

24dB 150GHz DWDM SFP+ Optical Transceiver

Product Features

- None CDR inside, supports data rate 1~11.3Gbps
- Up to 24dB link-budget for 20km transmission distance over 9/125um SMF
- 150GHz ITU-T Grid O-band DWDM wavelength
- Cooled DFB, APD
- 2-wire interface for integrated digital diagnostic monitoring
- SFP+ package with single LC/UPC receptacle optical interface and SFI electrical interface
- Single +3.3V power supply
- Operation case temperature -40~85°C for industrial
- Compliant with SFF-8431, SFF-8432
- RoHS compliance, and Class 1 laser safety

Operating Condition

Parameter	Unit	Min.	Typical	Max.
Storage Temperature	°C	-40		85
Operating Case Temp	°C	-40		85
Relative Humidity	%	0		85
Power Supply Voltage	V	3.135	3.3	3.465
Power Consumption	W			2
Bit Rate	Gbps	1	10.3125	11.3

Characteristics

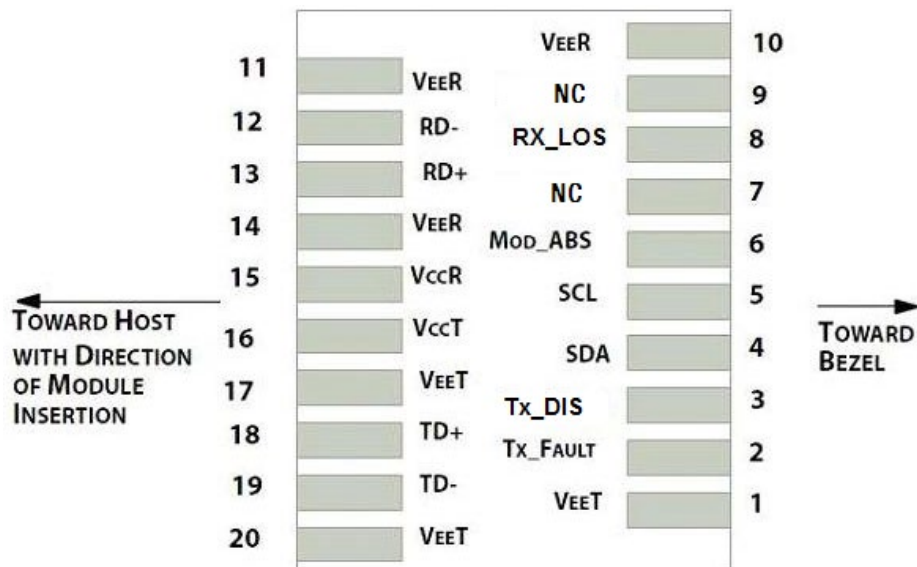
All performance is specified at whole working temperature and conditions

Parameter	Unit	Min.	Typical	Max.
Transmitter				
Transmitter Wavelength CH1-P1L	nm	1283.258	1283.358	1283.458
Transmitter Wavelength CH1-P1H	nm	1290.718	1290.818	1290.918
Transmitter Wavelength CH2-P2L	nm	1284.083	1284.183	1284.283
Transmitter Wavelength CH2-P2H	nm	1291.552	1291.652	1291.752
Transmitter Wavelength CH3-P3L	nm	1284.908	1285.008	1285.108
Transmitter Wavelength CH3-P3H	nm	1292.387	1292.487	1292.587
Transmitter Wavelength CH4-P4L	nm	1285.735	1285.835	1285.935
Transmitter Wavelength CH4-P4H	nm	1293.224	1293.324	1293.424
Transmitter Wavelength CH5-P5L	nm	1286.563	1286.663	1286.763
Transmitter Wavelength CH5-P5H	nm	1294.061	1294.161	1294.261
Transmitter Wavelength CH6-P6L	nm	1287.392	1287.492	1287.592
Transmitter Wavelength CH6-P6H	nm	1294.900	1295.000	1295.100
Transmitter Wavelength CH7-P7L	nm	1288.222	1288.322	1288.422
Transmitter Wavelength CH7-P7H	nm	1295.739	1295.839	1295.939
Transmitter Wavelength CH8-P8L	nm	1289.053	1289.153	1289.253
Transmitter Wavelength CH8-P8H	nm	1296.580	1296.680	1296.780
Wavelength Spacing	GHz		150	
Spectral Width (-20dB)	nm			0.45
Side Mode Suppression Ratio (SMSR)	dB	30		
Mean Launched Power	dBm	0.5		6
Mean Launched Power (TX Off)	dBm			-45
Extinction Ratio	dB	5		
Transmitter and dispersion Penalty @800ps/nm	dB			3.5
Transmitter Mask (PRBS ³¹ -1@10.3125G)	Compliant with IEEE Std 802.3ae			
Receiver				
Receive Wavelength	nm	1260		1620
Sensitivity (PRBS ³¹ -1@10.3125G, ER=6, BER<10 ⁻¹²)	dBm			-20.5
Overload (PRBS ³¹ -1@10.3125G, ER=6, BER<10 ⁻¹²)	dBm	-6		
Loss of signal De-assert Level	dBm			-21.5
Loss of signal assert Level	dBm	-35		
LOS Hysteresis	dB	0.5		5

