PRODUCT OVERVIEW
A DIFFERENT BREED OF CAT

INNOVATIVE TECHNOLOGIES • SUDDEN SERVICE®

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.

Silicon-to-Silicon Solutions

Core Board-to-Board

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.

#1 in Bishop’s Customer Survey of the Electronic Connector Industry
GLOBAL SUPPORT NETWORK

- DESIGN CENTERS
- OPERATIONS
- SALES OFFICES
HIGHSPEED CABLES
FLYOVER® | MID-BOARD & PANEL | BACKPLANE | MICRO COAX & TWINAX

OPTICS
MICRO FLYOVER SYSTEM™ | EXTENDED TEMP
PCI EXPRESS®-OVER-FIBER

RF
PRECISION RF | 50 Ω SOLUTIONS
75 Ω SOLUTIONS | ORIGINAL SOLUTIONS
INTEGRATION LEADS TO INNOVATION

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 is the Electronics Industry’s Service & Technology Leader.

24/7 WORLDWIDE ACCESS

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.

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!

24HOUR

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

MYSAMTEC™

A Personalized Web Experience for Easy Ordering.

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account.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. To find your solution, visit samtec.com/picturesearch.

Downloads
Samtec offers immediate and unlimited access to all the documentation you need to select the right solution for your application from 3D models, prints and footprints to test reports, white papers and so much more. Visit samtec.com to start exploring.

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 in Samtec’s online design tools.
HIGH-SPEED BOARD-TO-BOARD & BACKPLANE

Samtec offers the largest variety of high-speed board-to-board and backplane interconnects in the industry with full engineering support, online tools and an unmatched service attitude.

HIGH-DENSITY ARRAYS

• Up to 560 pins; roadmap to 1,000+
• Open-pin-field arrays for maximum grounding and routing flexibility
• 0.635 mm, 0.80 mm and 1.27 mm pitch; stack heights from 4 to 40 mm
• Supports high-speed protocols such as Ethernet, PCI Express®, Fibre Channel and InfiniBand™
• Vertical and right-angle, press-fit tails, standoffs and mating cable assemblies available for increased design flexibility

PCI-SIG®, PCI Express® and the PCle® design marks are registered trademarks and/or service marks of PCI-SIG.
VARIETY OF OPTIONS

<table>
<thead>
<tr>
<th>Brand/Series</th>
<th>Pitch</th>
<th>Stack Height</th>
<th>Pin Count</th>
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<tbody>
<tr>
<td>NovaRay® (NVAM/NVAF)</td>
<td>0.80 mm x 1.80 mm</td>
<td>7, 9, 10 &amp; 12 mm</td>
<td>8, 12, 16, 24, 32 pairs</td>
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<tr>
<td>AcceleRate® HP (APM6/APF6)</td>
<td>0.635 mm</td>
<td>5 &amp; 10 mm</td>
<td>80, 160, 240, 400, 800</td>
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<tr>
<td>AcceleRate® HD (ADM6/ADF6)</td>
<td>0.635 mm</td>
<td>7, 9, 10, 11, 12, 14 &amp; 16 mm</td>
<td>40-400</td>
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<tr>
<td>SEARAY™ (SEAM/SEAF)</td>
<td>1.27 mm x 1.27 mm</td>
<td>7-18.5 mm</td>
<td>40-560</td>
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<tr>
<td>SEARAY™ 0.80 mm (SEAM8/SEAF8)</td>
<td>0.80 mm</td>
<td>7 &amp; 10 mm</td>
<td>40-500</td>
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<tr>
<td>LP Array™ (LPAM/LPAF)</td>
<td>1.27 mm x 1.27 mm</td>
<td>4, 4.5 &amp; 5 mm</td>
<td>40-400</td>
</tr>
</tbody>
</table>

BUILD IT YOURSELF
Check out the High-Speed Board-to-Board Solutionator® to quickly build a mated set for your specific application. Visit samtec.com/hsb2b-solutionator

ALSO AVAILABLE

COMPRESSION INTERPOSERS
Dual compression with performance to 56 Gbps PAM4 in a low 1.27 mm body height (GMI)

PRECISION RF BOARD-TO-BOARD SOLUTIONS
SMP, SMPM and Ganged SMPM with a push-on design for quick installation and frequency to 65 GHz (GPPC, GPPB, SMPM, PRFIA, SMP).
HIGH-SPEED BOARD-TO-BOARD

