Quick Reference Guide
SFP+ Solutions

Increased protocol speeds led to the development of the SFP+ interface, which extended the SFP form factor to support applications to 10 Gb/s, such as 8G Fibre Channel and 10G Ethernet. Cages are offered in the same port configurations as SFP, with elastomeric gaskets and enhanced EMI springs to address EMI containment at the higher data rates.

TE Connectivity's SFP+ direct attach copper cable assemblies are a high speed, cost effective alternative to fiber optics in 10Gb Ethernet, 8Gb Fibre Channel and InfiniBand applications. SFP+ copper cable assemblies enable hardware OEMs and data center operators to achieve high port density and configurability at a low cost and reduced power requirement.

FEATURES AND BENEFITS

Interconnect

- Supports applications up to 10Gb/s
- Backward compatible with SFP
- Cages offered in single port, ganged, and stacked configurations
- Elastomeric gaskets and springs for EMI containment
- Uses enhanced 20 position connector
- Heat sink optional for single port cages
- Cages accommodate belly-to-belly mounting

Cable Assemblies

- Direct attach copper cable assemblies are SFF-8431 compliant
- Supports serial data rates up to 10Gbps
- Low cost alternative to fiber optic assemblies
- Low power consumption
- Enhanced EMI suppression
- Pull-to-Release retractable pin latch design

Product Applications

- Storage
- Servers
- Networking
- Switches
- Routers
- Hubs
- Network Interface Cards (NICs)
- Telecommunications Equipment

Applications by Protocol

- 10 Gigabit Ethernet (IEEE802.3ae)
- Fibre Channel : 2G, 4G, 8G
- InfiniBand standard SDR (2.5Gbps), DDR (5Gbps) and QDR (10Gbps)
- Fibre Channel over Ethernet (FCoE)

Cages

PN	Ports	PCB Termination	Requires Connector	Lightpipes Included	Dust Cap (Non-conductive)	Belly-to-Belly Apps	Heat Sink	EMI Containment
2007254-1	**1x1**	Press Fit	Yes	Outer	1367147-x/ 1761394-1	Yes	No	EMI Springs
2007262-1	**1x2**	Press Fit	Yes	Outer	1761394-1	Yes	No	EMI Springs
2007178-1	**1x4**	Press Fit	Yes	Outer	1761394-1	Yes	No	EMI Springs
2007250-1	**1x6**	Press Fit	Yes	Outer	1761394-1	Yes	No	EMI Springs
2007198-1	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	Yes	No	EMI Springs
2007263-1	**1x2**	Press Fit	Yes	No	1761394-1	Yes	No	EMI Springs
2007132-1	**1x4**	Press Fit	Yes	No	1761394-1	Yes	No	EMI Springs
2007251-1	**1x6**	Press Fit	Yes	No	1761394-1	Yes	No	EMI Springs
2007464-1	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	Yes	PCI	EMI Springs
2007464-2	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	Yes	SAN	EMI Springs
2007464-3	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	Yes	Networking	EMI Springs
2007180-1	**1x2**	Press Fit	Yes	Outer	1761394-1	Yes	No	Elastomeric Gaskets
2007093-1	**1x4**	Press Fit	Yes	Outer	1761394-1	Yes	No	Elastomeric Gaskets
2007169-1	**1x6**	Press Fit	Yes	Outer	1761394-1	Yes	No	Elastomeric Gaskets
2007171-1	**1x2**	Press Fit	Yes	No	1761394-1	Yes	No	Elastomeric Gaskets
2007135-1	**1x4**	Press Fit	Yes	No	1761394-1	Yes	No	Elastomeric Gaskets
2007170-1	**1x6**	Press Fit	Yes	No	1761394-1	Yes	No	Elastomeric Gaskets
2007194-1**	**1x1**	Solder	Yes	No	1367147-x/ 1761394-1	No	No	EMI Springs
2007215-1**	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	Yes	No	EMI Springs
2007193-1**	**1x1**	Solder	Yes	No	1367147-x/ 1761394-1	Yes	PCI	EMI Springs
2007277-1**	**1x1**	Press Fit	Yes	No	1367147-x/ 1761394-1	No	PCI	EMI Springs
2007538-5	**2x1**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007417-5	**2x2**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007399-5	**2x4**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007567-5	**2x6**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007538-6	**2x1**	Press Fit	Integrated	Inner	1761394-1	No	No	Elastomeric Gaskets
2007417-6	**2x2**	Press Fit	Integrated	Inner	1761394-1	No	No	Elastomeric Gaskets
2007399-6	**2x4**	Press Fit	Integrated	Inner	1761394-1	No	No	Elastomeric Gaskets
2007567-6	**2x6**	Press Fit	Integrated	Inner	1761394-1	No	No	Elastomeric Gaskets
2007538-7	**2x1**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007417-7	**2x2**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007399-7	**2x4**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007567-7	**2x6**	Press Fit	Integrated	Outer	1761394-1	No	No	Elastomeric Gaskets
2007538-8	**2x1**	Press Fit	Integrated	No	1761394-1	No	No	Elastomeric Gaskets
2007417-8	**2x2**	Press Fit	Integrated	No	1761394-1	No	No	Elastomeric Gaskets
2007399-8	**2x4**	Press Fit	Integrated	No	1761394-1	No	No	Elastomeric Gaskets
2007567-8	**2x6**	Press Fit	Integrated	No	1761394-1	No	No	Elastomeric Gaskets
2007492-5	**2x1**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007637-5	**2x2**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007394-5	**2x4**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007562-5	**2x6**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007492-6	**2x1**	Press Fit	Integrated	Inner	1761394-1	No	No	EMI Springs
2007637-6	**2x2**	Press Fit	Integrated	Inner	1761394-1	No	No	EMI Springs
2007394-6	**2x4**	Press Fit	Integrated	Inner	1761394-1	No	No	EMI Springs
2007562-6	**2x6**	Press Fit	Integrated	Inner	1761394-1	No	No	EMI Springs
2007492-7	**2x1**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
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2007394-7	**2x4**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007562-7	**2x6**	Press Fit	Integrated	Outer	1761394-1	No	No	EMI Springs
2007492-8	**2x1**	Press Fit	Integrated	No	1761394-1	No	No	EMI Springs
2007637-8	**2x2**	Press Fit	Integrated	No	1761394-1	No	No	EMI Springs
2007394-8	**2x4**	Press Fit	Integrated	No	1761394-1	No	No	EMI Springs
2007562-8	**2x6**	Press Fit	Integrated	No	1761394-1	No	No	EMI Springs

