



PARALIGHT Active Optical Cable Assemblies

PARALIGHT ACTIVE OPTICAL CABLE ASSEMBLIES FOR HIGH SPEED INTERCONNECTS

Product Facts

- 4 transmit and 4 receive channels at up to 5 Gb/s per channel)
- 10 Gb/s available end of 2008
- Industry standard (SFF-8470) electrical connector (aka InfiniBand 4X, IB 4X, CX4, Fibre Channel)
- Internally terminated optics — no optical connector to clean
- Differential data I/O per InfiniBand version 1.2.1
- Asynchronous, internally AC coupled inputs and outputs
- Passively cooled design — low thermal resistance heat path from chip to connector shell
- Low power consumption — under 1 watt per end
- Small diameter cable (2.9 mm)
- Light weight
- Tight bend radius

Tyco Electronics' PARALIGHT 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 VCSELs, it can be operated from 2.5 Gb/s to 5 Gb/s per channel with 10 Gb/s per channel available end of 2008. At 5 Gb/s this provides aggregate throughput of 20 Gb/s in each direction. At 10 Gb/s this provides aggregate throughput of 40 Gb/s in each direction. 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.

3.3 Volt power is supplied through a pin (G8) dedicated for this purpose as described in InfiniBand Specification Version 1.2.1. Pin G7 is the voltage sense pin and is tied internally to ground through a 5K ohm resistor.

Technical Document

Product Specification

108-2330

FOR MORE INFORMATION

Technical Support

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Fibre Channel is a trademark of the Fibre Channel Industry Association.

INFINIBAND is a trademark of the InfiniBand Trade Association.

XAUI is a trademark of the 10Gigabit Ethernet Alliance XAUI Interoperability Group.

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APPLICATIONS

- High Performance Computing Clusters
- Supercomputers
- High End Servers
- Mass Storage
- Metro Network Switch/Cross Connect
- High End Carrier Class Routers
- DDR InfiniBand Applications (QDR available end of 2008)
- Other 2.5–5.0 Gb/s Applications
(e.g. 10 Gb Fibre Channel or 10 Gig Ethernet XAUI on ports providing InfiniBand pinout 3.3 V power)

ELECTRICAL/OPTICAL

- 20 Gb/s bidirectional —
40 Gb/s future offering (end of 2008)
- Compatible with SDR and DDR (InfiniBand) standards (QDR available end of 2008)
- Low power consumption — under 1 watt per end

MECHANICAL/ENVIRONMENTAL

- Up to 150 meters — longer lengths available upon request
- 25 mm bend radius
- Operating temperature 0°C to 60°C
- Storage Temperature -25°C to 70°C
- 4 channels each direction

MATERIALS

- OFNR/CSA-FT-6 (plenum) cable
- OFN-LS (LSZH rated) cable

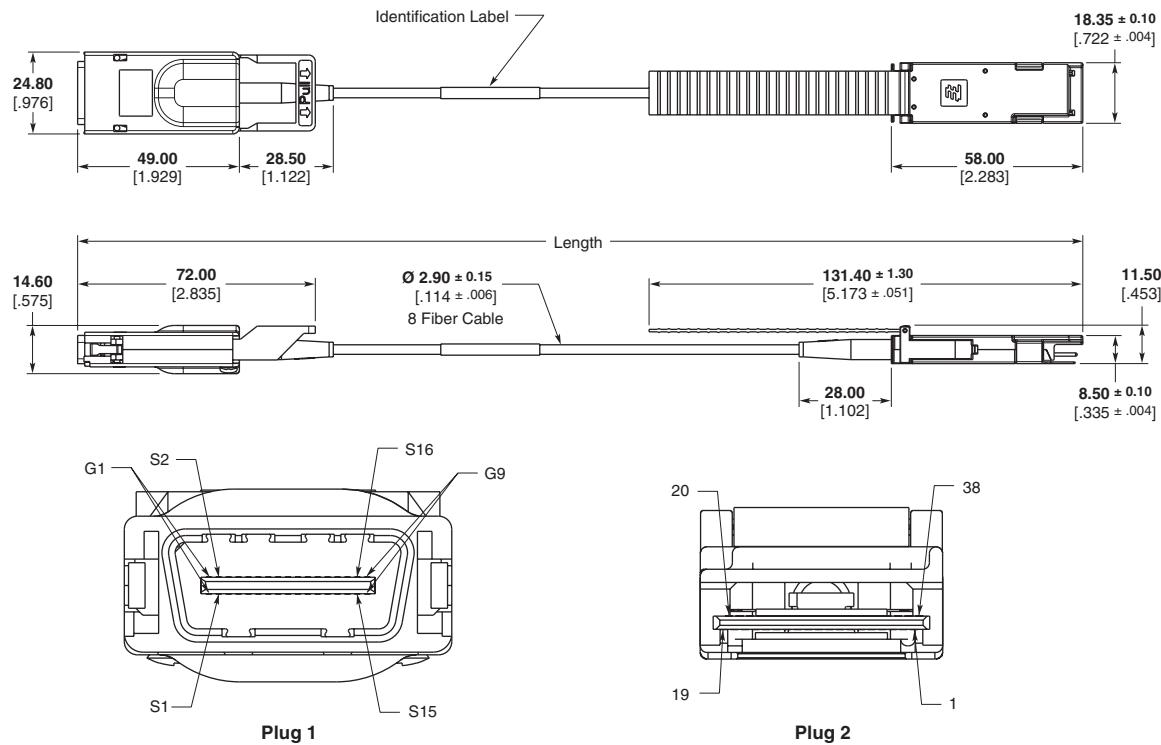
Fibre Channel is a trademark of the Fibre Channel Industry Association.