- Edge Rate® contacts optimized for speed and high cycles; designed at 85 Ω for PCIe® data rates
- Integral ground plane for power to 25 Amps
- 0.50 mm, 0.635 mm and 0.80 mm pitch; 5 to 25 mm stack heights
- Space-saving designs and ruggedizing features
- Vertical, right-angle and edge mount

ULTRA MICRO INTERCONNECTS

- Slim body designs for increased PCB savings; low profile 2 to 12 mm stack heights
- Up to 160 total pins on a choice of pitch from ultra-fine 0.40 mm to 0.80 mm
- Hermaphroditic connectors reduce inventory costs
- EMI shielding with rugged latching for higher retention forces
- Right-angle and standoff options
HIGH-SPEED EDGE CARDS

- Generate™ high-speed edge card sockets with Edge Rate® contacts for decreased crosstalk
- PCI Express® 3.0/4.0/5.0/6.0 solutions
- Choice of pitch with up to 300 total positions
- Vertical, right-angle, edge mount and pass-through
- Power/signal combo, press-fit tails, rugged tucked beam technology, weld tabs, locks, latches and mating cable assemblies
- Designs for misalignment mitigation

EDGE RATE® CONTACT SYSTEM

- Smooth milled mating surface reduces wear and increases durability
- Lower insertion and withdrawal forces
- Robust when “zippered” during unmating
- Minimized parallel surface area reduces broadside coupling and crosstalk
- Designed, simulated and optimized for 50 Ω and 100 Ω systems
HIGH-SPEED BOARD-TO-BOARD & BACKPLANE

HIGH-SPEED BACKPLANE

- Variety of configurations: traditional backplane, direct-mate orthogonal, coplanar, cable systems
- Up to 72 differential pairs total
- ExaMAX® provides two points of contact for a reliable electrical connection
- XCede® HD features a small form factor and modular design for space savings and flexibility
- Guidance, keying and power modules
ROADMAP: HIGH-SPEED BOARD-TO-BOARD & BACKPLANE

**EXAMAX® BACKPLANE CABLE ASSEMBLIES**

- 30 and 34 AWG Eye Speed® ultra low skew twinax cable technology for improved signal integrity
- Reduced costs due to lower layer counts
- Reliable mating with guaranteed two points of contact
- 16 - 96 differential pairs
- Multiple end 2 options available

**AcceleRate® HP Right-Angle**
High-performance 0.635 mm pitch arrays with a right-angle option for design flexibility

**AcceleRate® mP Signal and Power**
Power and signal solution with up to 10 power and 240 signal positions for 56 Gbps PAM4 performance in an open-pin-field design

**NovaRay® Backplane**
High-speed backplane system featuring NovaRay® contacts with extremely low crosstalk (beyond 40 GHz) and tight impedance control to support 224 Gbps PAM4 data rates

**XCEDE® HD**
Modular design for flexibility and customizable to meet specific requirements

Signal/ground pin staging for hot plugging

High-density application increases architectural flexibility by overcoming the limitations of traditional connector-to-connector backplane
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. This results in a cost-effective, high-performance and heat efficient answer to the challenges of 56 Gbps bandwidths and beyond.

**FLYOVER® TECHNOLOGY**

**ULTRA LOW SKEW TWINAX CABLE TECHNOLOGY**
- Ideal for 28 - 112+ Gbps applications
- Tight coupling between signal conductors
- Ultra low skew twinax < 3.5 ps/meter (intrapair)
- Improved signal integrity and eye pattern opening
- Increased bandwidth and reach

**PERFORMANCE & COST ADVANTAGES**
- Up to 112 Gbps PAM4 and beyond
- Simplified board layout
- Less expensive PCB materials, fewer PCB layers
- Eliminates expensive re-timers

**SUPPORT**
Fully integrated Technology Centers for full system optimization from Silicon-to-Silicon, including Samtec’s High-Speed Cable Group.

