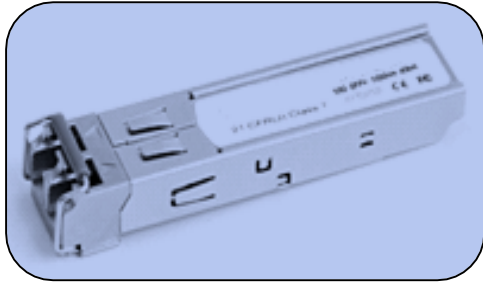




XTDxxA-40LY

10 Gbp/s 40km DWDM SFP+ Transceiver

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Product Highlights

- Compliant with SFF-8431 and IEE802.3ae
- Suitable for use in 100GHz channel spacing DWDM systems
- Data rate selectable ≤4.25Gbps or 9.95Gbps to 10.3Gbps bit rates
- Cooled EML transmitter and PIN receiver
- link length up to 40km
- Low Power Dissipation 1.5W Maximum
- -5°C to 70°C Operating Case Temperature
- Single 3.3V power supply
- Diagnostic Performance Monitoring of module temperature, supply Voltages, laser bias current, transmit optical power, receive optical power
- RoHS compliant and lead free

Applications

- o 10GBASE-ER/EW (with/without FEC)
- o 10G Fiber Channel (with/without FEC)

Description

XenOpt SFP+ER CWDM Transceiver is designed for 10GBASE-ER/EW, and 8.5G/10G Fiber-Channel applications.

The transceiver consists of two sections: The transmitter section incorporates a cooled EML laser. And the receiver section consists of a PIN photodiode integrated with a TIA. All modules satisfy class I laser safety requirements. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage.

Absolute maximum rating

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	V _{CC}	-0.5	3.8	V
Storage Temperature	T _{st}	-40	85	°C
Relative Humidity	R _h	0	85	%

Recommended Operating Environment

Parameters	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	V _{CC}	3.13	3.3	3.47	V
Power Supply Current	I _{CC}		360	450	mA
Operating Case temperature	T _{ca}	-5		70	°C
Module Power Dissipation	P _m	-	1.2	1.5	W

Notes:

[1] Supply current is shared between VCCTX and VCCR. X.

[2] In-rush is defined as current level above steady state current requirements.

Optical Characteristics

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Center Wavelength (SOL) Δ	λ_c	λ_{c-25}	λ_c	λ_{c+25}	nm	
Center wavelength (EOL) \blacktriangle	λ_c	λ_{c-100}	λ_c	λ_{c+100}	nm	
Optical OMA Power	Pom	-1.7			dBm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Optical Transmit Power (disabled)	PTX_DISABLE	-	-	-30	dBm	
Extinction Ratio	ER	8.2		-	dB	
RIN21OMA				-128	dB/Hz	RIN measurement is made with a return loss at 21 dB.
Optical Return Loss Tolerance				21	dB	
Receiver						
Input Operating Wavelength	λ	1260	-	1620	nm	
Average receive power		-	-	-1.0	dBm	
Receiver sensitivity in OMA		-	-	-14.1	dBm	
Stressed receiver sensitivity in OMA				-11.3	dBm	Measured with conformance test signal for BER = 10 ⁻¹² . The stressed sensitivity values in the table are for system level BER measurements which include the effects of CDR circuits. It is recommended that at least 0.4 dB additional margin be allocated if component level measurements are made without the effects of CDR circuits.
Maximum Input Power	RX-overload	-	-	-1	dBm	
Chromatic dispersion tolerance		-250		800	ps/nm	
Dispersion penalty				2.5	dB	@ CD=1600 ps/nm
OSNR		22.5			dB	For BER 1.10 ⁻¹²
Reflectance	Rrx	-	-	-27	dB	
Loss of Signal Asserted		-25	-	-	dBm	
LOS De-Asserted		-	-	-16	dBm	
LOS Hysteresis		0.5	-	-	dB	
Receiver Reflectance		-	-	-12	dB	

Notes:

