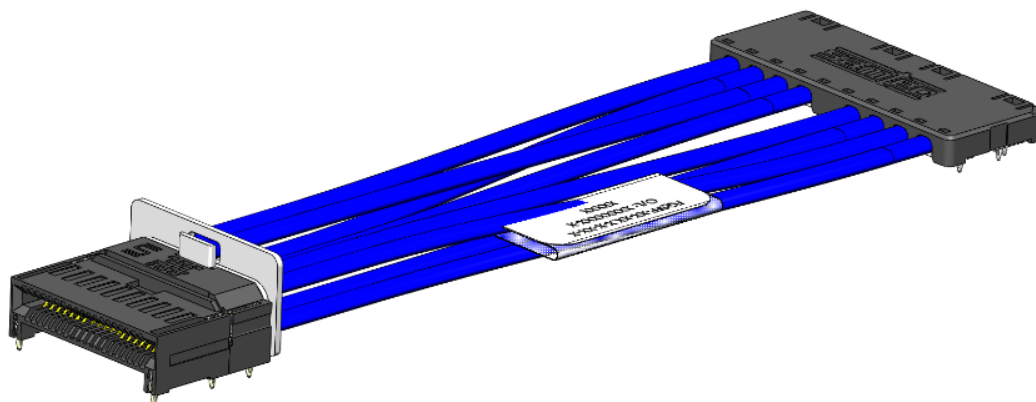


Series: **FQSFP** Flyover QSFP28 Cable System

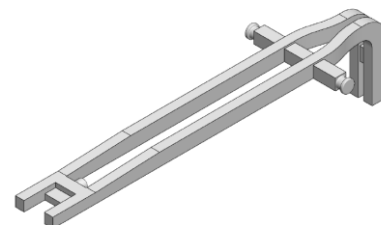
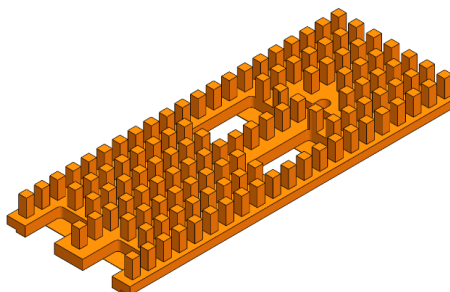
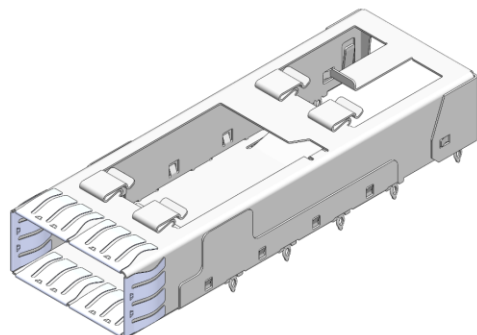
FQSFP Cable Assembly



QSFP28 Cage

HS-QSFP Heat Sink

LP-FQSFP Light Pipe



Other configurations available for:

DCH-PF 1X8 PAIR END, DCH-PF 2X4 PAIR END, ECUE END, ARC6-08 END
QSFP28-LP,

See www.samtec.com for more information.

Series: FQSFP Flyover QSFP28 Cable System

1.0 SCOPE

1.1 This specification covers performance, testing and quality requirements for Samtec FQSFP Flyover QSFP28 Cable System.

2.0 DETAILED INFORMATION

2.1 Product prints, footprints, catalog pages, test reports and other specific, detailed information can be found at FQSFP Cable Assembly: <https://www.samtec.com/products/fqsfp>.
 QSFP CAGE: <https://www.samtec.com/products/qsfp>
 HS-QSFP Heat Sink <https://www.samtec.com/products/hs-qsfp>
 LP-FQSPF Light Pipe: <https://www.samtec.com/products/lp-fqsfp>

3.0 TESTING

3.1 **Current Rating:** 2.1A (Press-Fit Pins Only)

3.2 **Voltage Rating:** 200 VAC

3.3 **Operating Temperature Range:** -25°C to +105°C

3.4 **Operating Humidity Range:** up to 95% (Per EIA-364-31)

3.5 **Electrical:**

ITEM	TEST CONDITION	REQUIREMENT
Withstanding Voltage	EIA-364-20 (No Flashover, Sparkover, or Breakdown)	610 VAC
Insulation Resistance	EIA-364-21 (1000 MΩ minimum)	45,000 MΩ
Contact Resistance (LLCR)	EIA-364-23	Δ 15 mΩ maximum (Samtec defined)/ No damage

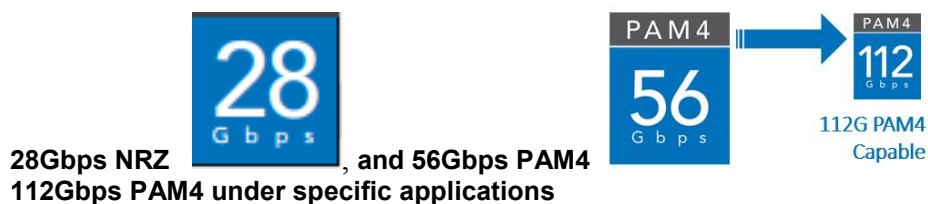
3.6 **Mechanical:**

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Durability	EIA-364-09C	100 cycles	PASS
Random Vibration	EIA-364-28 Condition V, Letter B 7.56 G 'RMS', 50 to 2000 Hz, 2 hours per axis, 3 axis total, PSD 0.04	Visual Inspection: No Damage LLCR: Δ 15 mΩ maximum	PASS
Mechanical Shock	EIA-364-27 100 G, 6 milliseconds, sawtooth wave, 11.3 fps, 3 shocks/direction, 3 axis (18 total shocks)	Visual Inspection: No Damage LLCR: Δ 15 mΩ maximum	PASS
Normal Force	EIA-364-04	30 grams minimum for Gold interface	PASS