**THERMAL IMPROVEMENT**
Standard Network Switch vs. Samtec Flyover® Technology
**FLYOVER® QSFP CABLE SYSTEMS**

- Up to 800 Gbps PAM4 aggregate data rate (112 Gbps PAM4 per channel; 4 or 8 channels)
- Double density versions feature belly-to-belly mating for maximum density
- Modular design improves heat management, increases SI performance, provides scalability and reduces costs by creating a multifunction board
- Variety of end 2 options including AcceleRate®, NovaRay®, Si-Fly™, FireFly™ and ExaMAX®

**NOVARAY® I/O EXTREME PERFORMANCE CABLE SYSTEM**

- Highest aggregate data rate on the market – up to 3,584 Gbps PAM4
- Cable-to-cable bulkhead panel connection; right-angle panel mount and sealed 38999 in development
- 16 and 32 differential pairs, accommodates PCIe® 6.0 in x4 or x8 configurations plus sidebands
- Reduced thermal load at the panel requires no heat sinks, saving valuable panel space
- Variety of end 2 options including AcceleRate®, NovaRay® and Si-Fly™

**BACKPLANE ASSEMBLIES**

**EXAMAX® HIGH-SPEED BACKPLANE CABLE SYSTEM**

- Cable-to-cable, cable-to-board, mid-board and panel applications
- 30 and 34 AWG Eye Speed® ultra low skew twinax for improved signal integrity, increased flexibility and routability
- Staggered differential pair design with embossed ground structure reduces crosstalk
- Highly customizable with modular flexibility and a wide variety of end 2 options

**DIRECT ATTACH**

- High-density contacts directly soldered to the Eye Speed® ultra low skew twinax cable
- Improved signal integrity by eliminating the transition board and its variability
- Achieves tighter tolerances
**NOVARAY® EXTREME PERFORMANCE CABLE SYSTEM**

- 4.0 Tbps aggregate data rate – 9 IEEE 400G channels (112 Gbps PAM4 per channel)
- Proprietary pin to ground configuration enables very low crosstalk (beyond 40 GHz), very tight impedance control and minimal variance in data rate as stack height increases
- 8 to 32 signal pairs with two reliable points of contact guaranteed; 72 pairs in development
- Industry leading aggregate data rate density – 2x the data rate in 60% of the space vs. traditional arrays

**ACCELERATE® SLIM, DIRECT ATTACH CABLE SYSTEM**

- Slimmest cable assembly in the industry – 7.6 mm width
- 8, 16 and 24 differential pair configurations in a high-density 2-row design
- Contacts directly soldered to the cable improves signal integrity by eliminating the transition board and its variability
- Rugged metal latching and shielding
- “Reversed Polarity” pinout option for reduced Far-End Crosstalk

**ACCELERATE® HP EXTREME DENSITY CABLE SYSTEM**

- Industry’s highest density 112 Gbps PAM4 cable-to-board system
- 32 to 72 differential pairs; up to 96 pairs in development
- Staggered row-to-row spacing of 2.2 mm x 2.4 mm allows adequate routing lanes for optimized traces
- Cable-on-substrate solution provides greater flexibility with the assembly directly mating with the connector on the chip package or transition card
SI-FLY™ LOW PROFILE CABLE SYSTEM
- Up to 16 pairs in an extremely low 3.8 mm profile for placement adjacent to the IC package, under heat sinks or other cooling hardware
- 112 Gbps PAM4 per lane enabling 25.6 TB aggregate with a path to 51.2 TB
- Co-packaged configuration for advanced 112G+ data rate requirements

GENERATE™ HIGH-SPEED EDGE CARD CABLE SYSTEM
- Compatible with SFF-TA-1002 (1C, 2C, 4C & 4C+)
- Surpasses PCIe® 4.0 and 5.0 performance requirements
- Vertical or right-angle cable launch
- Mates with Generate™ 0.60 mm pitch high-speed edge card socket
- Rugged metal latching system

ROADMAP: FLYOVER® CABLE SYSTEMS

AcceleRate® Mini
Provides system design flexibility as an End 2 option for Flyover® assemblies with 1 or 2 differential pairs; vertical and right-angle board connector

AcceleRate® HP Gen 2
Double the density in the same Gen 1 footprint with up to 144 differential pairs and Samtec’s Thinax™ cable for co-packaged applications

Si-Fly™ Gen 2
112 Gbps PAM4 cable system with angled vertical launch for high-density in an extremely low profile for co-packaged applications

NovaRay® Backplane
High-speed backplane system supports 224 Gbps PAM4 with traditional perpendicular board-to-board, board-to-cable and cable-to-cable applications

EYE SPEED® 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
HIGH-SPEED CABLE SYSTEMS

Samtec’s micro coax and twinax cable systems feature Eye Speed® cable technology and the ability to mix-and-match end options for application-specific requirements with extensive customizing capabilities. Single-ended 50 Ω and differential 100 Ω standards with rugged features and options including strain relief, plastic housings, screw downs, latches, locks and more.

