zSFP+ (SFP28) 28 GBPS PLUGGABLE I/O INTERCONNECT

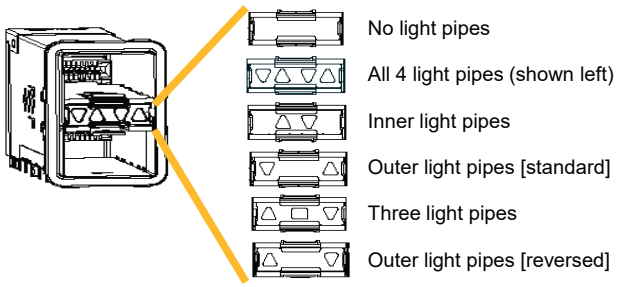
The zSFP+ interconnect is currently one of the fastest single-channel I/O connectors on the market today, transferring data at 28 Gbps with possible expansion to 40 Gbps. Through a design that is backward-compatible to SFP/SFP+ products, the interconnect is hot-swappable with existing SFP+ connectors for fast system upgrades of 28-40Gbps. Alternatively, users can design-in the zSFP+ connector for 10-16 Gbps data rates, establishing a progressive path to higher speeds–an upgradeability that can result in longterm cost savings as this would eliminate the need to fully redesign for higher performance.

The zSFP+ interconnect is compliant to SFF-8402 and has been adopted for Fibre Channel 32G (28.05 Gbps line rate). The entire product family is offered as a dual source option with Molex. LLC.

FEATURES

- Data rates: 28 Gbps (with possible expansion to 40 Gbps), 10 Gbps Ethernet and 16 Gbps Fibre Channel
- Surface-mount connector design for single high 1xN cages
- Press-fit 1xN cages and stacked assemblies (connector and cage) for one-step, easy PCB placement
- Coupled, narrow-edged, blanked- and formed-contact beam geometry and insert molding for superior signal integrity, mechanical and electrical performance
- Backwards-compatibility: Shares same mating interface and cage dimensions with the SFP+ connector (connector/single high cages are also PCB footprint-compatible)
- Elastomeric gasket or spring finger options for EMI containment
- Single high cages (1xN) for design flexibility; accommodates belly-to-belly applications for increased density and PCB space savings; available in 1x1, 1x2, 1x4 or 1x6 port configurations
- Stacked assemblies offered in 2x1, 2x2, 2x4, 2x6, 2x8 or 2x12 port
- Heat sinks, LEDs and plating choices offered
- Additional light pipe configurations available

Light pipe options include:



APPLICATIONS

- **Telecommunications:** Cellular infrastructure, central office uplink equipment, optical transport equipment, switches/routers, access equipment (CMTS, PON, DSL, etc)
- **Data Center:** Data center switches and routers, servers, storage
- **Medical:** Medical diagnostic equipment
- **Networking:** Network interface, switches, routers
- **Test and Measurement Equipment**

20-Pin Surface-Mount Connector

Electrical

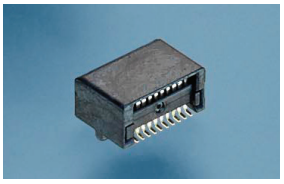
- Voltage (max.): 120V AC
- Current (max.): 0.5A
- Dielectric Withstanding Voltage: 300V AC between contacts

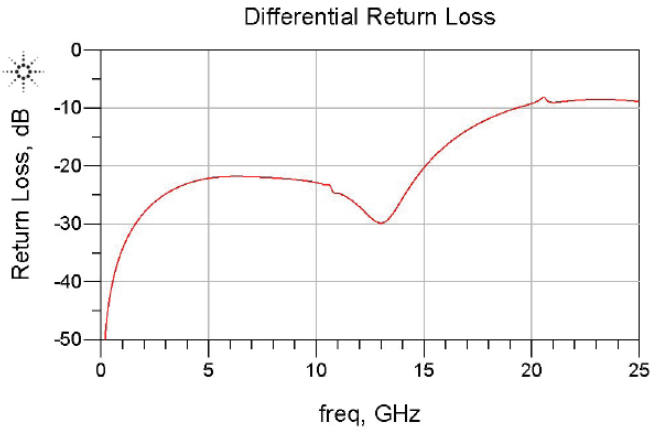
Mechanical

- Mating Force: 25N
- Unmating Force: 11.5N
- Durability (min.): 250 cycles

Physical

- High-temperature thermoplastic housing (glass-filled, UL 94V-0 black)
- High-performance copper alloy contacts
- Plating:
  - Nickel underplating; Tin plating on solder tail area; Gold plating on mating area
  - Plating options: 15 and 30µ" Gold or Palladium Nickel
- Operating Temperature: -40 to +85°C





