T-XFP-CWDM-40KM

10Gbps XFP CWDM Transceiver40KM

Features

Wavelengths selectable to ITU-T standards covering CWDM grid wavelengths.
XFP MSA Rev 4.5 Compliant
Supports 9.95Gbps to 11.3Gbps bit rates
No reference Clock required
Cooled EML transmitter and PIN receiver
Link Length of 40km
Low Power Dissipation 3.5W Maximum
XFI and Lineside Loopback Mode Supported
-5℃ to 70℃ Operating Case Temperature
Diagnostic Performance Monitoring of Module Temperature, Supply Voltages, Laser Bias Current, Transmit Optical Power and Receive Optical Power
RoHS compliant

Applications

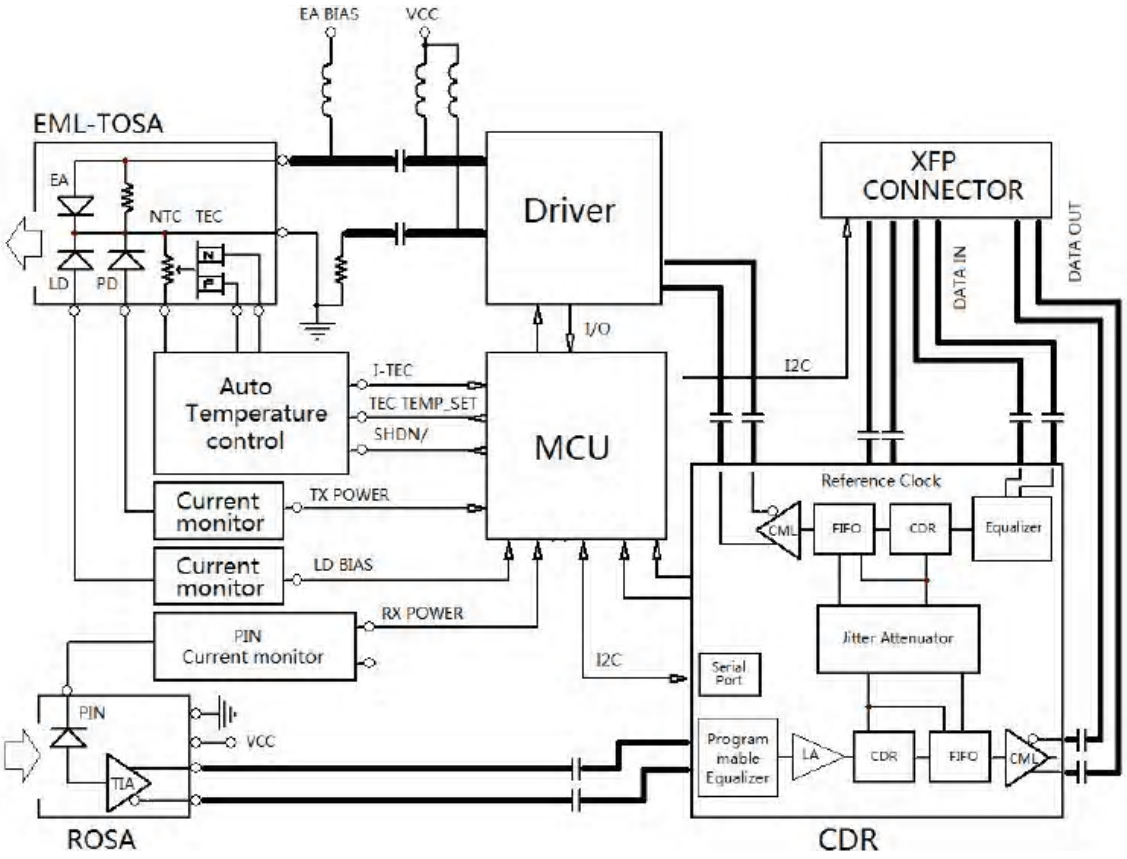
SONET OC-192&SDH STM 64 (with/without FEC)
10GBASE-ER/EW (with/without FEC)
40km 10G Fiber Channel
CWDM Networks

Description

The T-XFP-CWDM-40KM series single-mode transceiver exhibits excellent wavelength stability, supporting operation at 100GHz channel, cost effective module. It is designed for 10G CWDM SDH, 10GBASE-ER/EW and 10G Fiber-Channel applications.

The transceiver consists of two sections: The transmitter section incorporates a colded EML laser. And the receiver section consists of a PIN photodiode integrated with a TIA. All modules satisfy class I laser safety requirements. Sinton CWDM XFP transceiver provides an enhanced monitoring interface, 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.

