

SFP-10G-MR80-TUN

SFP+, 9.9-11.3G, 80km, Tunable DWDM 50GHz ITU, 23dB, SM

FEATURES

- SFP+ MSA compliant with LC connector
- Management interface specifications per SFF-8431 and SFF-8472
- SFP+ MSA package with duplex LC connector
- MZM Tunable Transmitter
- Up to 11.3Gb/s bi-directional data links
- 50GHz ITU-base channel spacing(C-Band)
- Built-in digital diagnostic functions
- Up to 80km distance
- Single +3.3V power supply
- Class 1 laser safety certified
- Operating case temperature: 0°C to +70°C
- RoHS Compliant



APPLICATIONS

- 80km 10Gb/s CPRI/eCPRI
- 80km 10Gb/s DWDM SONET/SDH
- 80km 10Gb/s DWDM Ethernet

DESCRIPTIONS

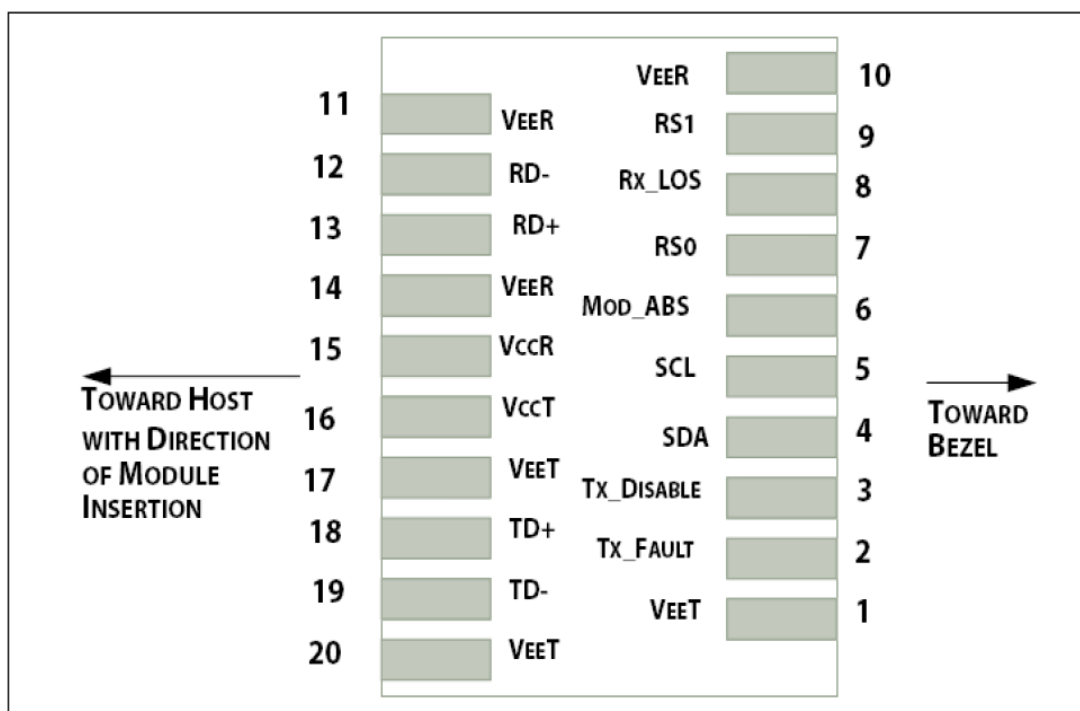
SFP-10G-MR80-TUN transceivers, according to Enhanced Small Form Factor Pluggable "SFP+" Multi-Sourcing Agreement (MSA) SFF-8431, SFF-8472 and SFF-8690. are designed for DWDM 10G ethernet data communications up to 80km over single mode fiber. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472. LX5901CDR are compliant with RoHS.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Minimum	Maximum	Unit
Storage Temperature	TS	-40	85	oC
Relative Humidity	RH	0	85	%
Supply Voltage	VCC	0	+3.6	V
Relative Humidity	RH	0		85

RECOMMENDED OPERATING ENVIRONMENT

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	TC	0		70	oC
Supply Voltage	VCC	3.135	3.3	3.465	V
Data Rate	-	-	10.3125	11.3	Gb/s