△Laser- Start of Life
 ▲Laser End of life

Electrical Characteristics

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter						
Data Rate	Mra	-	10.3	11.3	Gbps	
Input differential impedance	Rim	-	100	-	Ω	
Differential data Input	VtxDIFF	120	-	850	mV	
Transmit Disable Voltage	VD	2.0	-	Vcc3+0.3	V	
Transmit Enable Voltage	Ven	0	-	+0.8	V	
Transmit Disable Assert Time	Vn	-	-	100	us	
Receiver						
Data Rate	Mra	-	10.3	11.3	Gbps	
Differential Output Swing	Vout P-P	350	-	850	mV	
Rise/Fall Time	Tr / Tf	24	-	-	ps	
Loss of Signal –Asserted	VOH	2	-	Vcc3+0.3-	V	
Loss of Signal –Negated	VOL	0	-	+0.4	V	

Pin Definition

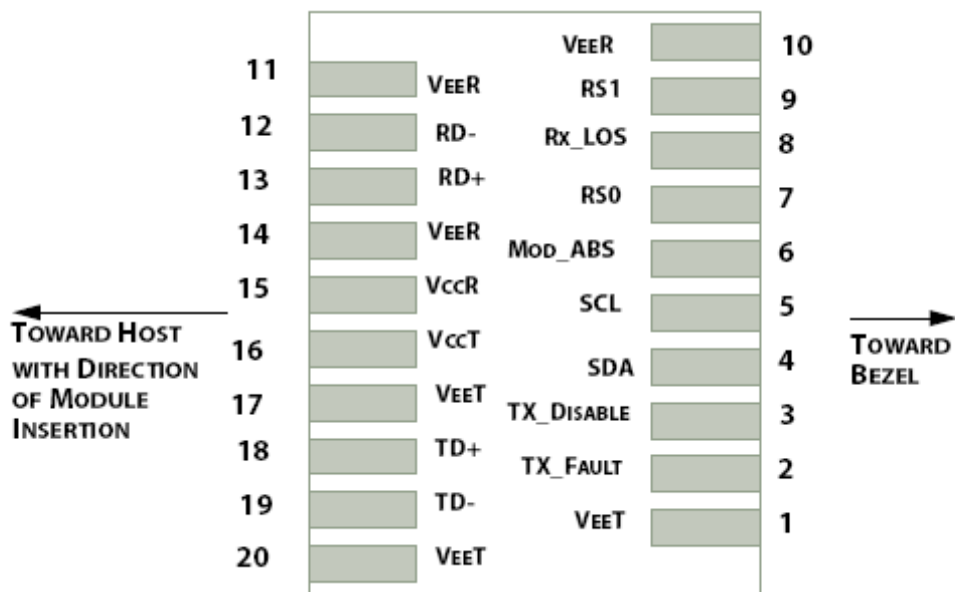


Figure 1. Electrical Pin-out Details

PIN description

Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	3
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	2
6		MOD_DEF0	Module Definition, Grounded in the module	4
7	LVTTL-I	RS0	Receiver Rate Select	5
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	2
9	LVTTL-I	RS1	Transmitter Rate Select (not used)	5
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Receiver 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Notes:

- [1] Module circuit ground is isolated from module chassis ground within the module.
- [2].should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
- [3]Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VccT inside the module.
- [4]Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to 10 kΩ. Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
- [5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

C-band λ_c Wavelength Guide

ITU Channel Product Code	Frequency(THz)	Wavelength	ITU Channel Product Code	Frequency(THz)	Wavelength
17	191.7	1563.86	40	194.0	1545.32
18	191.8	1563.05	41	194.1	1544.53
19	191.9	1562.23	42	194.2	1543.73
20	192.0	1561.42	43	194.3	1542.94
21	192.1	1560.61	44	194.4	1542.14
22	192.2	1559.79	45	194.5	1541.35
23	192.3	1558.98	46	194.6	1540.56
24	192.4	1558.17	47	194.7	1539.77
25	192.5	1557.36	48	194.8	1538.98
26	192.6	1556.55	49	194.9	1538.19
27	192.7	1555.75	50	195.0	1537.40
28	192.8	1554.94	51	195.1	1536.61
29	192.9	1554.13	52	195.2	1535.82
30	193.0	1553.33	53	195.3	1535.04
31	193.1	1552.52	54	195.4	1534.25
32	193.2	1551.72	55	195.5	1533.47
33	193.3	1550.92	56	195.6	1532.68
34	193.4	1550.12	57	195.7	1531.90
35	193.5	1549.32	58	195.8	1531.12
36	193.6	1548.51	59	195.9	1530.33
37	193.7	1547.72	60	196.0	1529.55
38	193.8	1546.92	61	196.1	1528.77
39	193.9	1546.12			