HIGH-DENSITY ASSEMBLIES

- SEARAY™ 1.27 mm pitch with up to 240 I/Os supports PCIe® 2.0/3.0 protocols
- SEARAY™ 0.80 mm pitch with up to 300 I/Os
- 34 or 36 AWG micro coax; 32 AWG twinax
- Rugged options include screw downs, guide posts and latching
- Vertical, right-angle and press-fit board level mates

GROUND PLANE ASSEMBLIES

- Integral ground/power plane reduces crosstalk
- 0.50 mm and 0.80 mm pitch with up to 240 I/Os
- 34 and 38 AWG micro coax; 30 AWG twinax
- Surface mount, edge mount or panel mount terminations
- Rugged screw mounts or retention pin options

EYE SPEED® CABLE TECHNOLOGY

- Excellent signal integrity performance with individual copper serve or braid shielding
- Stranded conductor for small bend radii and dynamic high flexing cycle applications
- Cost-effective ribbonizing eliminates discrete wires

samtec.com/HDR
EDGE CARD ASSEMBLIES

• Micro 0.50 mm pitch assembly mates with shielded edge card socket
• 0.80 mm pitch assembly mates with Generate™ high-speed edge card socket
• PCI Express® twinax assemblies support 3.0/4.0/5.0 data transfer rates
• FireFly™ copper available as standard (14 Gbps), optimized (56 Gbps PAM4) and PCIe® 4.0
• Pin compatible with optical FireFly™ using the same connector system
• 30, 32 and 34 AWG twinax; 34 AWG ultra low skew twinax
• Rugged latching and board lock options

HIGH-SPEED ASSEMBLIES

• Ultra micro 0.50 mm pitch hermaphroditic Razor Beam™ coax assemblies with rugged shielding
• 0.80 mm pitch Edge Rate® coax and twinax assemblies
• Up to 32 pairs or 60 total I/Os per row
• 34 and 38 AWG micro coax; 30 AWG twinax
• Rugged screw down and latching options

ALSO AVAILABLE

HIGH-SPEED I/O SYSTEMS

• Industry’s densest I/O cable system with HyperTransport™ HT 3.1 performance (HDLSP)
• Space-saving, high-cycle 0.80 mm pitch cable system shielded for EMI protection (EPLSP)
• Passive jumpers compliant to SFP+/SFP/XFP/XENPAK and up to 10 Gbps data transmission (SFPE)
FireFly™ Micro Flyover System™ takes the data connection “off board” for up to 28 Gbps per lane with a path to 56 Gbps PAM4 via optical cable – or copper for cost optimization – using the same surface mount connector system. Samtec’s optics offerings include PCIe®-Over-Fiber and rugged options ideal for harsh environments, as well as passive optical solutions.

**FIREFLY™ OPTICAL SYSTEMS**

- Industry leading miniature footprint allows for higher density close to the data source
- Simple assembly process with easy insertion/removal and trace routing
- x4 and x12 designs
- PCIe®-Over-Fiber supports 3.0/4.0 data rates for low latency, power savings and guaranteed transmission
- Extended Temp FireFly™ with a range of -40 °C to +85 °C for military, aerospace and industrial applications

**ALSO AVAILABLE**

**EVALUATION & DEVELOPMENT KITS**
Samtec-designed and Partner-designed kits and boards featuring FireFly™ simplify design and reduce time to market. Visit samtec.com/kits or contact kitsandboards@samtec.com

**PASSIVE OPTICS**
Industry standard passive MPO-to-MPO panel adaptor (OPA) and optical patch cable (FOPC)
END OPTION FLEXIBILITY

MPO (MTP®)
MT
MXC®
U-SDI Interface

Amphenol® MT38999
VITA 66.X Interface
Glenair® Series 79 MT Connector

ROADMAP: OPTICS

Extreme Environment FireFly™
Sealed and Mil-Coated with a -40 °C to +85 °C temperature range and multiple end 2 options for exposed military, aerospace and submersible applications

FireHawk™ Ultra Rugged Optics
Industry’s most compact fiber optics with solderable BGA attach for reliability and removable pigtail connector ideal for harsh environments

Halo™ Next Gen Optical
Capable of 112 Gbps PAM4 per lane with up to 16 channels in a low 6 mm profile designed to withstand high shock and vibration
RF SOLUTIONS

Full RF solution capabilities, including cable assemblies, board connectors and cable connectors are backed by the highest level of service in the industry. Samtec’s RF technical support includes launch optimization, simulation, and testing. The goal is to blend industry-leading system-level signal integrity expertise with high-quality RF products that meet mechanical, precision and performance expectations every time.

