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RAYCORE

Q3-S278 V1.1E

# Specification of XFP Dual LC 10G Transceiver

Part Number: ATRG-8gxx-xxxDD-xx

# M E L B Y E



For Multi Mode Fiber – 850nm



For Single Mode Fiber – 1310nm



For Single Mode Fiber – 1550nm

## Applications

- 10 Gigabit Ethernet
- 10 Gigabit Fiber Channel
- SONET OC192 / SDH STM64
- Other optical links, up to 11.1Gbps

## Features

- Supports 9.95Gb/s to 11.1Gb/s bit rates
- Hot-pluggable XFP footprint
- XFP MSA package with duplex LC connector
- No reference clock required
- +5V, +3.3V, 1.8V power supply
- Power consumption 850nm SR <1.5W, 1310nm LR <2.5W, 1550nm ER & ZR <3.5W
- Compatible with RoHS
- Built-in digital diagnostic functions
- Operating case temperature: Standard: -5 to 70°C, Industry: -40 to +85°C

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## Specifications

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage 1	V <sub>cc3</sub>	-0.5	4.0	V
Supply Voltage 2	V <sub>cc5</sub>	-0.5	6.0	V
Supply Voltage 3	V <sub>cc2</sub>	-0.5	3.0	V
Storage Temperature	T <sub>st</sub>	-40	85	°C
Case Operating Temperature	Standard	-5	70	°C
	Industry	-40	+85	
Optical Input Received Power (for 80km)	APD-IN	-	-8	dBm

### Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage 1	V <sub>cc3</sub>	3.13	3.3	3.47	V
Supply current 1	I <sub>cc3</sub>			750	mA
Supply Voltage 2	V <sub>cc5</sub>	4.75	5	5.25	V
Supply current 2	I <sub>cc5</sub>			500	mA
Supply Voltage 3	V <sub>cc2</sub>	1.71	1.8	1.89	V
Supply current 3	I <sub>cc2</sub>			750	mA
Operating Case Temperature	Standard	-5		70	°C
	Industry	-40		+85	



Pin Definitions

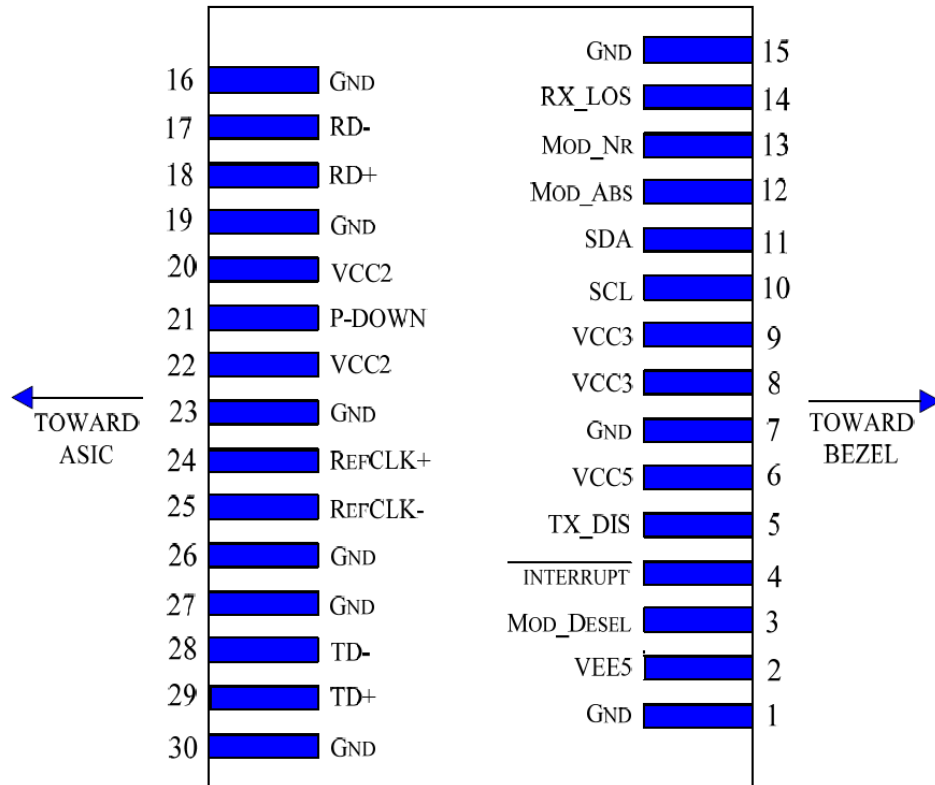
Pin	Logic	Symbol	Name/Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply- Not required	
3	LVTTTL-I	Mod-Desel	Module De-select; When held low allows the module to , respond to 2-wire serial	
4	LVTTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over	2
5	LVTTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source	
6		VCC5	+5 Power Supply	
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. Grounded 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
20		VCC2	+1.8V Power Supply	
21	LVTTTL-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; The falling edge initiates a complete reset of the module including the 2-wire	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	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. A Reference Clock input is not required.