Module Block Diagram



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	E347511
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
Supply Voltage 1	Vcc3	-0.5	4.0	V
Supply Voltage 2	Vcc5	-0.5	6.0	V
Supply Voltage 3	Vcc2	-0.5	2	V
Storage Temperature	Tst	-40	85	°C
Case Operating Temperature	Top	-5	70	°C

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			500	mA
Supply Voltage 3	Vcc2	1.71	1.8	1.89	V
Supply Current 3	Icc2			750	mA
Operating Case Temperature	Tca	-5		70	°C
Module Power Dissipation	Pm			3.5	W

Transmitter Specifications-Optical

Parameter	Symbol	Min.	Typical	Max.	Unit
Center Wavelength	λ_c	1464.5		1617.5	nm
Center Wavelength Stability	$\Delta\lambda_D$	-6.5	λ_c	6.5	nm
Optical Transmit Power	Po	0		+3	dBm
Optical Transmit Power(disable)	PTX_DIS			-30	dBm
Extinction Ratio	ER	8.2			dB
Jitter Generation (P-P)	JG P-P			0.1	UI
Jitter Generation(RMS)	JG RMS			0.01	UI
Spectral Width (-20dB)	$\Delta\lambda_{20}$			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				

Note：

1. Wavelength stability is achieved within 60 seconds (max) of power up.
2. BER=10^-12; PRBS 2^31-1@9.95Gbps.

Receiver Specifications-Optical

Parameter	Symbol	Min.	Typical	Max.	Unit
Input Operating Wavelength	λ_c	1260		1600	nm
Receiver Sensitivity (1)	Pavg			-16	dBm
Receiver Sensitivity in 10.3Gbps(OMA)	Rsen1			-14.3	dBm
Stressed Receiver Sensitivity in 10.3Gbps(OMA)	Rsen2			-11.3	dBm
Maximum Input Power	RX-overload			-1	dBm
Reflectance	Rrx			-27	dB
LOS Asserted	Lsa	-28			dBm
LOS De-Asserted	Lda			-22	dBm
LOS Hysteresis	Lh	0.5			dBz

Note：

1. BER=10^-12; PRBS 2^31-1@9.95Gbps~11.3Gbps.

Transmitter Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit
Input Differential Impendance	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			10	us

Receiver Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit
Output Differential Impendance	Rom		100		Ω
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	GND		GND+0.5	V

Note:

1. 20%-80%;

Pin Definition

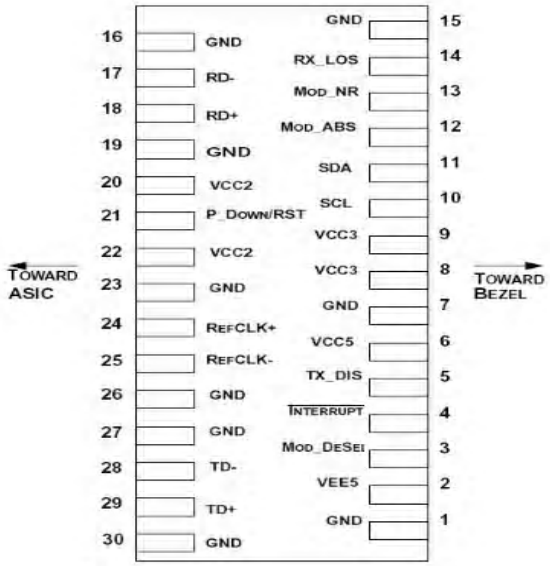
Parameter	Logic	Unit	Values	
1		GND	Module Ground	1
2		VEE 5	Optional-5.2 Power Supply-Not Required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to , respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-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	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs-	Module Absent; Indicates module is not present. Grounded in the module.	2

13	LVTTL-O	Mod_NR	Module Not Ready;	2
14	LVTTL-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	
20		VCC2	+1.8V Power Supply	
21	LVTTL-I	P Down/R ST	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	+1.8V Power Supply	
23		GND	Module Ground	
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – **Not required**	
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – **Not required**	
26		GND	Module Ground	
27		GND	Module Ground	
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	

