

T-10G-XFP-SM-80KM

10Gbps XFP Single Mode Transceiver 80km

Features

- XFP MSA Rev 4.5 Compliant
- Data Rate from 9.95Gbps to 11.3Gbps
- No reference clock required
- Cooled 1550nm EML and APD Receiver
- Link Length up to 80km
- +1.8V, +3.3V Supply Voltage
- Low Power Dissipation 3.5W Maximum
- XFI and lineside loopback Mode Supported
- 5~70 °C Operating Case Temperature
- Diagnostic Performance Monitoring of Module Temperature, Supply Voltage, Laser Bias Current, Transmit Optical Power and Receive Optical Power.
- RoHS6 compliant



Applications

- SONET OC-192&SDH STM64 (with/without FEC)
- 10G Fiber Channel
- 10GBASE-ER/EW (with / without FEC)

Ordering Information

Part No.	Data Rate	Fiber	Distance	Interface	Temperature	DDMI
T-10G-XFP-SM-80KM	9.95~10.3 Gbps	SMF	1550nm 80KM	LC	Standard	YES

Product Description

T-10G-XFP-SM-80KM is compliant with the 10G Small Form-Factor Pluggable (XFP) Multi-Source Agreement (MSA), supporting data-rate of 10.3125Gbps(10GBASE-LR) or 9.953Gbps (10GBASE-LW), and transmission distance up to 80km on 9µm SMF .

The transceiver module comprises a transmitter with 1550nm Uncooled DFB laser and a receiver with a PIN photodiode.

Transmitter and receiver are separate within a wide temperature range of 0°C to +70°C and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.

Regulatory Compliance

Feature	Agency	Standard	Certificate / Comments
Laser Safety	FDA	CDRH 21 CFR 1040 and Laser Notice No.50	1120292-000
Product Safety	UL	UL and CUL EN60950-2:2007	WT10093766-D-E-E
Environmental Protection	SGS	RoHS Directive 2002/95/EC	GZ1001008918/CHEM
EMC	WALTEK	EN55022:2006+A1:20077 EN55024:1998+A1+A2:2003	WT10093759-D-E-E

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Tst	-40	+85	°C
Case Operating Temperature	Top	-5	+70	°C
Supply Voltage 1	Vcc3.3	-0.5	4.0	V
Supply Voltage 2	Vcc5	-0.5	6.0	V
Supply Voltage 3	Vcc2	-0.5	2	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Supply Voltage 1	Vcc3	3.13	3.3	3.47	V
Supply Current 1	Icc3			750	mA
Supply Voltage 2	Vcc5	4.75	5	5.25	V
Supply Current 2	Icc5			400	mA
Supply Voltage3	Vcc2	1.71	1.8	1.89	V
Supply Current3	Icc2			750	mA
Operating Case Temperature	Tca	-5		70	°C
Module Power Dissipation	Pm			3.5	W

Electrical Characteristics

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Input Differential Impedance	Rim		100		Ω	1
Differential Data Input Swing	Vin,pp	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			10	us	
Receiver						
Output Differential Impedance	Rom		100		Ω	
Differential Output Swing	T _{vout} p-p	350		850	mV	2
Rise/Fall Time (1)	Tr/Tf	24			ps	3
LOS of Signal-Asserted	VOH	2		VccHost	V	3
LOS Normal	VOL	GND		GND+0.5	V	4