INFINIBAND is a trademark of the InfiniBand Trade Association.

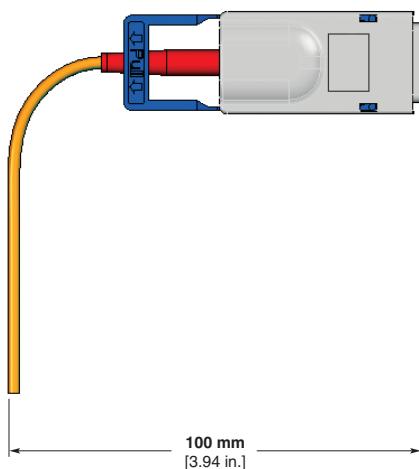
XAUI is a trademark of the 10Gigabit Ethernet Alliance XAUI Interoperability Group.

PRODUCT DIMENSIONS

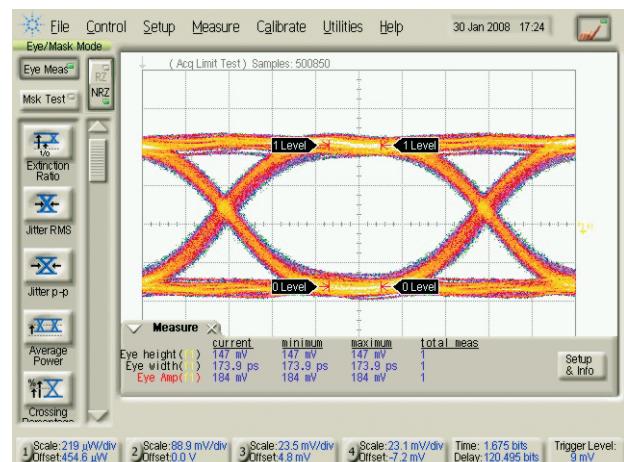
IB 4X to QSFP



FRONT PANEL DOOR CLEARANCE



TYPICAL 5 Gb/s EYE DIAGRAM (PRBS2^7-1 WITH CROSSTALK)



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PART NUMBERS

Length (meters)	Cable Type	InfiniBand 4X*** Part Numbers	InfiniBand 4X to QSFP Part Numbers	QSFP to QSFP Part Numbers
2	OFNP**	1985427-9	1985554-9	1985861-9
	LSZH*	1984462-9	2064158-9	2064159-9
3	OFNP**	1985427-1	1985554-1	1985861-1
	LSZH*	1984462-1	2064158-1	2064159-1
5	OFNP**	1985427-2	1985554-2	1985861-2
	LSZH*	1984462-2	2064158-2	2064159-2
10	OFNP**	1985427-3	1985554-3	1985861-3
	LSZH*	1984462-3	2064158-3	2064159-3
15	OFNP**	1-1985427-0	1-1985554-0	1-1985861-0
	LSZH*	1-1984462-0	1-2064158-0	1-2064159-0
20	OFNP**	1985427-4	1985554-4	1985861-4
	LSZH*	1984462-4	2064158-4	2064159-4
30	OFNP**	1985427-5	1985554-5	1985861-5
	LSZH*	1984462-5	2064158-5	2064159-5
40	OFNP**	1985427-6	1985554-6	1985861-6
	LSZH*	1984462-6	2064158-6	2064159-6
50	OFNP**	1985427-7	1985554-7	1985861-7
	LSZH*	1984462-7	2064158-7	2064159-7
100	OFNP**	1985427-8	1985554-8	1985861-8
	LSZH*	1984462-8	2064158-8	2064159-8

*LSZH = Low Smoke Zero Halogen

**OFNP = Optical Fiber Nonconductive Plenum

***Also known as CX4 and SFF-8470

Note: Longer lengths available upon request.

Note: All part numbers are RoHS compliant.