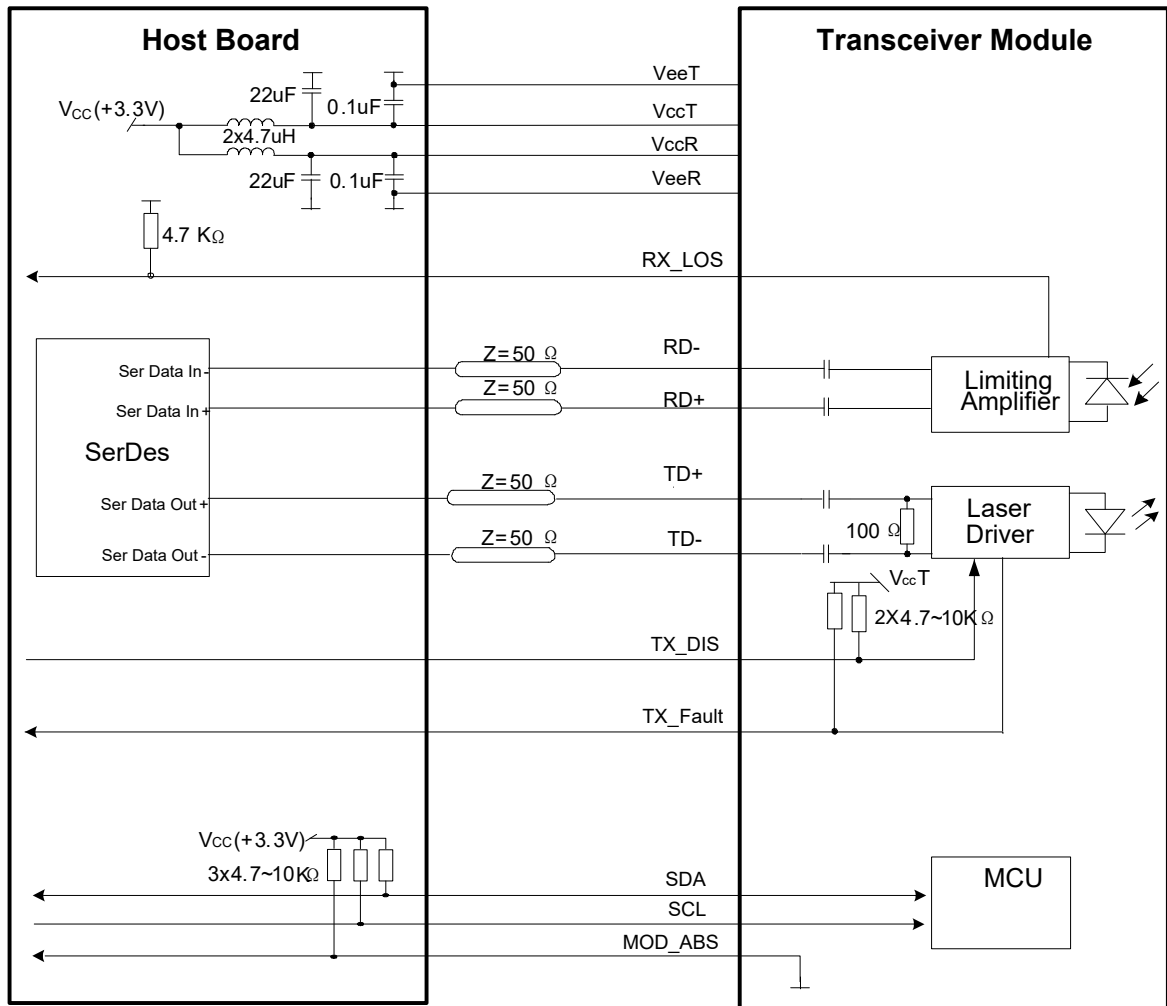
Electrical Interface Characteristics				
Data Input Swing Differential/TX	mV	180		850
Data Output Swing Differential/RX	mV	300		850
Data Differential Impedance	Ω	90	100	110
LVTTL Output High	V	2.4		V _{cc}
LVTTL Output Low	V	0		0.4
LVTTL Input High	V	2.0		V _{cc} +0.3
LVTTL Input Low	V	0		0.8
Timing Characteristics				
LOS Assert Time (T _{LOSA})	us			100
LOS De-assert Time (T _{LOSD})	us			100