Optical Characteristic

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter						
Center Wavelength (1)	λ_c	1530		1565	nm	
Optical Transmit Power	P_o	0		+4	dBm	
Optical Transmit Power(disable)	PTX_DIS			-30	dBm	
Extinction Ratio	ER	9			dB	
Jitter Generation (P-P)	JG P-P			0.1	UI	
Jitter Generation (RMS)	JG RMS			0.01	UI	
Spectral Width(-20 dB)	$\Delta \lambda_{20}$			0.3	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Dispersion Penalty(800ps/nm) (2)	DP			2	dB	
Relative Intensity Noise	RIN			-130	dB/Hz	
Eye Mask	Compliant with ITU-T G.691 STM-64 eye mask					
Receiver						
Input Operating Wavelength	λ	1270		1600	nm	
Receiver Sensitivity 9.95~10.7Gbps (1)	Rsen1			-24	dBm	2
Receiver Sensitivity 10.1~11.3Gbps (1)	Rsen2			-23	dBm	
Maximum Input Power	RX-overload	-7				
Reflectance	Rrx			-27	dBm	
LOS of Signal Asserted	LOS_A	-34			dBm	
Path Penalty at 1600ps/nm~9.95Gb/s	DP1			2	dBm	
Path Penalty at 1600ps/nm~10.7Gb/s	DP2			3	dBm	
Path Penalty at 1450ps/nm~11.3Gb/s	DP3			3	dBm	
LOS De-Asserted	LOS_D			-24	dBm	
LOS Hysteresis	LOS_H	0.5			dB	

Notes:

1. BER=10⁻¹², PRBS 2³¹-1

Pin Description

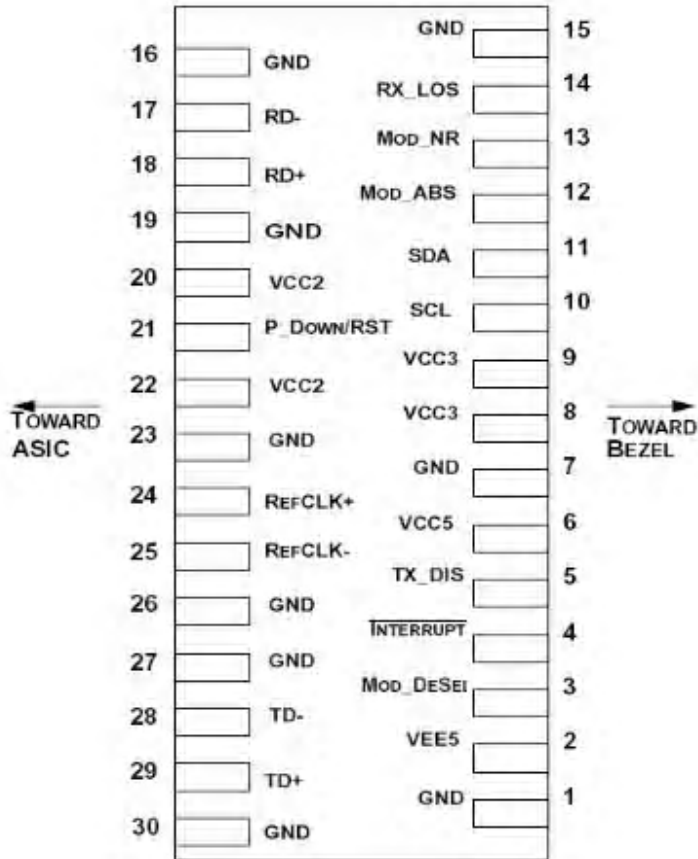
Pin No	Logic	Symbol	Name / Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional-5.2 Power Supply- Not required	
3	LVTTTL-I	Mod-Desel	Module De-select; When held low allows the module to , respond to 2-wire serial interface	

				commands
4	LVTTTL-00	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply-Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTTL-O	Mod_Abs	Module Absent; Indicates Module is not present. Ground in the module.	2
13	LVTTTL-O	Mod_NR	Module Not Ready	2
14	LVTTTL-O	RX_LOS	Receiver Loss of Signal Indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver Inverted Data Output	
18	CML-O	RD+	Receiver Non-inverted Data Output	
19		GND	Module Ground	1
21	LVTTTL-I	P Down/RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	Port Address Bit 1 (Low = 0)	
23		GND	Port Address Bit 0 (Low = 0)	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board. Not required	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter Inverted Data Input	
29	CML-I	TD+	Transmitter Non-inverted Data Input	
30		GND	Module Ground	1

