

Introducing
56 Gb/s QSFP+ Active Optical Cable Assemblies

TE's PARALIGHT active optical cable assemblies use state-of-the-art technology to provide cost effective high-data throughput interconnects. These cable assemblies incorporate E/O and O/E conversion into the connector shell to yield a dramatic improvement in PCB real estate utilization. Using 850 mn VCSEL technology, they operate over a data rate of 2.5 to 14 Gb/s per lane (four lanes) with a maximum bi-directional aggregate data rate of 56 Gb/s.

These cutting edge cable assemblies are available in lengths up to 100 meters using 50 micron core fiber and offer EOE circuitry designed for use with data streams encoded up to 64B/66B in InfiniBand standard and Ethernet applications. Our PARALIGHT cables have QSFP style connectors incorporating a I2C serial interface, which can be used to identify the product and performance capabilities.



KEY FEATURES

- PARALIGHT active optical cable assemblies feature fully integrated optical engines that use less power, are lower cost and high performance.
- 4 transmit and 4 receive channels at 14 Gb/s
- QSFP connectors
- Internally terminated optics — no optical connector to clean.
- Differential data I/O per InfiniBand standard version 1.2.1.
- Asynchronous, internally AC coupled inputs and outputs.
- Passively cooled design — low thermal resistance heat path from chip to connector shell
- Small diameter cable (3.0 mm)
- Light weight
- Tight bend radius

APPLICATIONS

- High-performance computing clusters
- Supercomputers
- High-end servers
- Mass storage equipment
- Metro network switch/cross connect
- High-end carrier class routers
- SDR, DDR, QDR and FDR InfiniBand applications
- Other 2.4–14.1 Gb/s applications (e.g. 10 Gb Fibre Channel or 10 Gig Ethernet XAUI on ports providing InfiniBand product pinout 3.3 V power)

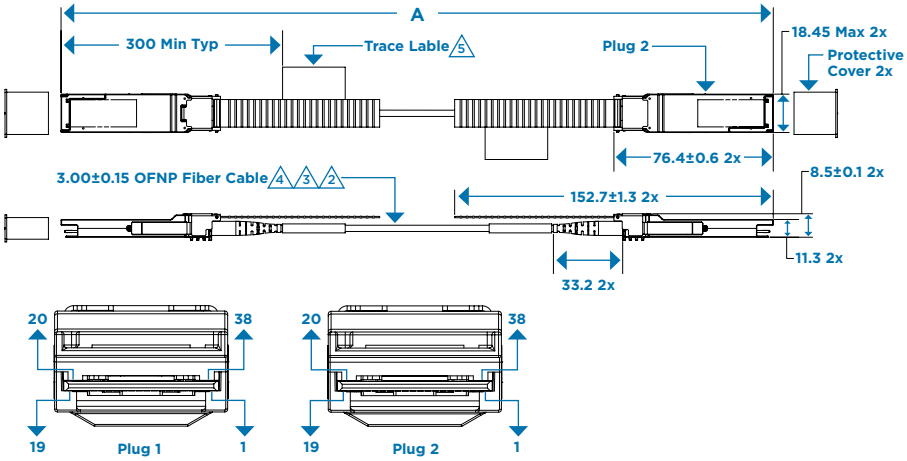
MECHANICAL/ENVIRONMENTAL

- Up to 100 meters
- 25 mm bend radius
- Operating connector temperature : 0°C to 70°C
- Storage temperature : -20°C to 85°C

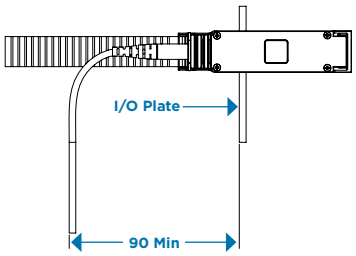
MATERIALS

- OFNP/CSA-FT-6 (plenum) cable

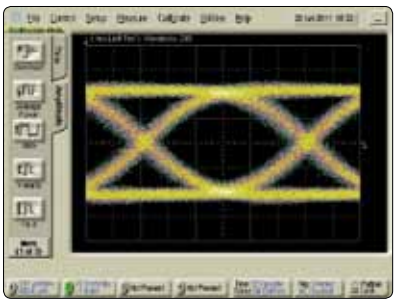
PRODUCT DIMENSIONS



FRONT PANEL DOOR CLEARANCE



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



PARALIGHT ASSEMBLY PART NUMBER TABLE

Length (Meters)	Cable Type	14Gb/s QSFP-QSFP	Notes
3	OFNP	2123541-2	OFNP = Optical Fiber Nonconductive Plenum Note : All part numbers are RoHS compliant.
5	OFNP	2123541-3	
7	OFNP	1-2123541-3	
10	OFNP	2123541-4	
15	OFNP	2123541-5	
20	OFNP	2123541-6	
25	OFNP	2123541-7	
30	OFNP	2123541-8	
40	OFNP	2123541-9	
50	OFNP	1-2123541-0	
100	OFNP	1-2123541-1	

STANDARDS AND SPECIFICATIONS

Product specification # : **108-122035**

General Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Data rate/channel	2.4	—	14.1	Gb/s	Test pattern PRBS 2E7-1
Tc	Operating connector temperature	0	—	70	°C	Central office environment per GR-468-CORE
Vcc	Supply voltage	3.13	3.3	3.47	V	--
	Total power dissipation	—	0.9	1.1	W	Per connector

Transmitter Electrical Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Input common mode	0	—	Vcc	V	Internally AC coupled
V_diff_IN	Differential data swing	500	—	1200	mVpp	--
Rin	Differential input impedance	80	100	120		--

Receiver Electrical Specifications

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Output common mode	—	—	—	V	Internally AC Coupled
V_diff_OUT	Differential data swing	200	650	1200	mVpp	--
Rout	Differential output impedance	—	100	—	Ω	--
TJ	Total jitter contribution (p-p)	—	—	0.42	UI	Total jitter is specified at a BER of 10^{-12} using PRBS 2^{31}-1.
T ch-ch	Skew	—	—	500	ps	--

Mechanical Specifications

Parameter	Value	Unit
Off axis load	22.2	N
Retention load	89	N
Durability	250	Cycles

REGULATORY INFORMATION

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 preliminarily classified as a Class 1M Laser product in accordance with IEC 60825-1:1993+A1+A2 and complies with 21CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice N0. 50, dated 24-Jun-2007.

Parameter	Compliance
Preliminary eye safety classification	JESD22-A114D
Electrostatic discharge (ESD)	Class 1 (1000 volts), human body model



INVISIBLE LASER RADIATION
DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS "(MAGNIFIERS)"
CLASS 1M LASER PRODUCT
840-850NM, 700UW

FOR MORE INFORMATION

te.com/products/FDRQSFP

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*as defined www.te.com/leadfree

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TE connectivity