

QSFP-DD CONNECTORS & CABLE ASSEMBLIES PRODUCT PORTFOLIO

400G PLUGGABLE I/O SOLUTIONS





APPLICATIONS

- SERVERS
- SWITCHES
- ROUTERS
- DATA CENTERS
- HIGH PERFORMANCE COMPUTING

High Speed 400G Pluggable I/O Solutions

TE Connectivity's (TE) QSFP-DD (quad small form-factor pluggable double density) doubles the density of QSFP interconnects with an eight-lane electrical interface capable of 28 Gbps NRZ or 56 Gbps PAM-4 to achieve 200 or 400 Gbps aggregate per port. The QSFP-DD portfolio's backwards compatibility allows existing QSFP modules to be plugged into QSFP-DD ports. Our QSFP-DD cages feature a proprietary heat sink design, making them the only solution to work in 15-18W applications at a low cost - providing superior thermal and signal integrity performance.

Surface Mount (SMT) Connectors & Cages

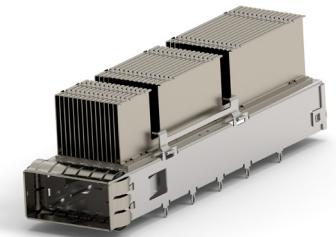
- Faceplate density equal to current 1xN QSFP28
- 1x1, 1x2, 1x3, 1x4, 1x5 and 1x6 cages available
- Cages are belly-to-belly compatible
- Connector is traditional SMT with 4 rows
- Multiple heatsink and lightpipe options available
 - Customizable with standard PCIe, SAN and NET heatsink heights, or to customer defined requirements
 - 1, 2 and 4 lightpipe configurations



SMT connector



1x1 cage with extruded aluminum heatsinks



1x1 cage with thermally enhanced zipper fin heatsinks

TE has conducted extensive research on module-to-heatsink thermal performance, and applied this to optimize QSFP-DD.

- Extensive structural analysis on mechanical design and performance
- Wear and durability testing to ensure repeated results over time
- Proprietary finish on riding heatsink mating interface for optimal heat transfer

General Part Number Offering

| Part number | |
|----------------------------|--|
| 2318579-1 | |
| 2318579-2 (belly-to-belly) | |

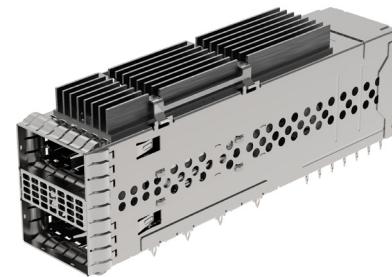
| | | | Part Number | | | | |
|-------|-----------|-----------|-------------|-----------|---|-----------------|----------------|
| Ports | Rear Pins | Heat Sink | ZIP Fin | Extruded | Lightpipe Add-On (Available upon request) | | |
| 1x1 | 1 | PCI | 2342934-1 | 2342933-1 | 2325129-1 Dual Light Pipe, Left | | |
| | | SAN | 2342934-2 | 2342933-2 | 2325129-2 Dual Light Pipe, Right | | |
| | | NET | 2342934-3 | 2342933-3 | 2324420-1 Quad Light Pipe, Side | | |
| 1x2 | 1 | PCI | 2342936-1 | 2342935-1 | Heatsink* | | |
| | | SAN | 2342936-2 | 2342935-2 | | | |
| | | NET | 2342936-3 | 2342935-3 | | | |
| 1x3 | 0 | PCI | 2342888-1 | 2342886-1 | Type | Heatsink Height | Total Height** |
| | | SAN | 2342888-2 | 2342886-2 | PCI | 4.2mm | 13.7mm |
| | | NET | 2342888-3 | 2342886-3 | SAN | 6.5mm | 16mm |
| 1x4 | 0 | PCI | 2343989-1 | 2343988-1 | NET | 13.5mm | 23mm |
| | | SAN | 2343989-2 | 2343988-2 | * Heatsinks available in extruded aluminum and thermally enhanced ZIP fin **Module inserted | | |
| | | NET | 2343989-3 | 2343988-3 | | | |
| 1x5 | 0 | PCI | 2343987-1 | 2343986-1 | TE's thermal engineering team will work directly with you to design and optimize custom QSFP-DD port configurations | | |
| | | SAN | 2343987-2 | 2343986-2 | | | |
| | | NET | 2343987-3 | 2343986-3 | | | |
| 1x6 | 0 | PCI | 2342892-1 | 2342891-1 | | | |
| | | SAN | 2342892-2 | 2342891-2 | | | |
| | | NET | 2342892-3 | 2342891-3 | | | |