TRANSCEIVER ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Module Supply Current	I _{cc}	-	-	666	mA	-
Power Dissipation	PD	-	-	2.2	W	-
Transmitter						
Input Differential Impedance	Z _{IN}	90	100	110	Ω	-
Differential Data Input Swing	V _{IN} , P-P	180	-	900	mVP-P	-
Transmitter Disable Voltage	VD	2.0	-	V _{cc} +0.3	V	-
Transmitter Enable Voltage	VE	0	-	0.8	V	-
Receiver						
Output Differential Impedance	Z _O	90	100	110	Ω	-
Differential Data Output Swing	V _{OUT} , P-P	450	600	900	mVP-P	-
Los Assert Voltage	V _{LOSA}	2.0	-	V _{cc}	V	-
Los De assert Voltage	V _{LOSD}	0	-	0.8	V	-

TRANSMITTER OPTICAL CHARACTERISTICS

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Launch Optical Power	P _o	-1.0	-	+4.0	dBm	1
Wavelength Range (ITU Grid)	λ _c	1528.77	-	1566.72	nm	-
Frequency Range	f _c	191.35	-	196.10	THz	-
Center Wavelength Spacing	-	-	50	-	GHz	-
Center Wavelength deviation	λ _c EOL	-5	-	+5	GHz	-
Wavelength Tuning	-	-	-	2	s	-
Transmitter and Dispersion Penalty	TDP	-	-	3	dB	-
Extinction Ratio	ER	8.2	-	-	dB	2
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Relative Intensity Noise	RIN	-	-	-130	dB/Hz	-
Optical Return Loss Tolerance	ORLT	-	-	12	dB	-
P _{out} @TX-Disable Asserted	P _{off}	-	-	-40	dBm	1
Tx Power Monitor Accuracy	-	-	-	±2	dB	-

Notes:

1. The optical power is launched into 9/125μm SMF.
2. Measured with a PRBS 231-1 test pattern @10.3125Gbps.

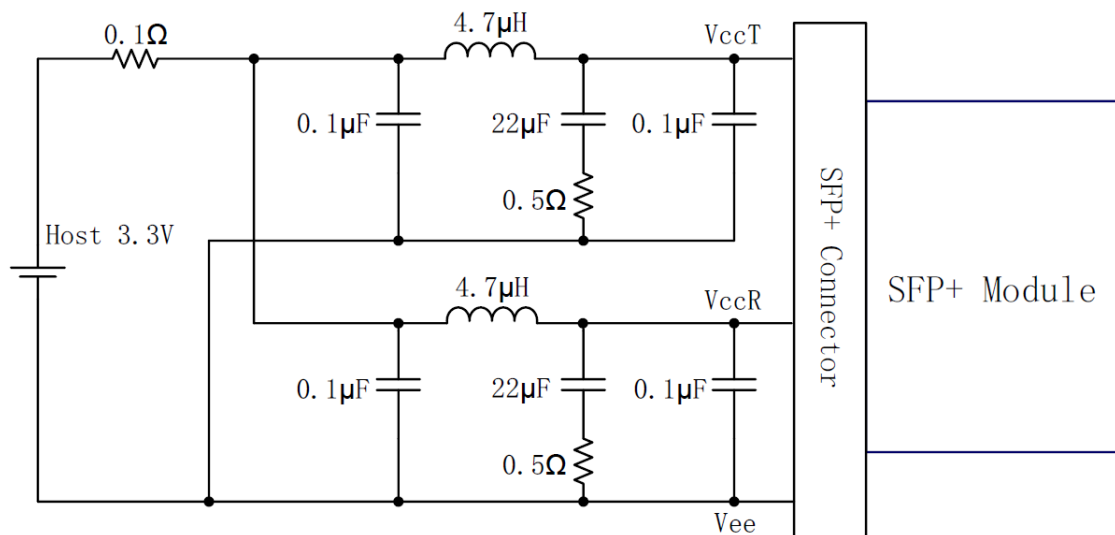
RECEIVER OPTICAL CHARACTERISTICS

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Center Wavelength	λ_c	1270	-	1620	nm	-
Receiver Sensitivity (Pavg)	S	-	-	-24	dBm	1
Receiver Overload (Pavg)	POL	-7.0	-	-	dBm	-
Optical Return Loss	ORL		-	-26	dB	-
Rx Power Monitor Accuracy	-		-	± 3	dB	-
LOS De-Assert	LOSD	-	-	-25	dBm	-
LOS Assert	LOSA	-35	-	-	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-