Note : All cages use EMI Plug 1888901-1. Cages containing a heat sink include a clip.

**Indicates the cages are designed for PCI Applications

20 Pin SMT Connector

PN	Description
1888247-1	30 µin Au
1888247-2	15 µin Au

Dust Cap

PN	Description
1367147-1	Dust Cap for single port cages w/ AMP logo
1367147-3	Dust Cap for single port cages w/o AMP logo
1761394-1	Dust Cap for ganged and stacked (multiport cages)
1888901-1	EMI Plug

Direct Attach Copper Cable Assemblies

PN	Description	AWG	Cable Length															
			0.5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2127934	Standard Passive	24	-1	-2	-3	-4	-5	-6	-7	-8								
2127933	Other Passive	26	-1	-2	-3	-4	-5	-6	-7									
2127932		28	-1	-2	-3	-4	-5	-6										
2127931		30	-1	-2	-3	-4												
2032757	Active	24												-12	-13	-14	-15	-16
		28										-10	-11					
		30	-1	-2	-3	-4	-5	-6	-7	-8	-9							
2053453	SFP+ to QSFP+ Hybrid	26						-6										
		28					-5											
		30	-1	-2	-3	-4												

Cable Assembly Features and Benefits

- Truly broadband - operates from 1 Gbps to 10 Gbps
- 100 Ohm differential impedance
- 3.3 V input source voltages
- Pull tab allows compact belly-to-belly application
- 360 degree cable braid crimp and enhanced EMI skirt
- Uses MADISON CABLE brand TurboTwin parallel pair cable

Frequently asked questions

What is belly-to-belly mounting?

- Belly-to-belly mounting allows a customer to install connectors and cages on both sides of a PCB. This design reduces board space and is an alternative solution to stacked connectors.

When would I use elastomeric gaskets versus EMI springs?

- While comparable in EMI performance, gaskets are less susceptible to damage but are higher in cost. Gasket cages also require tighter board-to-bezel tolerance to assume compression.

How do the cages designed for PCI applications differ from the standard portfolio?

- Cages designed for PCI applications have a one degree mounting angle to meet requirements of industry standard SFF-8075.

If I am currently using SFP, can I use SFP+?

- Yes. SFP+ transfer data at higher rates. SFP+ ports are backwards compatible with SFP transceivers and SFP Direct Attach cable assemblies.

What data rate does SFP+ Support?

- SFP+ supports up to 10Gb/s.

What are the PCB termination options?

- Cages are offered in press-fit and solder PCB termination styles.

Is TE's footprint compatible with other suppliers?

- It depends. The single port cages are designed to industry standards. The ganged and stacked cages are not compatible with all other sources.

Are heatsinks available?

- Yes. Riding heat sink technology is available for thermal management.

Is application tooling required?

- Single port assemblies require only flat-rock tooling, while ganged and stacked assemblies require specific application tooling.

What are the performance requirements for the cable assembly?

- TE SFP+ copper passive and active cable assemblies meet the signal integrity requirements defined by the industry SFF-8431. We can custom engineer cable assemblies to meet the requirements of a customer's specific system architecture, such as EEPROM programming, labeling and packaging.

Are passive or active cable assemblies required?

- Passive cables have no signal amplification in the assembly and rely on host system Electronic Dispersion Compensation (EDC) for signal amplification/equalization. Active cable assemblies have signal amplification and equalization built into the assembly and are typically used in host systems that do not employ EDC.

What cable lengths are required?

- Cable length and wire gauge are related to the performance characteristics of the cable assembly. Longer cable lengths require heavier wire gauge, while shorter cable lengths can utilize a smaller gauge cable. Smaller gauge cable assemblies provide many benefits to the data center operator, such as ease of routing, less weight and increased airflow. TE offers SFP+ cable assemblies in wire gauges #24 through #30 to support customers' specific cable routing requirements.

FOR MORE INFORMATION

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