Circuit Diagram

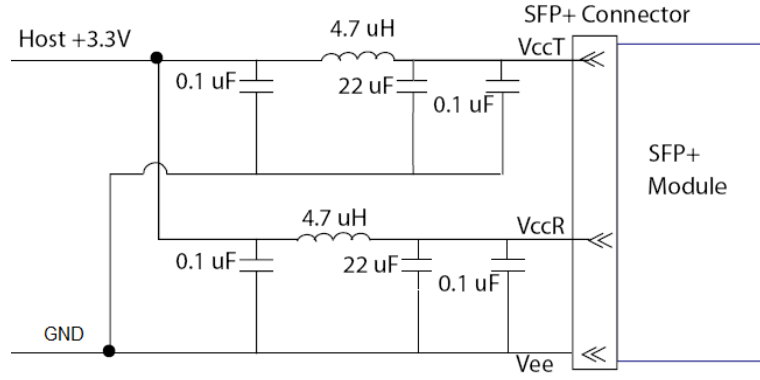


Figure 2. Host Board Power Supply Filters Circuit

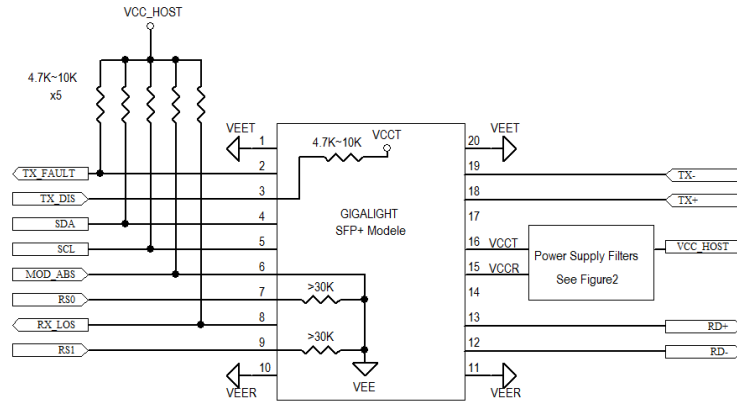


Figure 3. Host-Module Interface

Mechanical Dimensions

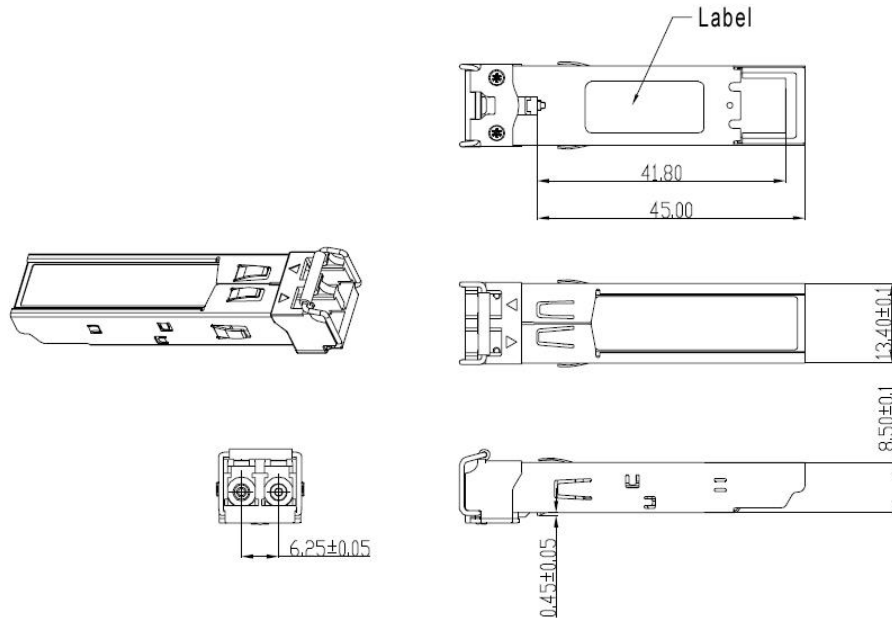


Figure 4. Mechanical Specifications

Ordering information

Part Number	Product Description
XTDxxA-40LY	XX= ITU Grid 17~61, 10Gbps, DWDM SFP+ 40km, -5°C ~ +70°C

Notice. Please specify any compatibility requirements at time of ordering. Standard MSA compatible pluggable components may not work or some function of these components may not be available in devices that require customized compatible devices. Pluggable components compatible with one type of communications equipment may not work in other type of communications equipment.

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