

# 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

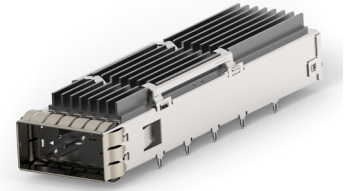
TE Connectivity's (TE) QSFP-DD (quad small form-factor pluggable double density) doubles the density of QSFP interconnects with an eight-lane electrical interface capable of 28 Gbps NRZ or 56 Gbps PAM-4 to achieve 200 or 400 Gbps aggregate per port. The QSFP-DD portfolio's backwards compatibility allows 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



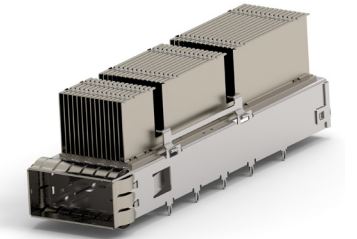
SMT connector



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	<b>Part number</b>
	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	<b>Heatsink*</b>		
			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				
		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				

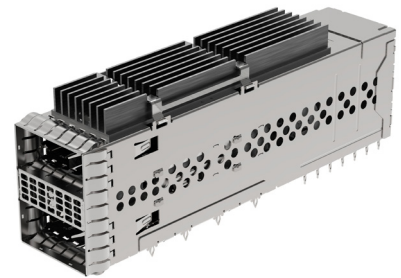
**TE's thermal engineering team will work directly with you to design and optimize custom QSFP-DD port configurations**

## 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

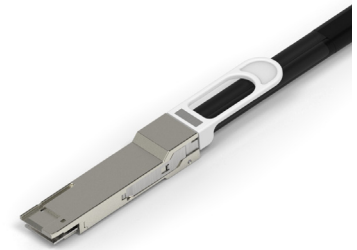
\*\*Module inserted

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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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