMBLY

#### Testing Specifications

- Test Methods for Electrical Connectors: EIA-364
- Test Methods for Electronic/Electrical Components: EIA-364
- Connections, Electrical, Solderless, Wrapped: EIA-364
- Environmental Test Methods: EIA-364
- Sockets (Lead, Electronic Components), General: EIA-364
- Sockets, Plug-in Electronic Components, General: EIA-364

#### Packaging Specifications

- Tape and Reel Packaging of Connectors: Visit samtec.com/packaging
- Tray Packaging of Connectors: ANSI/EIA-960
- Packaging Materials for ESD Sensitive Items: ANSI/ESD S541
- Package Testing Procedures: ISTA-3A

### OTHER SPECIFICATIONS

- Insulation Resistance: 5000 MΩ min
- Flammability Rating: UL 94V-0 **** (Typically)

### PRODUCT ENVIRONMENTAL COMPLIANCE

Product environmental compliance is a part-specific issue for Samtec. To confirm the environmental compliance status of any Samtec product please contact the Product Environmental Compliance Group at PEC@samtec.com and/or visit samtec.com/quality.

Samtec has offered both lead-bearing and lead-free products for many years and will continue to support customers requiring products not compliant with the EU Directives, such as those specified for military, aerospace and specialty applications.

Proposition 65 statement: These products could expose you to chemicals which are known to the State of California to cause birth defects or other reproductive harm. For more information, visit P65Warnings.ca.gov.

### LEAD FREE PROCESSING GUIDELINES

- Lead-Free Wave Solderable: This product is compatible with wave solder pot temperatures between 260 °C and 270 °C with maximum exposure of the termination pins to the solder wave for 4 seconds.
- Lead-Free Reflow Solderable: This product can withstand a maximum peak temperature of 260 °C, 255 °C for up to 30 seconds, and the longer dwell times required for lead-free reflow processing.

### AUTOMOTIVE CERTIFICATION (ACD SERIES)

Samtec offers design and manufacture of electronic connectors, marketed as “ACD Series” (Automotive Certified Designs) for printed circuit boards. Samtec shall only comply with ISO/IATF 16949 on products it certifies as Automotive Custom Design (“ACD”) or those designated with “A-“ in the Samtec part number preface of the Automotive Solutions Catalog.

Download the Automotive Solutions catalog at samtec.com/catalog, or contact AutoSalesGroup@samtec.com for qualifying products and alternative automotive application solutions.

---

**Notes:**

*Products with specifications other than those listed above are noted on the product’s website page.

**With the exception of thickness.

***As dictated by material grade.

****Contact UL@samtec.com for additional flammability ratings.
<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AcceleRate</td>
<td>High-performance edge-rate interconnects for high-speed data transmission.</td>
</tr>
<tr>
<td>Edge Rate</td>
<td>Low-profile high-speed connectors for high-density applications.</td>
</tr>
<tr>
<td>FlexStack</td>
<td>High-performance interconnect solutions for signal integrity and reliability.</td>
</tr>
<tr>
<td>PowerStrip</td>
<td>High-performance power distribution solutions for efficient power delivery.</td>
</tr>
<tr>
<td>PowerMate</td>
<td>High-performance power distribution solutions for efficient power delivery.</td>
</tr>
<tr>
<td>Si-Fly</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
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<tr>
<td>Tiger Beam</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
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<tr>
<td>Tiger Buy</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
</tr>
<tr>
<td>Tiger Claw</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
</tr>
<tr>
<td>Tiger Eye</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
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<tr>
<td>URSA I/O</td>
<td>High-speed micro-flange interconnects for signal integrity.</td>
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<td>Series</td>
<td>Description</td>
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<tr>
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<tr>
<td>135</td>
<td>50 Ω Precision 1.35 mm Compression Jacks</td>
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<tr>
<td>185</td>
<td>50 Ω Precision 1.85 mm Compression Jacks</td>
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<tr>
<td>240</td>
<td>50 Ω Precision 2.40 mm Compression Jacks</td>
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<tr>
<td>292</td>
<td>50 Ω Precision 2.92 mm Compression Jacks</td>
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<tr>
<td>BE90A</td>
<td>90 GHz Bulls Eye® Assembly, Single or Double Row</td>
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<tr>
<td>BE70A</td>
<td>70 GHz Bulls Eye® Assembly, Single or Double Row</td>
</tr>
<tr>
<td>BE40A</td>
<td>50 GHz &amp; 40 GHz Bulls Eye® Assembly, Double Row</td>
</tr>
<tr>
<td>BNC5</td>
<td>50 Ω BNC Cable Connectors</td>
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<tr>
<td>BNC7T</td>
<td>75 Ω 12G-SDI BNC Jacks</td>
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<tr>
<td>BNC7T-CA</td>
<td>75 Ω 12G-SDI BNC Cable Connectors</td>
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