Connector P/N	Description
2170088-1	30µ" in Au or Au Flash Over PdNi
2170088-2	15µ" in Au or Au Flash Over PdNi

Cages with Elastomeric Gaskets

EMI Suppression	Light Pipe Option	1X1	1X2	1X4	1X6	1X8
EMI gasket	No	2198709-1*	2198720-1	2198722-1	2198724-1	TBD**
	Yes	2198708-1*	2198719-1	2198721-1	2198723-1	TBD**

Cages with EMI Springs

EMI Suppression	Light Pipe Option	Heat Sink Option	1X1	1X2	1X4	1X6	1X8
EMI Spring Fingers	No	No	2274001-1 2291579-1 (PCI)	2227728-1	2227730-1	2227732-1	2304921-1 2295325-6
	Yes	No	2274000-1	2227727-1	2227729-1	2227731-1	TBD**
	Yes	Yes	TBD*	TBD**	2304342-X	2293156-X	2294408-X

*Tooling in process **Not yet tooled, but planned

Ganged 1xN Cages

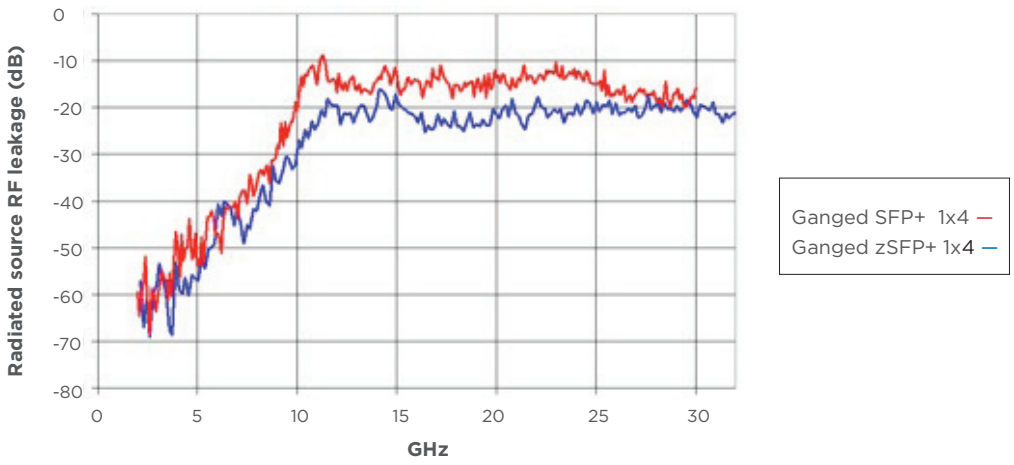
Mechanical

- Transceiver insertion force (max.): 34 N without heat sink and clip; 45.37 N with heat sink and clip
- Transceiver extraction force (max.): 12.5 N without heat sink and clip; 14.36 N with heat sink and clip
- SFP+ module to surface-mount connector and zSFP+ cage.
- Cage press fit insertion force (max.): 44.5 N for single port cage, 54.3 N for ganged cage
- Cage press fit extraction force (min.): 8.9 N for single port and ganged cages
- Durability (min.): 100 cycles

Physical

- Cage material: Nickel Silver
- PCB thickness (min.): 1.50mm in single sided applications; 2.25mm (EMI springs) or 3.0mm (elastomeric gasket) in belly-to-belly applications
- Operating Temperature: -40 to +85°C