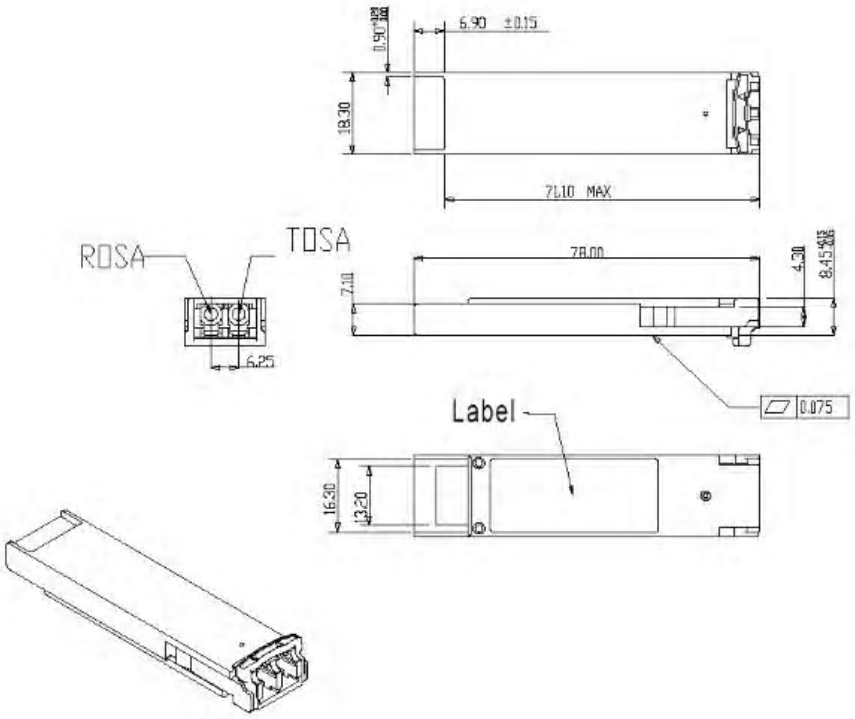
Notes:

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 3.15Vand 3.6V.
3. Reference Clock input is not required.

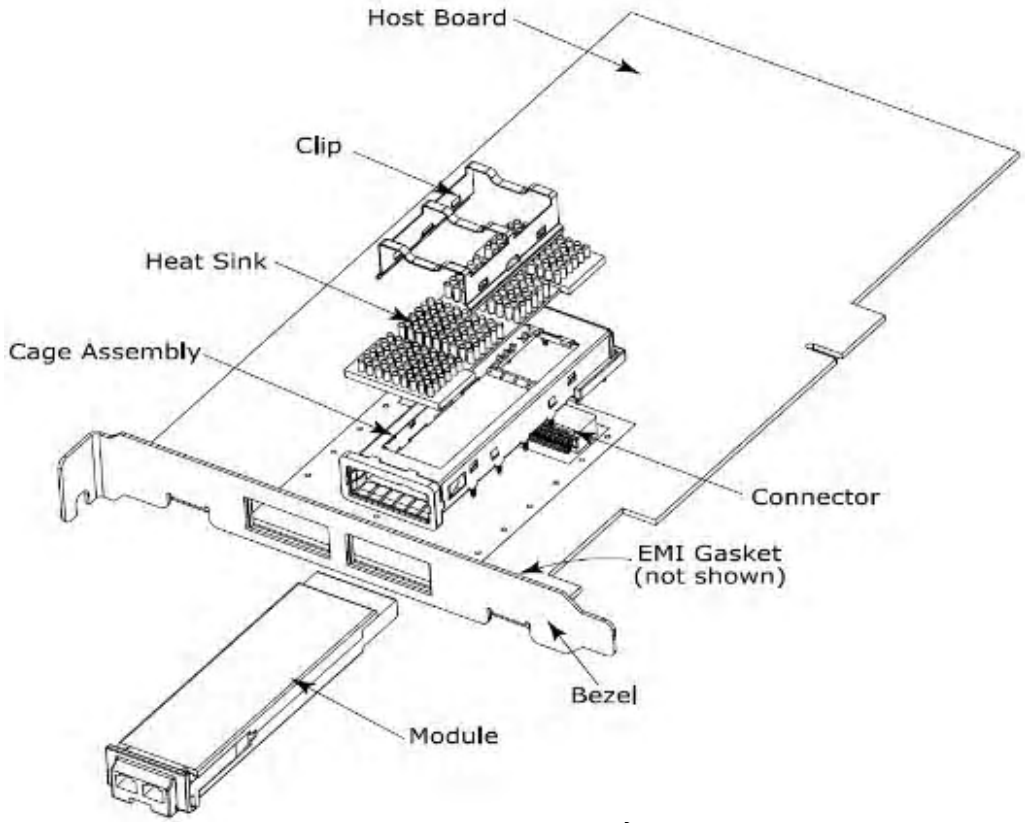
Electrical Pin-out Details



Mechanical Specifications



XFP Mechanical Components



The mechanical components defined：

1. The module, clip and connector dimensions are constant for all applications. While the bezel, cage assembly, EMI gasket and heat sink can be designed and/or adjusted for the individual application.
2. The relatively small form factor of the XFP module combined with an adaptable heatsink option allows host system design optimization of module location, heatsink shape/dimension/fins design, and airflow control. The module can be inserted and removed from the cage with the heat sink and clip attached.

Ordering information

Part Number	**Product Description**
T-XFP-CWDM-40KM	**9.95~10.3Gbps CWDM XFP 40km -5℃~+70℃ (1470~1610nm)**

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