GENERAL SPECIFICATIONS

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Data Rate/Channel	2.5	—	5	Gb/s	1
Tc	Operating Case Temperature	5	—	75	°C	
Vcc	Supply Voltage	3.13	3.3	3.47	V	
	Total Power Dissipation	—	0.8	1.0	W	2
	Fiber Core Diameter	—	50	—	μm	

1. Test pattern PRBS 2E7-1

2. 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	650	—	1600	mVpp	
Rin	Differential Input Impedance	80	100	120	Ω	

1. Internally AC coupled.

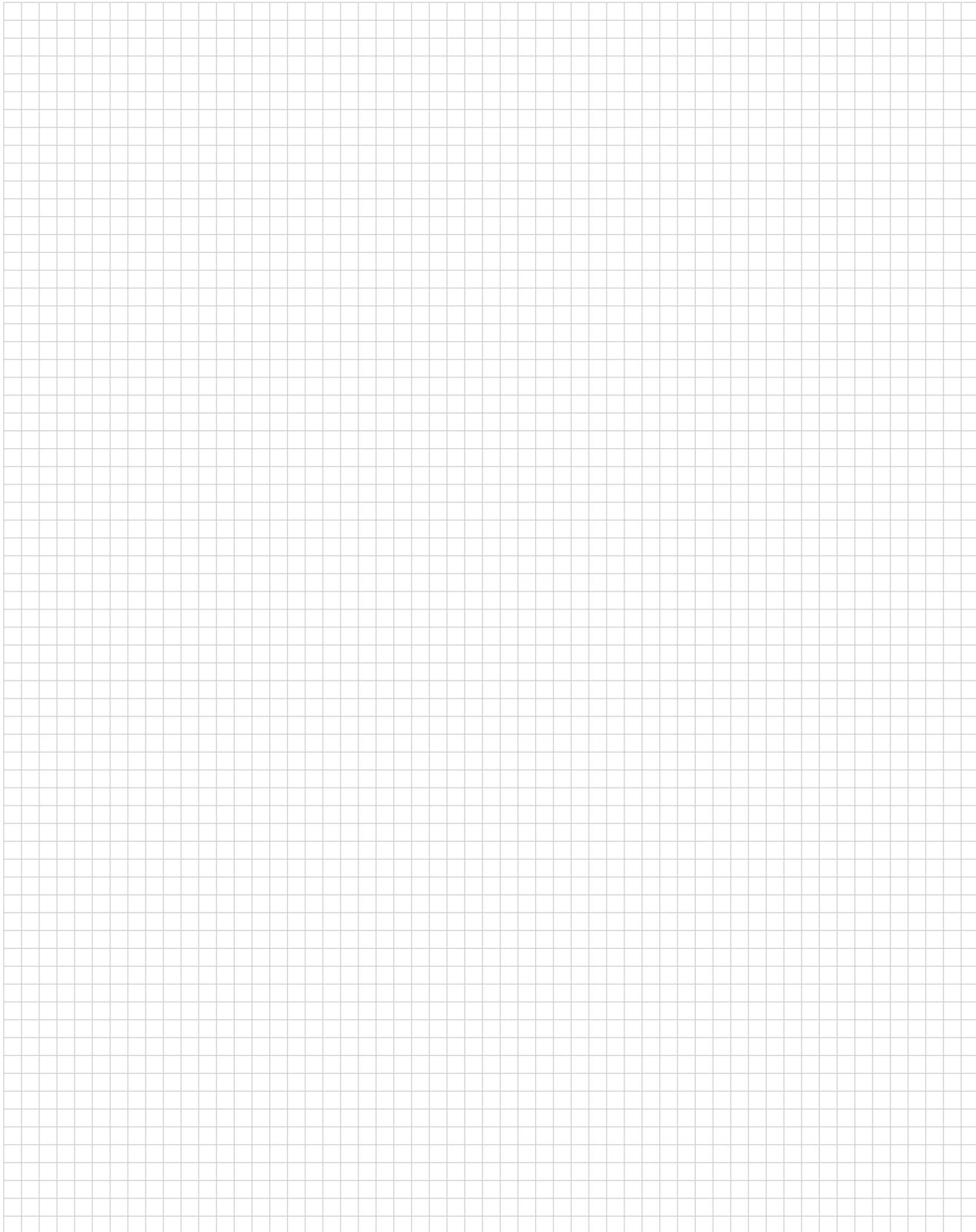
RECEIVER ELECTRICAL SPECIFICATIONS

Symbol	Parameter	Min.	Typical	Max.	Unit	Notes
	Output Common Mode	—	—	—	V	1
V_diff_OUT	Differential data swing	90	300	1600	mVpp	
Rout	Differential Output Impedance	—	100	—	Ω	
	Output Rise/Fall Time (20-80%)	—	—	120	ps	
TJ	Total Jitter (p-p)	—	—	.4	UI	2
ΔT ch-ch	Skew	—	—	100	ps	

