1000BASE-CWDM SFP 1270nm~1610nm 40km Transceiver Module

OC12-SFP-LR1-LL

Application

- Gigabit Ethernet
- 1×Fiber Channel
- CWDM Networks

Features

- Up to 1.25Gb/s Data Links
- Hot-Pluggable
- Duplex LC connector
- Up to 40km on 9/125μm SMF
- 18-Wavelength CWDM 1270n~1610nm Available
- CWDM DFB laser transmitter
- Single +3.3V Power Supply
- Monitoring Interface Compliant with SFF-8472
- Low power dissipation <1W typically
- Operating temperature range: 0° C to 70° C
- RoHS compliant and Lead Free

Description

Longline 's CWDM -SFP1G-ZX--LL CWDM Transceiver products provide optical networking equipment manufacturers with a timely and cost effective tool in supporting the unceasing demand for higher bandwidth equipment build-outs in the enterprise access and metropolitan area networks. There are 18 center wavelengths available from 1270nm to 1610nm. The 20nm channel spacing allows for un-cooled laser operation, a high yield manufacturing process, and lower cost Mux/Demux technology, thus providing a complete cost effective solution for various data and telecom applications.

Product Specifications

I. General Specifications

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Data Rate	BR		1.25		Gb/s	
Bit Error Rate	BER			10-12		
Max. Supported Link Length on 9/125μm SMF@1.25Gb/s	LMAX		40		km	
Total System Budget	LB	19			dB	

II. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Storage Temperature	TS	-40		+85	° C	
Supply Voltage	VCC	-0.5		4	V	
Relative Humidity	RH	0		85	%	

III. Recommended Operating Environment

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Case operating Temperature	Tc	0		+70	° C	
Supply Voltage	VCC	3.135		3.465	V	
Supply Current	Icc			250	mA	
Inrush Current	Isurge			Icc+30	mA	
Maximum Power	Pmax			1	W	

IV.Electrical Characteristics(TOP =Tc, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Transmitter						
Input differential impedance	Rin	90	100	110	W	1
Single ended data input swing	Vin PP	250		1200	mVp-p	
Transmit Disable Voltage	VD	Vcc – 1.3		Vcc	V	2
Transmit Enable Voltage	VEN	Vee		Vee+ 0.8	V	
Transmit Disable Assert Time	Tdessert			10	us	
Receiver						
Single ended data output swing	Vout,pp	300		800	mv	3
Data output rise time	tr			260	ps	4
Data output fall time	tf			260	ps	4
LOS Fault	Vlosfault	Vcc – 0.5		VCC_host	V	5
LOS Normal	Vlos norm	Vee		Vee+0.5	V	5
Power Supply Rejection	PSR	100			mVpp	6

Notes:
1. AC coupled.
2. Or open circuit.
3. Into 100 ohm differential termination.
4. 20 – 80 %
5. LOS is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. All transceiver specifications are compliant with a power supply sinusoidal modulation of 20 Hz to 1.5MHz up to specified value applied through the power supply filtering network shown on page 23 of the Small Form-factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 14, 2000.

V. Optical Characteristics(TOP =Tc, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
Transmitter						
Center Wavelength	λc	λ-6.5	λ	λ+6.5	nm	
Spectral Width	σ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Output Power	Pout	-5		0	dBm	1
Optical Rise/Fall Time	tr / tf			260	ps	2
Extinction Ratio	ER	9			dB	
Generated Jitter (peak to peak)	JTXp-p			0.07	UI	3
Generated Jitter (rms)	JTXrms			0.007	UI	3
Eye Mask for Optical Output	Compliant with IEEE802.3z(class 1 laser safety)					
Receiver						
Optical Input Wavelength	λc	1260		1620	nm	
Receiver Overload	Pol	-8			dBm	4
RX Sensitivity	Sen			-24	dBm	4
RX_LOS Assert	LOS A	-40			dBm	
RX_LOS De-assert	LOS D			-25	dBm	
RX_LOS Hysteresis	LOS H	0.5			dB	

Notes:
1. The optical power is launched into SMF.
2. 20-80%.
3. Jitter measurements taken using Agilent OMNIBERT 718 in accordance with GR-253.
4. Measured with PRBS 27 -1at 10-12 BER

VI. Pin Assignment

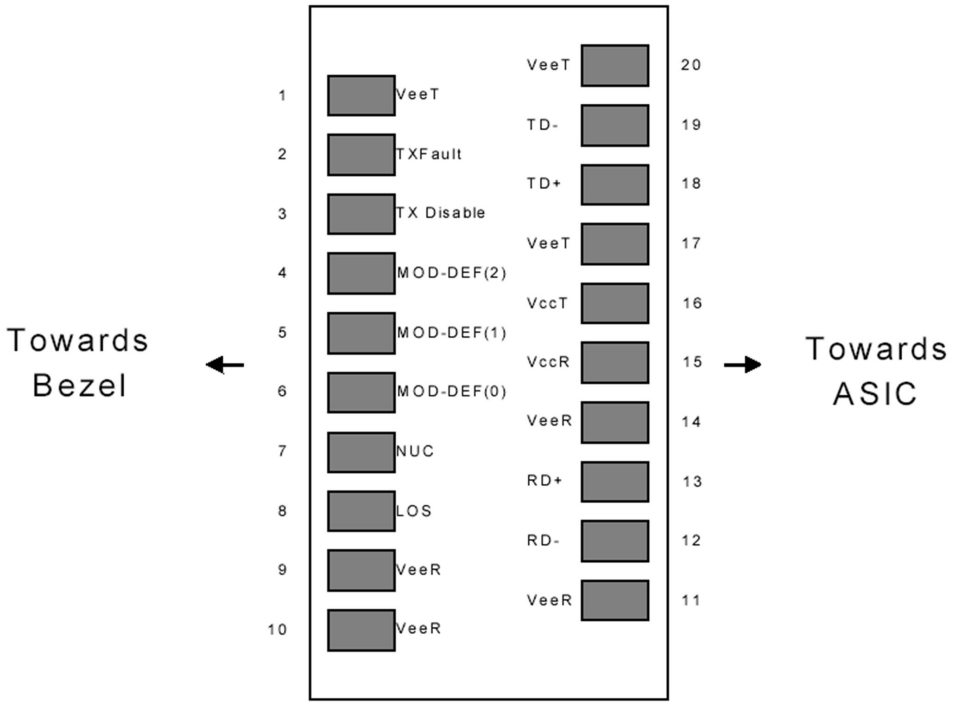

Figure1. Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Name	Function	Plug Seq	Notes
1	VeeT	Transmitter Ground	1	1
2	TX Fault	Transmitter Fault Indication	3	
3	TX Disable	Transmitter Disable	3	2
4	MOD-DEF2	Module Definition	2	3
5	MOD-DEF1	Module Definition 1	3	3
6	MOD-DEF0	Module Definition 0	3	3
7	Rate Select	Not Connected	3	4
8	LOS	Loss of Signal	3	5

9	VeeR	Receiver Ground	1	1
10	VeeR	Receiver Ground	1	1
11	VeeR	Receiver Ground		1
12	RD-	Inv. Received Data Out	3	6
13	RD+	Received Data Out	3	6
14	VeeR	Receiver Ground	3	1
15	VccR	Receiver Power	2	1
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	6
19	TD-	Inv. Transmit In	3	6
20	VeeT	Transmitter Ground	1	

Notes:
1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10 kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
4. Rate select is not used
5. LOS is open collector output. Should be pulled up with 4.7k – 10 kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
6. AC Coupled

VII. Mehanical Specifications