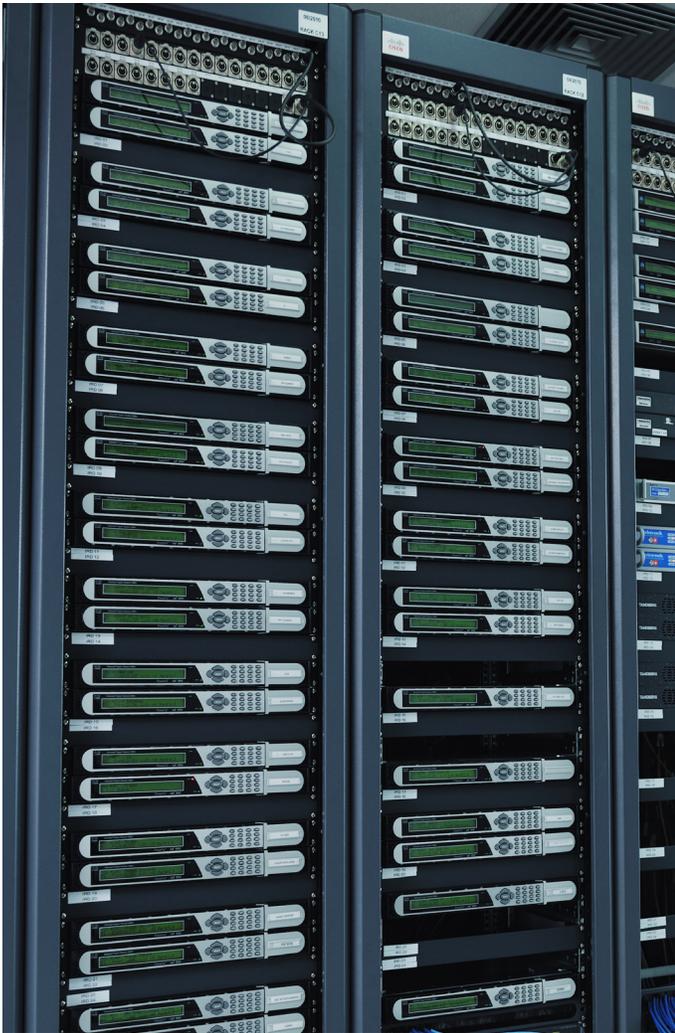


QSFP-DD CONNECTORS & CABLE ASSEMBLIES PRODUCT PORTFOLIO

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



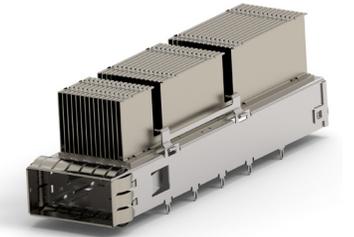
SMT connector



1x1 cage with extruded aluminum heatsinks

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



1x1 cage with thermally enhanced zipper fin heatsinks

General Part Number Offering

SMT Connectors	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)																		
Cages	1x1	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	<table border="1"> <thead> <tr> <th colspan="3">Heatsink*</th> </tr> <tr> <th>Type</th> <th>Heatsink Height</th> <th>Total Height**</th> </tr> </thead> <tbody> <tr> <td>PCI</td> <td>4.2mm</td> <td>13.7mm</td> </tr> <tr> <td>SAN</td> <td>6.5mm</td> <td>16mm</td> </tr> <tr> <td>NET</td> <td>13.5mm</td> <td>23mm</td> </tr> </tbody> </table>			Heatsink*			Type	Heatsink Height	Total Height**	PCI	4.2mm	13.7mm	SAN	6.5mm	16mm	NET	13.5mm	23mm
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* Heatsinks available in extruded aluminum and thermally enhanced ZIP fin
 **Module inserted

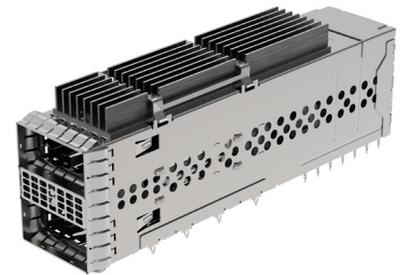
TE's thermal engineering team will work directly with you to design and optimize custom QSFP-DD port configurations

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

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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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