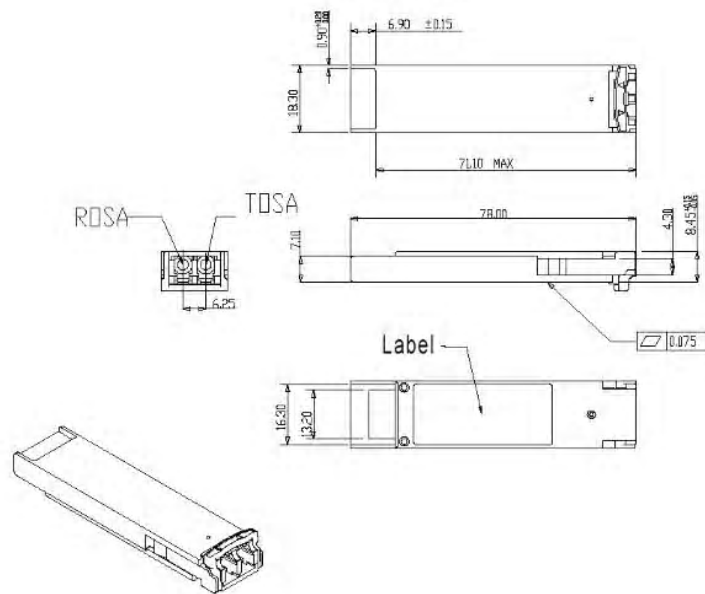
Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. Reference Clock input is not required

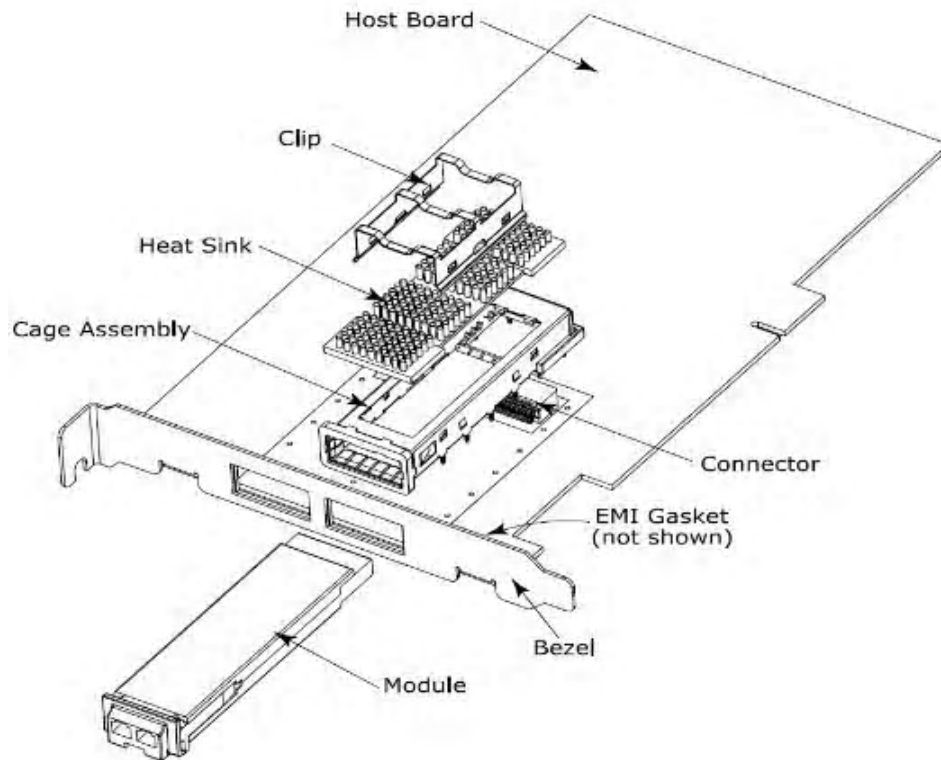
Electrical Pin-out Details



Mechanical Specification



XFP Mechanical Components



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