Ganged SFP+ 1x4 vs. zSFP+ 1x4



Stacked 2xN Assemblies

Electrical

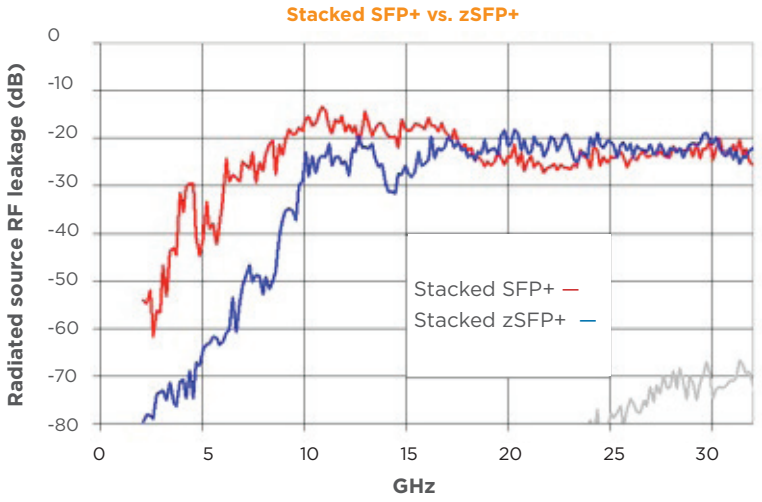
- Voltage (max.): 120V AC
- Current (max.): 0.5A
- Dielectric Withstanding Voltage: 300V AC between contacts

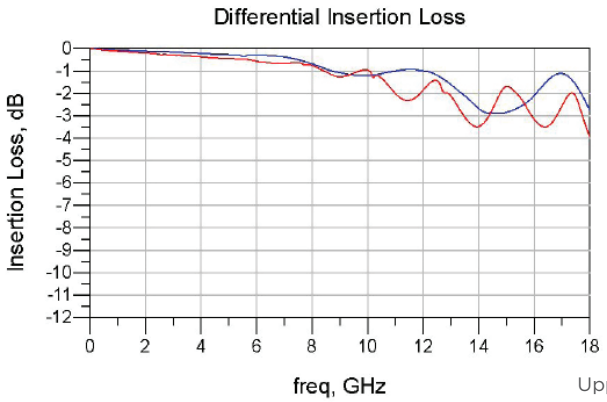
Mechanical

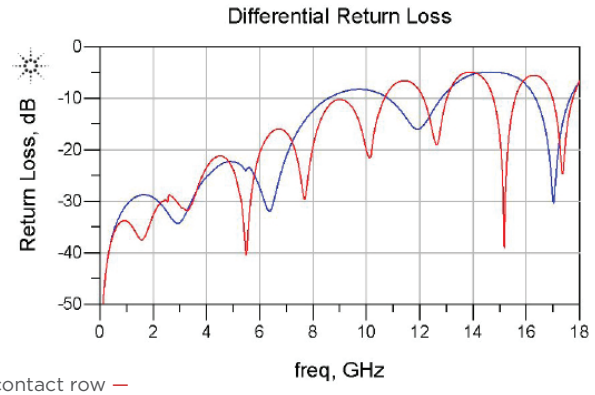
- Durability (min.): 100 cycles

Physical

- Cage material: Nickel Silver
  - High-temperature thermoplastic housing (glass-filled, UL 94V-0 black)
  - High-performance copper alloy contacts
  - Plating: Nickel underplating; Tin plating on solder tail area; 30µ" Gold plating on mating area
- PCB thickness (min.): 1.57mm
- Operating Temperature: -40 to +85°C







