



## Introducing Generation II PARALIGHT QSFP+ Active Optical Cable Assemblies for High Speed Interconnects

Our TE Connectivity PARALIGHT QSFP+ active optical cable assemblies use state-of-the-art technology to provide cost effective high data throughput interconnects. The cables incorporate E/O and O/E conversion built into the connector shell to yield a dramatic improvement in PCB real estate utilization.

Using 850 nm VCSEL technology, the 10 Gb/s active cable assemblies will operate over a data rate of 2.5 to 10 Gb/s per lane with an aggregate data rate of 40 Gb/s.

They are available in lengths up to 100 meters using 50 micron fiber. Longer lengths available upon request. The EOE circuitry is designed for use with 8B/10B encoded data streams, such as InfiniBand, Fibre Channel, and XAUI.

QSFP connector style supports connections for an I2C serial interface, which can be used to identify the product and performance capabilities.





## KEY FEATURES

- Generation II PARALIGHT QSFP+ Active Optical Cable Assemblies feature fully integrated optical engines that use less power, are lower in cost and offer higher performance.
- 4 transmit and 4 receive channels at 10 Gb/s channel.
- Industry standard QSFP Connectors.
- Internally terminated optics — no optical connector to clean.
- Differential data I/O per InfiniBand version 1.2.1.
- Passively cooled design — low thermal resistance heat path from chip to connector shell.
- Small diameter cable (3.0mm).
- Light weight.
- Tight bend radius.

## APPLICATIONS

- High performance computing clusters
- Supercomputers
- High end servers
- Mass storage
- Metro network switch/cross connect
- High end carrier class routers
- SDR, DDR, and QDR InfiniBand applications
- Other 2.5–10.0 Gb/s applications (e.g. 10 Gb Fibre Channel ISL or 10 Gig Ethernet XAU1 on ports providing InfiniBand pinout 3.3 V power)

## MECHANICAL/ENVIRONMENTAL

- Up to 100 meters — longer lengths available upon request
- 25 mm bend radius
- Storage temperature -20°C to 85°C

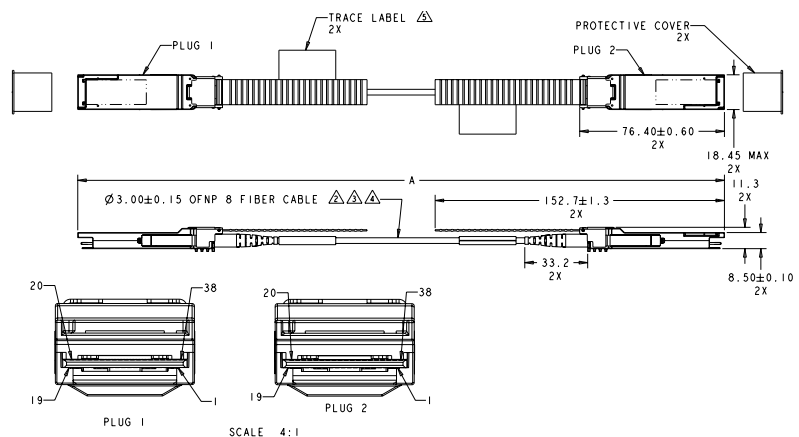
## MATERIALS

- OFNP/CSA-FT-6 (plenum) cable
- OFN-LS (LSZH rated) cable available upon request

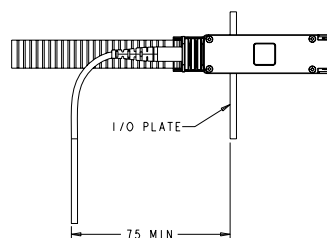
## SPECIFICATIONS

- Product Specification 108-2454

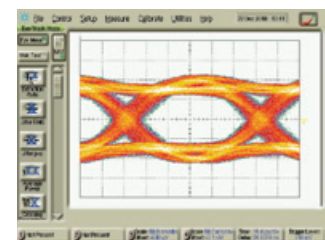
## PRODUCT DIMENSIONS



## FRONT PANEL DOOR CLEARANCE



## TYPICAL 10 Gb/s EYE DIAGRAM (PRBS2^7-1 WITH CROSSTALK)



## PARALIGHT ASSEMBLY PART NUMBER TABLE

Length (Meters)	Cable Type	10Gb/s QSFP-QSFP Part Numbers
1	OFNP*	1-2123287-2
2	OFNP*	2123287-1
3	OFNP*	2123287-2
5	OFNP*	2123287-3
7	OFNP*	1-2123287-3
10	OFNP*	2123287-4
15	OFNP*	2123287-5
20	OFNP*	2123287-6
25	OFNP*	2123287-7
30	OFNP*	2123287-8
40	OFNP*	2123287-9
50	OFNP*	1-2123287-0
100	OFNP*	1-2123287-1

\*OFNP = Optical Fiber Nonconductive Plenum

Note: Longer lengths available upon request.

Note: All part numbers are RoHS compliant.

## 10 GB/S SPECIFICATIONS

## General Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Data Rate/Channel	2.5	—	10	Gb/s	1
Tc	Operating Ambient Temperature	0	—	70	°C	2
Vcc	Supply Voltage	3.13	3.3	3.47	V	
	Total Power Dissipation	—	0.73	0.85	W	3
	Fiber Core Diameter	—	50	—	µm	

1. Test pattern PRBS 2E7-1

2. Central office environment per GR-468-CORE.

3. Per end.

## Transmitter Electrical Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Input Common Mode	0	—	Vcc	V	1
V_diff_IN	Differential data swing	500	—	1600	mVpp	
Rin	Differential Input Impedance	80	100	120	Ω	

1. Internally AC coupled.

## Receiver Electrical Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Output Common Mode	—	—	—	V	1
V_diff_OUT	Differential data swing	200	250	1200	mVpp	
Rout	Differential Output Impedance	—	100	—	Ω	
TJ	Total Jitter (p-p)	—	—	0.42	UI	2
ΔT ch-ch	Skew	—	—	200	ps	

1. Internally AC coupled.

2. Total jitter is specified at a BER of 10<sup>-12</sup> using PRBS 2<sup>7</sup>-1.

## Mechanical Specifications

Symbol	Parameter	Value	Unit	Notes
	Off Axis Load	22.2	N	
	Retention Load	90	N	
	Durability	200	Cycles	



## Mechanical Specifications

Symbol	Parameter	Compliance
	Preliminary Eye Safety Classification	1M
	Electrostatic Discharge (ESD)	JESD22-A114D, Class 1 (1000 volts), human body model.



Note: Optical energy contained within cable.

**CAUTION:** Do not cut optical cable. Viewing the cut fiber ends, especially with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) may pose an eye hazard.

This product is classified as a Class 1M Laser product in accordance with IEC 60825-1:2007 and complies with 21CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice NO. 50, dated 24-Jun-2007

Note: The TÜV Bauartmark does not apply to LSZH assemblies

## FOR MORE INFORMATION

[te.com/products/paralight](http://te.com/products/paralight)

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Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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