Samtec's Flyover QSFP Systems provide improved signal integrity and architectural flexibility by flying critical high-speed signals over lossy PCB materials and directly to the panel via ultra low skew twinax cable. The ultra-high-density design includes sideband signaling via press-fit contacts to help increase airflow, and a multitude of "End 2" options allow for maximum design flexibility.

- Signal integrity is improved and extended by flying critical data over lossy PCB materials.
- Reduced PCB costs due to lower layer counts & increased material options.
- Heat sink options for a variety of airflow patterns.
- Allows drivers to be remotely located enabling flexibility in system architecture.
- Multiple End 2 options for ultimate design flexibility.
- Supports dual port architecture for maximum density.
- Sideband signals are routed through press-fit contacts for increased airflow.
DIRECT ATTACH QSFP SYSTEMS
High-Speed I/O Ports for Pluggable Transceivers

FLYOVER QSFP28

Shown without Cage

Localized Press-Fit Control & Power Contacts
Direct Connect Sidebands =
Increased Airflow & No Extra Cables Needed

FQSFP Series (QSFP28)

- 4 Channels (x4 Bidirectional, 8 Differential Pairs)
- 25 Gbps NRZ per channel
- Aggregate: 100 Gbps NRZ (200 Gbps PAM4)
- Compatible with all QSFP cable assemblies
- Heat dissipation: ~3.5 W / cable

Direct Solder Attach to Connector Contacts

1 Row of Contact Pads
Compatible with QSFP Modules

Also Available: Cages and Heat Sinks for a Variety of Airflow Patterns

FLYOVER QSFP28 DOUBLE DENSITY

Shown without Cage

FQSFP-DD Series (QSFP28-DD)

- 8 Channels (x8 Bidirectional, 16 Differential Pairs)
- 25 Gbps NRZ per channel
- Aggregate: 200 Gbps NRZ (400 Gbps PAM4)
- Belly-to-Belly mating for maximum density
- Heat dissipation: ~7 W / cable

2 Rows of Contact Pads
Backward Compatible with QSFP Modules

Also Available: Cages and Heat Sinks for a Variety of Airflow Patterns
As bandwidth requirements rapidly increase, routing signals through lossy PCBs, vias and other components has become one of the most complex challenges designers face. Samtec’s “Flyover” design approach breaks the constraints of traditional signaling and leverages the performance benefits of our Eye Speed® Twinax Cable.

**EYE SPEED® ULTRA LOW SKEW TWINAX CABLE**

- Co-extruded, low loss construction
- Proprietary cable technology
- Ideal for 28+ Gbps applications
- Tight coupling between signal conductors
- Improved bandwidth and reach
- Improved signal integrity
- Ultra low skew twinax < 3.5 ps / meter

**Nominal Performance Specifications**

<table>
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<tr>
<th></th>
<th>28 AWG</th>
<th>30 AWG</th>
<th>32 AWG</th>
<th>34 AWG</th>
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<tbody>
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<td><strong>14 GHz (28 Gbps)</strong></td>
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<td>1.00 m</td>
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<tr>
<td><strong>Density / Flexibility</strong></td>
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<td>Good</td>
<td>Better</td>
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</tr>
</tbody>
</table>

*Eye Speed® Ultra Low Skew Twinax Cable is available in engineered impedance configurations of 85 Ω, 92 Ω and 100 Ω.*
END 2 OPTIONS - CURRENTLY AVAILABLE

**Mini Edge Card Connector**
- 0.5 mm pitch; up to 200 pins
- Vertical orientation
- Accepts .062" thick cards
- MECS-DV Series

**FireFly™ Micro Flyover**
- Space-saving low profile
- Performance up to 28 Gbps
- Easily upgrade to optical using same connector set
- ECUE & UEC5 / UCC8 Series

**Mini Edge Card Connector**
- 0.5 mm pitch; up to 160 pins
- Right-angle orientation
- Accepts .062" thick cards
- MEC5-RA Series

**High-Speed Press-Fit**
- 8 or 4 pairs on 2.00 mm pitch
- Press-fit termination
- Low profile
- Tx and Rx isolation
- DCH Series

**Edge Rate® Differential Pair**

**High-Speed Edge Card Sockets**
- 0.8 mm pitch; up to 56 pairs
- Vertical orientation
- Accepts .062" thick cards
- HSEC8-DP Series

Samtec's Flyover technology is a flexible solution, ideal for many signal integrity-critical, 28+ Gbps applications. To discuss your design specifications, please contact our Flyover specialists at FQSFP@samtec.com.

END 2 OPTIONS - IN DEVELOPMENT

**Direct Pluggable Horizontal (DPH Series)**

**ExaMAX® High-speed Backplane (EBC Series)**

**Low Profile One-Piece Array (GMI Series)**

ExaMAX® is a trademark of AFCI.
FQSFP PRACTICAL APPLICATIONS

High-speed interconnect, microelectronics and optics expertise, along with leading edge innovations such as the Flyover QSFP System make Samtec an ideal partner to help take your application design to the next level. To discuss your design, please contact FQSFP@samtec.com.

HIGH-SPEED I/O + HIGH-SPEED EDGE CARD

HIGH-SPEED I/O + BACKPLANE

ULTRA LOW PROFILE HIGH-SPEED ARRAY INTERCONNECT

HYBRID COPPER + OPTICAL SYSTEM

Design Enables Belly-to-Belly Mating for Maximum Density

High-Performance, High-Density Backplane Systems

High-Density 10x10 Arrays with Optimized Signal Mapping