2x1 Cages and Connectors

QSFP-DD 2x1 cages and connectors' stacked configuration allows for more height from the host board to allow for a more unified airflow and larger ASIC heat sink products.

- Multiple heatsink and lightpipe options available
- Customizable with standard PCIe, SAN and NET heatsink heights, or to customer defined requirements
- 1, 2 and 4 lightpipe configurations
- Cost effective within 15-18W applications, due to a proprietary heat sink design

| QSFP-DD 2x1 Connectors Product Offering | |
|---|------------------------------------|
| Part Number | Description |
| 2343246-1 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |
| 2343246-2 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |
| 2343246-3 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |
| 2340397-1 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |
| 2340397-2 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |
| 2340397-4 | CAGE ASSY W/ HS SPRING 2X1 QSFP-DD |



| Heatsink* | | |
|-----------|-----------------|----------------|
| Type | Heatsink Height | Total Height** |
| PCI | 4.2mm | 13.7mm |
| SAN | 6.5mm | 16mm |
| NET | 13.5mm | 23mm |

* Heatsinks available in extruded aluminum and thermally enhanced ZIP fin

**Module inserted

TE's thermal engineering team will work directly with you to design and optimize custom QSFP-DD port configurations.

Cable Assemblies

- QSFP-DD cable assemblies are similar to QSFP28 4 channel (8 pair), but use double the channels to 8 (16 pair) by using a 2nd row of contact/pad locations on the front of the PCB
- 16 pair 28AWG cable maximum fit (2.5m), plans for as small as 32AWG
 - QSFP-DD to QSFP-DD
 - QSFP-DD to 2x and 4x QSFP28/56
 - QSFP-DD to 8x SFP28/56
- Maximum cable reaches to meet IEEE 802.3cd SDD21 requirement of -17.28dB at 13.28 GHz



General Part Number Offering

| Configuration | Data Rate | AWG | Base Part Number | Cable Assembly Length (meters) | | | | | |
|----------------|---------------|-----|------------------|--------------------------------|-----|-----|-----|-----|-----|
| | | | | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 |
| 400G to 400G | 56 Gbps PAM-4 | 32 | 2323765 | -1 | -2 | -3 | | | |
| 400G to 400G | 56 Gbps PAM-4 | 30 | 2323766 | -1 | -2 | -3 | -4 | | |
| 400G to 400G | 56 Gbps PAM-4 | 28 | 2323767 | | -1 | -2 | -3 | -4 | |
| 400G to 2x200G | 56 Gbps PAM-4 | 32 | 2821986 | -1 | -2 | -3 | | | |
| 400G to 2x200G | 56 Gbps PAM-4 | 30 | 2821987 | -1 | -2 | -3 | | | |
| 400G to 2x200G | 56 Gbps PAM-4 | 28 | 2821988 | | -1 | -2 | -3 | -4 | |
| 400G to 4x100G | 56 Gbps PAM-4 | 32 | 2821992 | -1 | -2 | -3 | | | |
| 400G to 4x100G | 56 Gbps PAM-4 | 30 | 2821993 | -1 | -2 | -3 | | | |
| 400G to 4x100G | 56 Gbps PAM-4 | 28 | 2821994 | | -1 | -2 | -3 | -4 | |
| 400G to 8x50G | 56 Gbps PAM-4 | 32 | 2327687 | -1 | -2 | -3 | | | |
| 400G to 8x50G | 56 Gbps PAM-4 | 30 | 2327688 | -1 | -2 | -3 | | | |
| 400G to 8x50G | 56 Gbps PAM-4 | 28 | 2327689 | | -1 | -2 | -3 | -4 | |

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