Upper contact row —
Lower contact row —

EMI Suppression	Performance	Light Pipe Configuration	2x1	2x2	2x4	2x6	2x8	2x12
			2198318-(x)	2198325-(x)	2180324-(x)	2198339-(x)	2198346-(x)	2288172-(x)
EMI gasket	Standard	None	2198318-1	2198325-1	2180324-1	2198339-1	2198346-1	2288172-1
		All 4	2198318-2	2198325-2	2180324-2	2198339-2	2198346-2	2288172-2
		Inner	2198318-3	2198325-3	2180324-3	2198339-3	2198346-3	2288172-3
		Outer	2198318-4	2198325-4	2180324-4	2198339-4	2198346-4	2288172-4
		3	1-2198318-7	1-2198325-7	1-2180324-7	1-2198339-7	1-2198346-7	1-2288172-7
		Outer (reversed)	1-2198318-8	1-2198325-8	1-2180324-8	1-2198339-8	1-2198346-8	1-2288172-8
	Thermally Enhanced	Multiple	--	--	3-2180324-0	--	--	2227838-8
EMI spring fingers	Standard	None	2198318-5	2198325-5	2180324-5	2198339-5	2198346-5	2288172-5
		All 4	2198318-6	2198325-6	2180324-6	2198339-6	2198346-6	2288172-6
		Inner	2198318-7	2198325-7	2180324-7	2198339-7	2198346-7	2288172-7
		Outer	2198318-8	2198325-8	2180324-8	2198339-8	2198346-8	2288172-8
		3	1-2198318-9	1-2198325-9	1-2180324-9	1-2198339-9	1-2198346-9	1-2288172-9
		Outer (reversed)	2-2198318-0	2-2198325-0	2-2180324-0	2-2198339-0	2-2198346-0	2-2288172-0
	Thermally Enhanced	Multiple	--	--	3-2180324-1	2291491-1	--	2227838-7 2301210-2

SFP28 Passive Copper Cable Assemblies

Our SFP28 passive copper cable assembly features two differential copper pairs, providing one data transmission channel at speeds up to 28 Gbps per channel that meets 25G Ethernet performance requirements.

Offered in a broad range of wire gages – from 30AWG through 33AWG – this next generation copper cable assembly features low insertion loss and low cross talk. Our SFP28 assemblies share the same mating interface with SFP+ form factors, making them backward compatible with existing SFP+ I/O ports. SFP28 cable assemblies can be used with legacy 10G Ethernet and 16G Fibre Channel applications with substantial signal integrity margin.

In addition to SFP28 straight cables, we offer break out assemblies with a 100G QSFP28 module on one end splitting to four SFP28 modules on the opposite end of the assembly. In-line signal integrity (SI) based production testing ensures that each cable assembly meets the electrical performance requirements of the applicable industry standard specification.

Features and Benefits

- Compatible with IEEE 802.3by and Fibre Channel industry standards
- Supports single lane data rate up to 28Gbps
- Optimized construction to minimize insertion loss and cross talk
- Customized cable braid termination limits EMI radiation
- Backward compatible with existing SFP+ form factor connectors and cages
- Pull-to-release latch design
- 30AWG through 33AWG cable
- Straight and breakout cable assembly configurations available
- Customizable EEPROM mapping for cable signature
- RoHS compliant

SFP28 to SFP28 Straight Cable Assembly

QSFP28 to 4x SFP28 Breakout Cable Assembly

Industry Standards

- 25G Ethernet (IEEE 802.3by)
- Fibre Channel
- SFF-8402 SFP+ 1X 28Gb/s Pluggable Transceiver Solution (SFP28)
- SFF-8665 QSFP+ 28G 4X Pluggable Transceiver Solution (QSFP28)

Part Number Detail

Base Part Number	Description	AWG	Dash to Length (meters)						
			0.5	1	1.5	2	3	4	5
2821262	SFP28 to SFP28 Straight Assembly	33	-1	-2	-3	-4			
2821222		30	-5	-3		-2	-1		
2821033	QSFP28 to 4x SFP28 Breakout Assembly	33		-8					
		30		-1		-10	-2		

Contact your TE Representative for customized lengths and breakouts.

For More Information

te.com/products/zsfp+

TE Technical Support Center

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico	+52 (0) 55-1106-0800
Latin/S. America:	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

Part numbers in this brochure are RoHS Compliant*, unless marked otherwise.
*as defined www.te.com/leadfree

te.com

© 2017 TE Connectivity Ltd. family of companies. All Rights Reserved.

1-1773707-6 DND PDF 10/17

TE Connectivity, TE and TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.
zSFP+ is a part of the ZXP® family of connectors and uses the ZXP technology.
ZXP is a registered trademark of Molex LLC.
Other logos, product and company names mentioned herein may be trademarks of their respective owners.

While TE has made every reasonable effort to ensure the accuracy of the information in this brochure, TE does not guarantee that it is error-free, nor does TE make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. TE reserves the right to make any adjustments to the information contained herein at any time without notice. TE expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this brochure are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.