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3.7 Environmental:

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Thermal Shock	EIA-364-32 Thermal Cycles: 100 (30 minute dwell) Hot Temp: 85°C Cold Temp: -55°C Hot/Cold Transition: Immediate	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 610 VAC IR: >45,000 M Ω	PASS
Thermal Aging (Temp Life)	EIA-364-17 Test Condition 4 @ 105°C Condition B for 250 hours	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 840 VAC IR: >10,000 M Ω	PASS
Cyclic Humidity	EIA-364-31 Test Temp: 25°C to 65°C Relative Humidity: 90 to 95% Test Duration: 240 hours	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 610 VAC IR: >45,000 M Ω	PASS
Gas Tight	EIA-364-36 Gas Exposure: Nitric Acid Vapor Duration: 60 min. Drying Temp.: 50°C +/- 3°C Measurements: Within 1 hour of Exposure	LLCR: Δ 15 m Ω	PASS

4.0 HIGH SPEED PERFORMANCE
4.1 Channel Simulation - Channel Performance Metric (CPM) for 0.5m long


Note: CPM is a channel simulation based approach to understanding connector performance. For further information on CPM please visit [Introducing Channel Performance](#).

CPM is simulated using a Samtec specific channel. Connector performance may improve based on specific applications. Please email SIG Frontline SIGFrontline@samtec.com to determine performance in your system.

Series: FQSFP Flyover QSFP28 Cable System

4.2 Empirical Testing – Based on -7dB insertion loss

Assembly	Frequency @ -7dB IL
FQSFP Cable Assembly	27 GHz for 0.5m long

Note: The cable assembly bandwidth is based on -7dB insertion loss point of the mated cable assembly. The -7dB point can be used to estimate usable system bandwidth in a typical two-level signaling environment.

4.3 System Impedance: 100 Ohm for differential pair

5.0 APPLICATION PROCEDURE

5.1 Connector Insertion Tooling

The FQSFP cable system is intended to be applied utilizing a “flat rock” insert tools for DCH end and a special insert tools for FQSFP end, a special insert tools for QSFP cage.

If a connector’s ground tails are longer than the thickness of the printed circuit board that the connector is being applied to (ground tail length specification is $1.60 \pm 0.15\text{mm}$) a special bottom support tool will be necessary. This tool could be a PCB with oversized holes or a custom tool designed by the user.

5.2 PCB specifications

PCB geometry and materials to comply with appropriate connector footprint drawing.

There is no maximum PCB thickness but the footprint PTH details must be held for the depth at which the compliant pin will be inserted.

PCBs less than 1mm are not recommended for mechanical reasons, there may additional SI limiting factors Any PCB PTH may be used up to three insertions.

Connectors are only good for one insertion.

5.3 Board Insertion Procedure for FQSFP cable system

- **Application views**

Application view information can be found at link below:

<http://suddendocs.samtec.com/prints/fqsfp-xx-xx.x-x-xx-x-mkt.pdf>

5.4 The post-application inspection should consist of several simple checks to assure that the connector is applied properly and is not damaged.

- Visually assure that all press-fit tails are seated in the proper PCB holes and that none have been crushed during application.
- Visually check that the standoffs on the bottom of each assembly are seated flush and parallel with the PCB surface (see Figure 3 & 4). Once fully seated, there may be some minor gaps (<0.1 mm) due to component tolerances.

6.0 APPLICATION INFORMATION

6.1 Min Cable Bend Radius: TTF-34100-XX-01 = .125” [3.175mm]

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6.2 Cable Management: Samtec recommends some form of cable management to prevent non-axial forces being applied to the connector.

7.0 ADDITIONAL RESOURCES

- 7.1 For additional mechanical testing or product information, contact our Customer Engineering Support Group at CES@samtec.com
- 7.2 For additional information on high speed performance testing, contact our Signal Integrity Group at SIG@samtec.com
- 7.3 For additional processing information, contact our Interconnect Processing Group at IPG@samtec.com.
- 7.4 For RoHS, REACH or other environmental compliance information, contact our Product Environmental Compliance Group at PEC@samtec.com

USE OF PRODUCT SPECIFICATION SHEET

This Product Specification Sheet (“PSS”) is a brief summary of information related to the Product identified. As a summary, it should only be used for the limited purpose of considering the purchase/use of Product. For specific, detailed information, including but not limited to testing and Product footprint, refer to Section 2.0 of this document and the links there provided to test reports and prints. This PSS is the property of Samtec, Inc. (“Samtec”) and contains proprietary information of Samtec, our various licensors, or both. Samtec does not grant express or implied rights or license under any patent, copyright, trademark or other proprietary rights and the use of the PSS for building, reverse engineering or replication is strictly prohibited. By using the PSS, the user agrees to not infringe, directly or indirectly, upon any intellectual property rights of Samtec and acknowledges that Samtec, our various licensors, or both own all intellectual property therein. The PSS is presented “AS IS”. While Samtec makes every effort to present excellent information, the PSS is only provided as a guideline and does not, therefore, warrant it is without error or defect or that the PSS contains all necessary and/or relevant information about the Product. The user agrees that all access and use of the PSS is at its own risk. **NO WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY KIND WHATSOEVER ARE PROVIDED.**