PRECISION RF, HIGH-FREQUENCY CABLE ASSEMBLIES

- Variety of interfaces from 1.00 mm (110 GHz) to TNCA (18 GHz)
- Push-on, threaded and ganged solutions
- Low-loss microwave and millimeter wave cable from .047 to .277, semi-flexible microwave, high-density ganged and Samtec optimized varieties
- Magnum RF™ ganged SMPM for 40% greater density, less processing time and better positional alignment

ALSO AVAILABLE
PRECISION RF ADAPTORS

Between-series and in-series adaptors designed for well-performing VSWR

BUILD IT YOURSELF

Check out the RF Cable Solutionator® to quickly design a full assembly for your specific application. Visit samtec.com/rf-cablebuilder
PRECISION RF CABLE CONNECTORS

- Flexibility to terminate to an industry-standard cable to meet application specifications
- High-frequency to 110 GHz
- Solder clamp and direct solder connectors available
- Available for a wide variety of semi-flexible and low-loss microwave industry standard cables
- Termination instructions available on engineering prints at samtec.com

PRECISION RF BOARD CONNECTORS

- Threaded coupling for superior repeatability and high mechanical stability
- Solderless compression mount for easy, field replaceable, cost-effective assembly to the board
- Magnum RF™ ganged SMPM operates mode-free to 65 GHz with a push-on interface for varying retention forces
- Vertical and edge mount for mezzanine, coplanar and perpendicular applications
- Board-to-board solutions available using SMP, SMPM or Magnum RF™ ganged, multi-position blocks

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Board Connector</th>
<th>Cable Connector</th>
<th>Cable Assemblies</th>
<th>Adaptor</th>
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<td>1.00 mm</td>
<td>to 110 GHz</td>
<td>In Development</td>
<td>PRF10</td>
<td>In Development</td>
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<td>PRF18</td>
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<td>2.40 mm</td>
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<td>RF047-A, RF085, RF086, RF23C</td>
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<td>2.92 mm</td>
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<td>to 65 GHz</td>
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<td>PRFM0</td>
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<td>RF180, RF280</td>
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BULLS EYE® HIGH-PERFORMANCE TEST & MEASUREMENT

- High-density, space saving array design with advanced cabling to support applications to 70 GHz (90 GHz in development)
- Compression interface to the board provides easy on/off and eliminates soldering costs
- 70 GHz, single or double row system with 360° grounding and 1.85 mm connection to instrumentation
- 50 GHz, double row system and 2.40 mm (50 GHz) or 2.92 mm (40 GHz) connection to instrumentation

Test Assembly | Silicon Speeds
---|---
BE90A, 90 GHz | 224 Gbps PAM4
BE70A, 70 GHz | 112 Gbps PAM4
BE40A, 50 GHz | 56 Gbps PAM4

STANDARD RF 50 Ω & 75 Ω CABLES & CONNECTORS (< 18 GHz)

- Wide variety of industry standard cables with mix and match cable connectors
- Straight and right-angle jacks, plugs and bulkhead jacks; die cast options
- 50 Ω double-shielded RG 316 cable assembly
- Low profile 75 Ω BNC and high-density BNC with pick and place capability, optimized for high volume manufacturing
- The largest variety of 12G-SDI optimized 75 Ω interconnects
- 50 Ω and 75 Ω assemblies with RG type cable and 12G-SDI Belden cable
- .081 mm and 1.13 mm DIA coax cable assemblies with MHF1 (U.FL), MHF3 and MHF4
**ORIGINAL SOLUTIONS**