PIN Definition

Pin No.	Symbol	Level / Logic	Description
1	VeeT		Module Transmitter Ground
2	Tx_Fault	LVTTL-O	Module Transmitter Fault Indication
3	Tx_DIS	LVTTL-I	Transmitter Disable; Active High Disable Transmitter Output
4	SDA	LVTTL-I	2-Wire Serial Interface Data Line
5	SCL	LVTTL-I/O	2-Wire Serial Interface Clock
6	MOD_ABS	LVTTL-O	Module Absent, connected to ground in the module
7	RS0		Not Connected
8	RX_LOS	LVTTL-O	Loss of Receiver Signal Indication
9	RS1		Not Connected
10	VeeR		Module Receiver Ground
11	VeeR		Module Receiver Ground
12	RD-	CML-O	Receiver Inverted Data Output
13	RD+	CML-O	Receiver Non-Inverted Data Output
14	VeeR		Module Receiver Ground
15	VccR		Module Receiver 3.3V Supply
16	VccT		Module Transmitter 3.3V Supply
17	VeeT		Module Transmitter Ground
18	TD+	CML-I	Transmitter Non-Inverted Data Input
19	TD-	CML-I	Transmitter Inverted Data Input
20	VeeT		Module Transmitter Ground

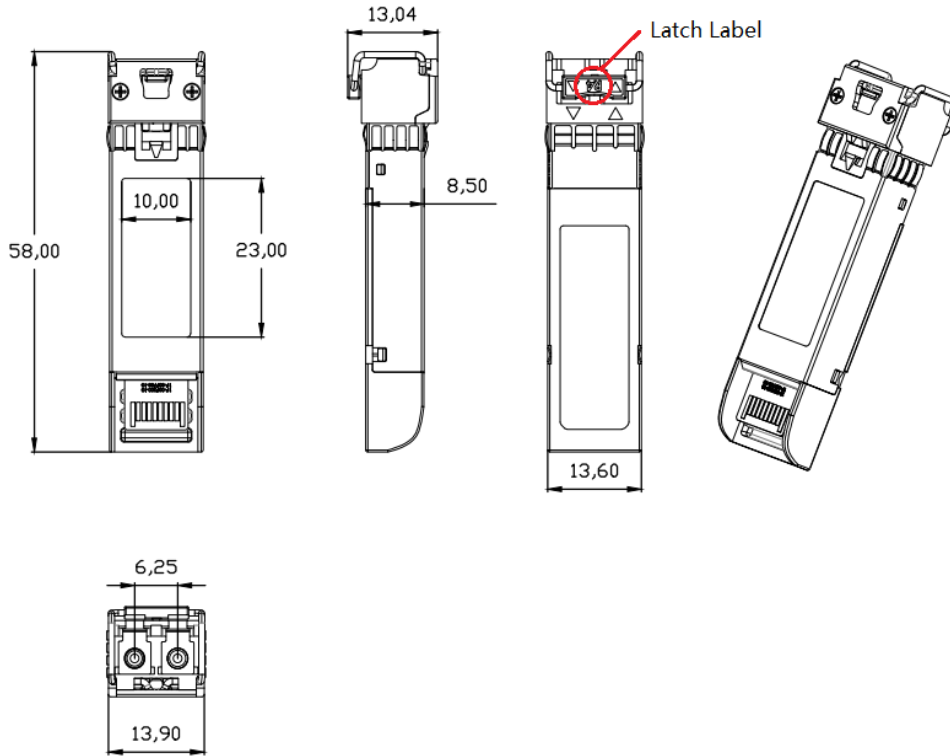


Typical Interface Circuit



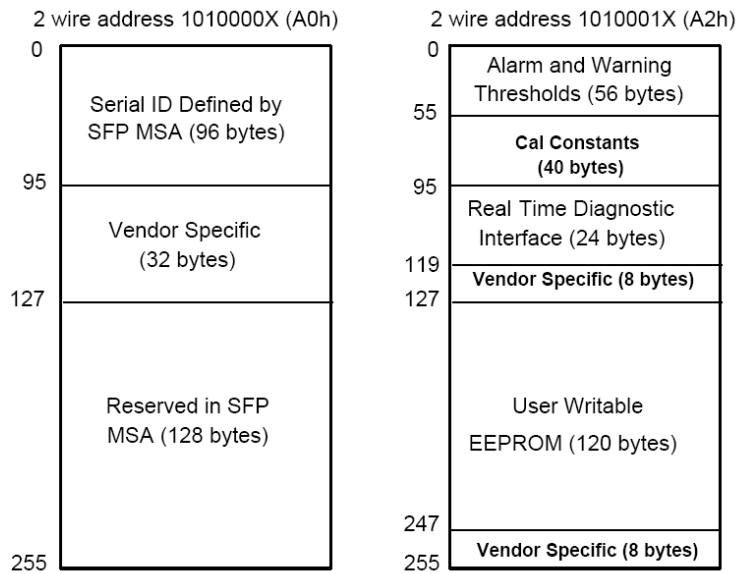
Mechanical Diagram

For detail mechanical information, please refer to the related document of SFF-8432



EEPROM Memory Map

The digital diagnostic memory map specific data field define as following. For detail EEPROM information, please refer to the related document of SFF 8472 Rev 12.0.



ESD

The SFP+ module and host SFI contacts (High Speed Contacts) shall withstand 1kV electrostatic discharge based on Human Body Model and all host contacts with exception of the SFI contacts (High Speed Contacts) shall withstand 2kV electrostatic discharge based on Human Body Model. The SFP+ module shall meet ESD requirements given in EN61000-4-2, criterion B test specification such that units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case per section 2.9 in SFF-8431 REV4.1. However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Laser Safety