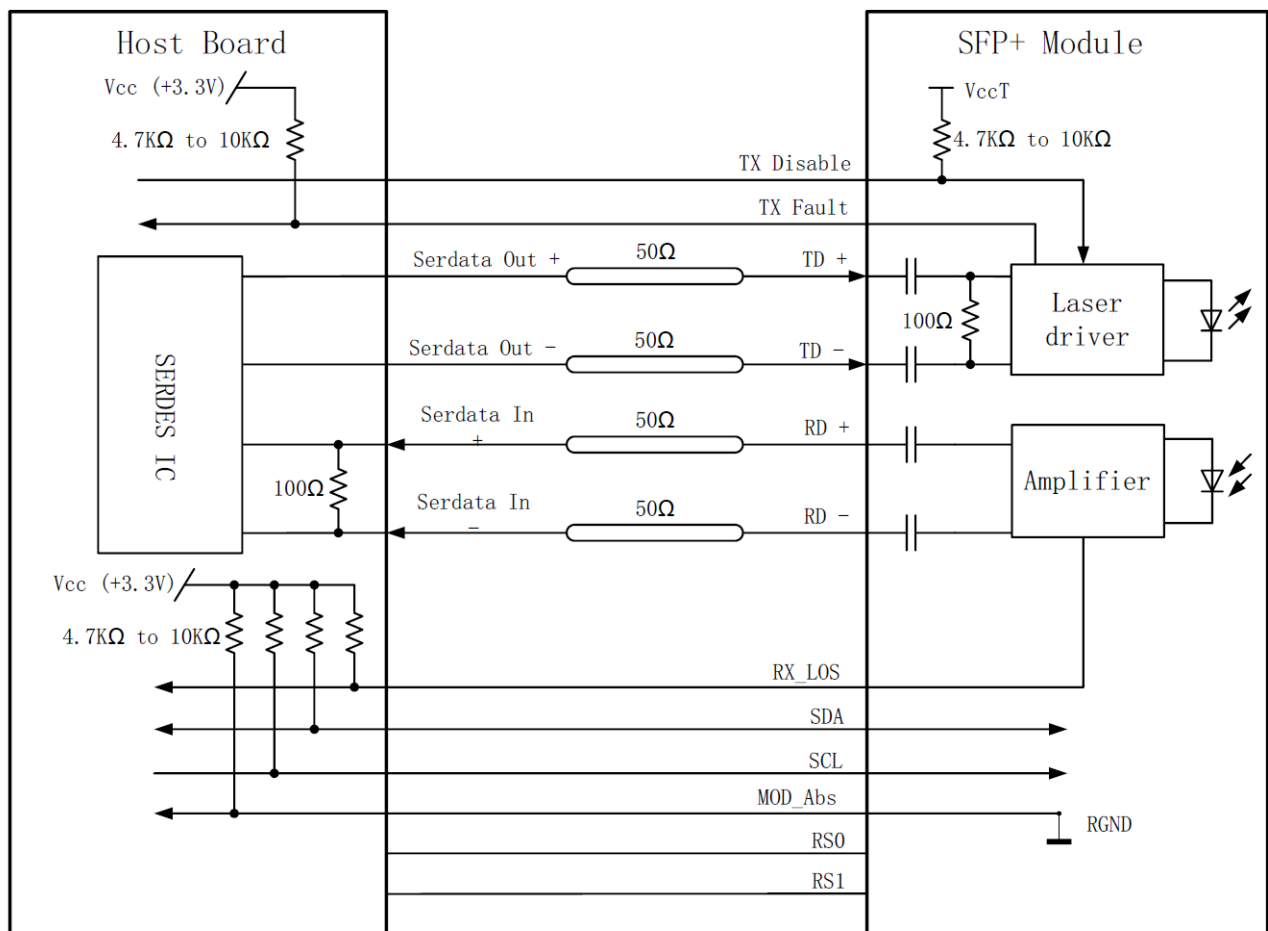
Notes:

1. Measured with PRBS 231-1 test pattern, 10.3125Gb/s, BER=1E-12.

RECOMMENDED HOST BOARD POWER SUPPLY FILTER



RECOMMENDED APPLICATION INTERFACE BLOCK DIAGRAM



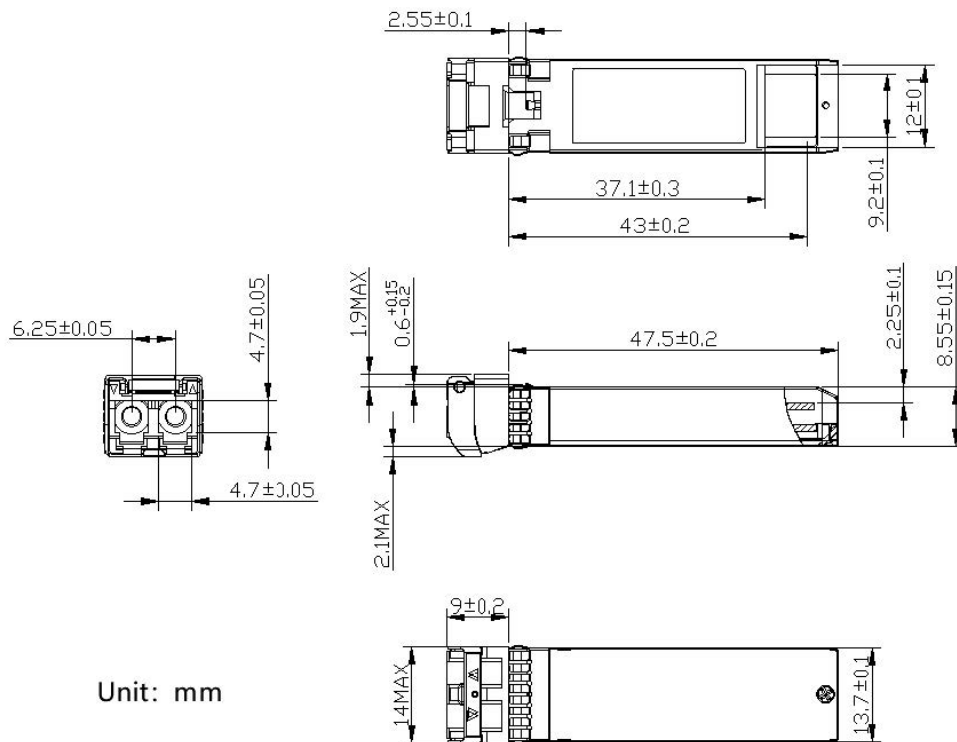
PIN DESCRIPTION

Pin	Name	Function/Description	Notes
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault (LVTTL-O) - High indicates a fault condition	2
3	TX_Disable	Transmitter Disable (LVTTL-I) – High or open disables the transmitter	3
4	SDA	Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2)	4
5	SCL	Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1)	4
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module	5
7	RS0	NA	6
8	RX_LOS	Receiver Loss of Signal (LVTTL-O)	2
9	RS1	NA	6
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O)	-
13	RD+	Received Data out (CML-O)	-
14	VeeR	Receiver Ground	-
15	VccR	Receiver Power - +3.3V	-
16	VccT	Transmitter Power - +3.3 V	-
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Data In (CML-I)	-
19	TD-	Inverse Transmitter Data In (CML-I)	-
20	VeeT	Transmitter Ground	1

Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.
3. This input is internally biased high with a 4.7KΩ to 10KΩ pull-up resistor to VccT.
4. Two-Wire Serial interface clock and data lines require an external pull-up resistor.
5. This is a ground return that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.
6. Rate select can be set through the 2-wire bus in accordance with SFF-8472 v. 12.1, Rx Rate Select is set at Bit 3, Byte 110, A2h. Tx Rate Select is set at Bit 3, Byte 118, A2h.

MECHANICAL DIMENSIONS



ORDERING INFORMATION

Part Number	Product Description
SFP-10G-MR80-TUN	SFP+, 9.9-11.3G, 80km, Tunable DWDM 50GHz ITU, 23dB, SM