- Shielded twisted pair system for 100 Ω applications
- Ganged micro scale high-performance RF jacks, plugs and cable assemblies on a 5.00 mm pitch
- IsoRate® high-isolation systems at half the cost vs. traditional RF
- 75 Ω mini and micro-mini interconnects
- 50 Ω high-vibration MMCX for rugged applications
- High-frequency solutions: Magnum RF™ to 65 GHz, flexible micro waveguide (E-band), Vita 90 VNX+ with RF backplane, Bulls Eye® high-performance test assemblies

**ROADMAP: RF SOLUTIONS**

- **Flexible Waveguide**
  Flexible cable with an E-band frequency range of 60 to 90 GHz in an ultra-small form factor

- **1.00 mm Precision RF Solutions**
  110 GHz compression mount board connectors and cable assemblies (cable connectors available now)

- **90 GHz Bulls Eye® Test System**
  Samtec’s Bulls Eye® system capable of testing 224 Gbps PAM4 silicon chips

- **Next Gen Precision RF Cable Assemblies**
  Phase and insertion loss stable cable assemblies with vertically integrated, extended frequency range coax cable

- **Edge Launch Precision RF Connectors**
  1.85 mm, 2.40 mm and 2.92 mm edge launch, solderless threaded compression board connectors

- **Size 16 & 20 Contacts**
  High-frequency coax contacts for high-density multi-position housings often used in extreme environments
RUGGED/POWER SOLUTIONS

Rugged contact systems, flexible power interconnects and rugged signal integrity combined with ultra-rugged offerings create the foundation of Samtec’s rugged/power solutions for high cycle, high speed and high power applications. Additional testing for severe environments ensures products are more than suitable for military, space, automotive, industrial and other extreme applications.

RUGGED BOARD-TO-BOARD SYSTEMS

- Tiger Eye™ is Samtec’s most rugged contact system rated to 1,000+ mating cycles on 0.80 mm, 1.27 mm and 2.00 mm pitch
- Screw down, locking clip, friction latching, and other ruggedizing options
- High-density, four row design with up to 200 total positions
- Discrete wire assemblies available in 24 - 32 AWG PVC or *Teflon™ fluoropolymer wire
- IDC cable assemblies available with rugged strain relief option

TIGER EYE™ CONTACT SYSTEM

- Multi-finger design with several points of contact for high-reliability
- Smooth, flat mating area increases mating cycles and lowers contact resistance
- Heat-treated BeCu for the best combination of mechanical and electrical properties
- Surface mount, micro slot tail increases solder surface area for higher joint strength

*Teflon™ is a trademark of the Chemours Company FC, LLC used under license by Samtec
RUGGED HIGH-SPEED SYSTEMS

- 0.50, 0.635 and 0.80 mm pitch Edge Rate® strips available in 5 to 18 mm stack heights
- Generate™ 0.60, 0.80 and 1.00 mm pitch edge card sockets up to 56 Gbps PAM4 performance
- 0.635 mm to 2.00 mm pitch micro edge card sockets with rugged features
- Razor Beam™ hermaphroditic interfaces with optional EMI shielding

POWER SYSTEMS

- mPOWER® 2.00 mm pitch, 18 Amp interconnects designed for power-only or power/signal with Samtec’s high-speed connectors for a two-piece solution; cable-to-cable solution in development
- Mini Mate® and Power Mate® systems feature individually shrouded contacts for electrical and mechanical protection
- Extreme power systems with AC or DC power, and AC-DC combo options
- 23.5 A/blade to 58.7 A/blade (1 blade powered) PowerStrip™ systems
- One-piece interfaces designed for high-shock and vibration
RUGGED/POWER SOLUTIONS

DISCRETE WIRE CABLE ASSEMBLIES
- High-reliability Tiger Eye™ assemblies with rugged latching and screw down options
- 1.00 mm pitch Micro Mate™ for cable-to-cable, cable-to-board and panel-to-board applications
- Mini Mate® and Power Mate® with individually shrouded contacts
- mPOWER® passes 18 Amps per blade directly to active components
- PowerStrip™ with up to 34.5 Amps per power blade
- Components and tooling available; visit samtec.com/tooling

RUGGED I/O SYSTEMS
- IP67 miniature push-pull latching system with lightweight plastic shell
- IP68 bayonet-style latching circulars with 12 mm, 16 mm and 22 mm metal or plastic shells (cost-effective crimp version available)
- Space-saving rectangular designs and IP68 threaded circular design with rugged overmold
- IP67 sealed USB Type-C system capable of USB 3.1 speeds