This is a Class 1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

Ordering Information

Ordering P/Ns	Description
D2DD99-SLHA- Pxy	10G 150GHz DWDM SFP+, 24dB link budget for 20km application, 1~11.3Gbps, Tx 150GHz ITU-T Grid C-band DWDM wavelength, Rx 1260~1620nm, SFP+ form-factor, duplex LC/UPC receptacle connector, -40~85°C industrial temperature, Cooled DFB+APD, Without CDR

Note: "Pxy" is for the center wavelength definition.

For example: D2DD99-SLHA-P1L: central wavelength 1283.358nm at 233.600THz

Channel(xxx)	P/N	Frequency(THz)	Center Wavelength (nm)	Latch Label
CH1	D2DD99-SLHA –P1L	233.600	1283.358	29DL1
	D2DD99-SLHA –P1H	232.250	1290.818	29DH1
CH2	D2DD99-SLHA –P2L	233.450	1284.183	29DL2
	D2DD99-SLHA –P2H	232.100	1291.652	29DH2
CH3	D2DD99-SLHA –P3L	233.300	1285.008	29DL3
	D2DD99-SLHA –P3H	231.950	1292.487	29DH3
CH4	D2DD99-SLHA –P4L	233.150	1285.835	29DL4
	D2DD99-SLHA –P4H	231.800	1293.324	29DH4
CH5	D2DD99-SLHA –P5L	233.000	1286.663	29DL5
	D2DD99-SLHA –P5H	231.650	1294.161	29DH5
CH6	D2DD99-SLHA –P6L	232.850	1287.492	29DL6
	D2DD99-SLHA –P6H	231.500	1295.000	29DH6
CH7	D2DD99-SLHA –P7L	232.700	1288.322	29DL7
	D2DD99-SLHA –P7H	231.350	1295.839	29DH7
CH8	D2DD99-SLHA –P8L	232.550	1289.153	29DL8
	D2DD99-SLHA –P8H	231.200	1296.680	29DH8

Contact Us

International Sales

Email: Sales@broadex-tech.co.uk

Tel: +44-1506-426021

Mobile: +44-7968-854124

China Sales

Tel: +86-573-82585881

Email: Sales@broadex-tech.com

Copyright © 2020 Broadex Technologies. All rights reserved