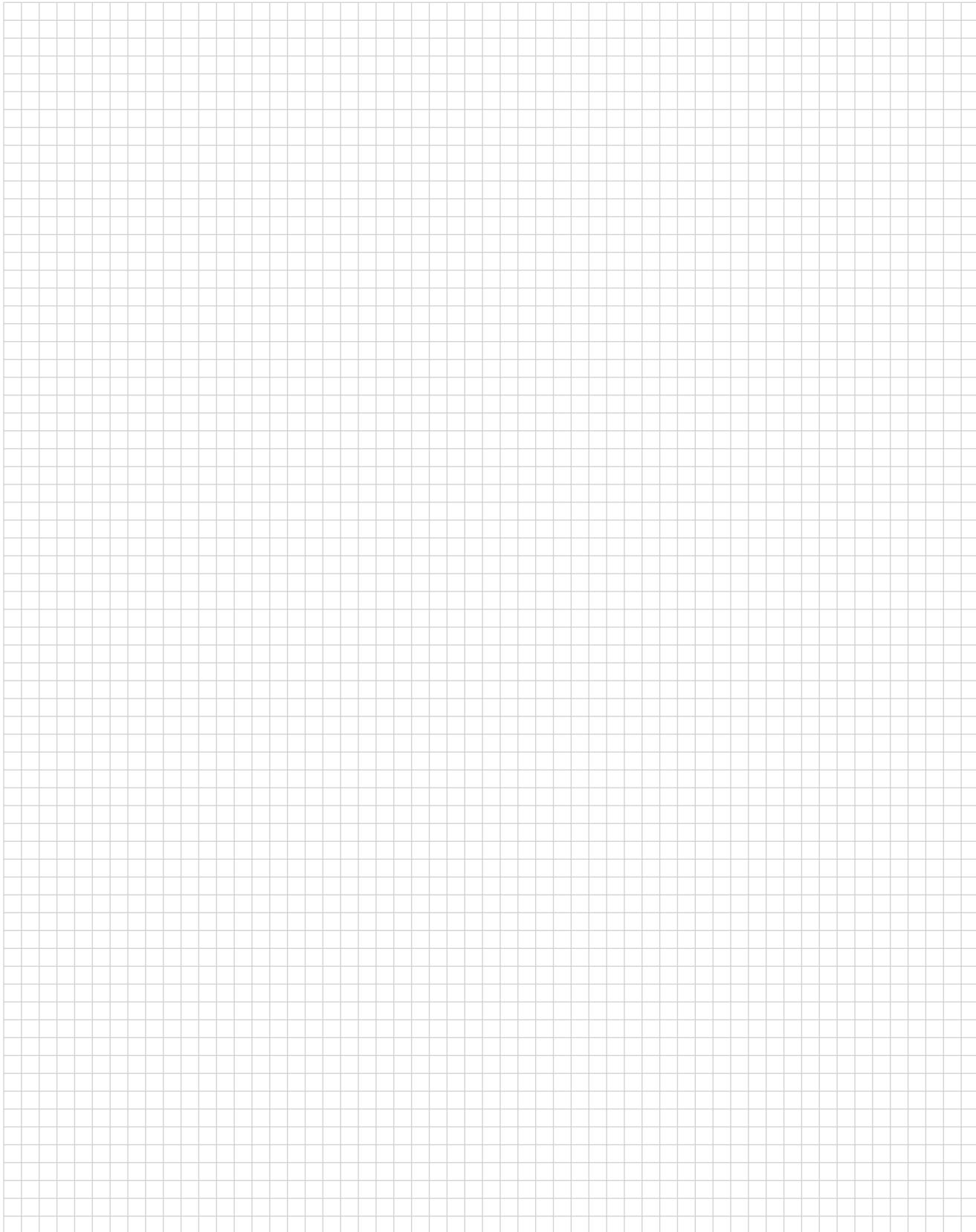
1. Internally AC Coupled.

2. Total jitter is specified at a BER of 10^-12 using PRBS 2^7-1.

ENGINEERING NOTES



ENGINEERING NOTES



MECHANICAL

Symbol	Parameter	Value	Unit	Notes
	Side load	75	N	
	Tensile Load	75	N	
	Durability	250	cycles	

REGULATORY INFORMATION

Symbol	Parameter	Compliance
	Preliminary Eye Safety Classification ¹	Not Applicable
	Electrostatic Discharge (ESD), human body	JESD22-A114D, Class 2 (2000 volts), human body model.

1. Optical energy contained with 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.

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- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we have the answers at www.tycoelectronics.com/leadfree

RoHS
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Dimensions are in millimeters with inches (if shown) in brackets.

For more information, contact your Tyco Electronics sales engineer, call 1-800-522-6752, or visit our website at: <http://www.tycoelectronics.com/fiberoptics>. Specifications subject to change.

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