MICROMATE™

POWER STRIP™

mPOWER®

ACCLIMATE™

samtec.com/discretewire

samtec.com/sealed
ULTRA RUGGED SOLUTIONS

- URSA™ I/O 1.00 mm pitch rugged power system with 4 points of contact for extreme reliability and high mating cycles in cable-to-cable and cable-to-board solutions
- Vertical or right-angle board connector with up to 40 positions per row
- Extreme density with up to 1,450 I/Os in a 1RU panel
- EMI shielding limits signal degradation and optimizes performance
- SureWare™ ultra rugged hardware with 5 - 30 mm stack heights and rugged materials
- Guide Post Standoffs assist with "blind mate" for ultra micro mezzanine connectors
- Jack screw standoffs help reduce the risk of component damage when unmating

TESTING
Samtec’s products are tested to or beyond industry standards to ensure quality and performance in a variety of applications. Visit samtec.com/set

SURECOAT™

- High-reliability palladium plating for high-temp, high-cycle applications
- Roadmap: High-cyle “super lube” for extreme mating cycles and cost optimized next gen surface plating

ROADMAP: RUGGED/POWER

**NovaRay® I/O 38999 Rugged I/O Systems**
Samtec’s NovaRay® I/O high data rate cable system in a rugged 38999 shell and salt fog resistant to 500 hours

**Single Pair Ethernet (SPE) Cable System**
IEC 63171-6 compliant with high-performance Eye Speed® twinax and 4A CCC for Power over Dataline (PoDl)

**VITA 90 VNX+ Solutions**
RF backplane system to support 110 GHz with high-density size 20 cable; configured with SEARAY™ right-angle array and FireFly™ optics

samtec.com/ursa
samtec.com/hardware
FLEXIBLE STACKING

With the largest variety of board-to-board interconnects, Samtec makes it easy to find board stackers for any application. Header and socket systems are available in a variety of pitches, densities, stack heights, orientations and many more standard or custom options.

INCREDBLE 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

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)

CUSTOMIZABLE
• Mix-and-match headers and sockets to find the right solution
• Quick and easy custom parts are available. Contact asp@samtec.com

BUILD IT YOURSELF
Check out the Flex Stacking Solutionator® to quickly build a mated set for your specific application. Visit samtec.com/flex-solutionator
**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

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**VARIETY OF ORIENTATIONS/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

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**IDC CABLE SYSTEMS**

- .050" and 2.00 mm pitch Tiger Eye™ IDC systems
- Mating shrouded and ejector terminal strips
- Choice of socket and plug, single and double ended, twisted pair and flat cable
- Flexible Flat Ribbon IDC systems in a low profile design with no bulky side locks
- Molded-to-Position IDC systems mate with .025" (.064 mm) square tail headers
## 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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<td>1.00 mm (.0394&quot;)</td>
<td>.100&quot; (2.54 mm)</td>
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<td>V &amp; RA</td>
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<td>MATES</td>
<td>One-Piece</td>
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## .050" (1.27 mm) PITCH HEADERS & SOCKETS

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<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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<td>BOARD STACKING (mm)</td>
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## 2.00 mm (.0787") PITCH HEADERS & SOCKETS

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<th>TW</th>
<th>ZLTMH</th>
<th>CLT</th>
<th>ESQT/368</th>
<th>MMS</th>
<th>SMM</th>
<th>SQT</th>
<th>SQW</th>
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<tr>
<td>CONTACT SYSTEM</td>
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<td>Tiger Buy™</td>
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<td>MATES</td>
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## .100" (2.54 mm) PITCH HEADERS & SOCKETS

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<thead>
<tr>
<th>SERIES</th>
<th>DW, EW, ZW</th>
<th>HW</th>
<th>MTSW/HMTSW</th>
<th>TLW/MTLW</th>
<th>TSM</th>
<th>TSW/HTSW</th>
<th>BCS</th>
<th>ESQ</th>
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<td>V &amp; RA</td>
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<tr>
<td>TERMINATION</td>
<td>T/H</td>
<td>T/H &amp; SMT</td>
<td>T/H</td>
<td>T/H &amp; SMT</td>
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<td>BOARD STACKING (mm)</td>
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<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
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<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
<td>SSW, SSQ, ESQ, CES, SLW, BSW, BCS, SSM, HLE, PHF</td>
</tr>
</tbody>
</table>

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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
- Polared 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