# M E L B Y E



## General Specifications

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Bit Rate	BR	9.95		11.1	Gb/s	1
Bit Error Ratio	BER			$10^{-12}$		2
Max. Supported	$L_{MAX}$		80		km	1

Note:

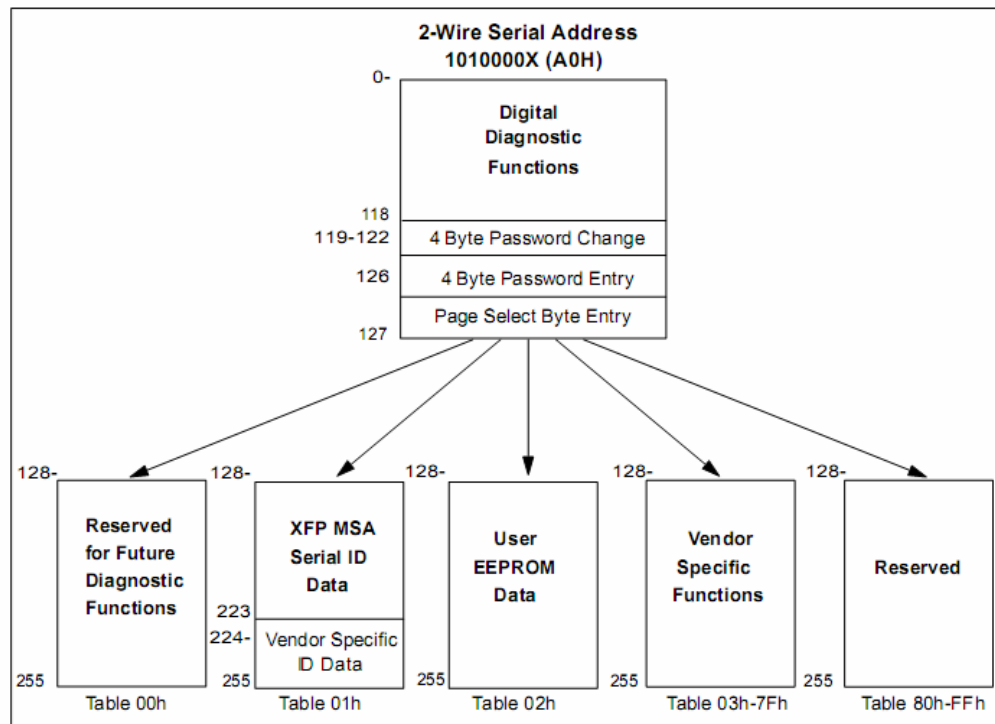
1. SONET OC-192 LR-1 • SDH STM L-64.2, 10GBASE-ZR/ZW, 1200-SM-LL-V
2. Tested with a 231 – 1 PRBS



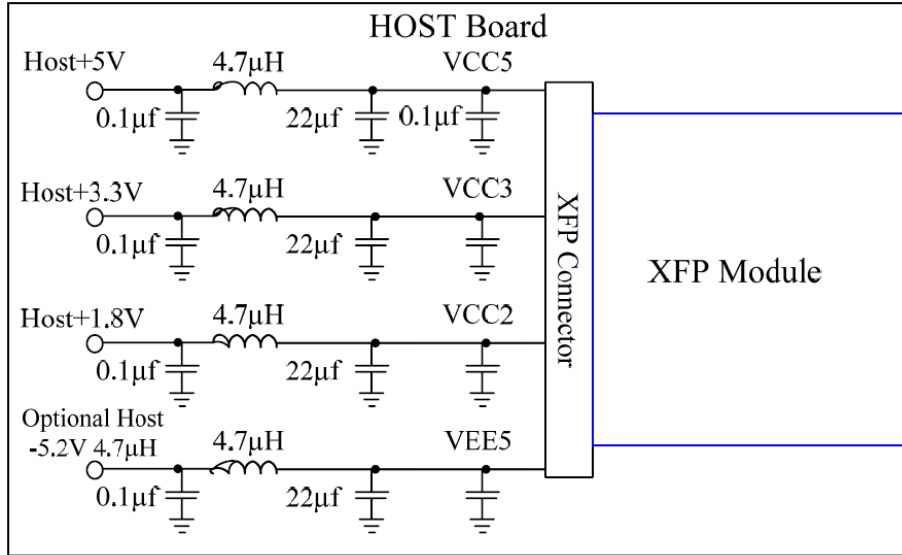
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## Management Interface

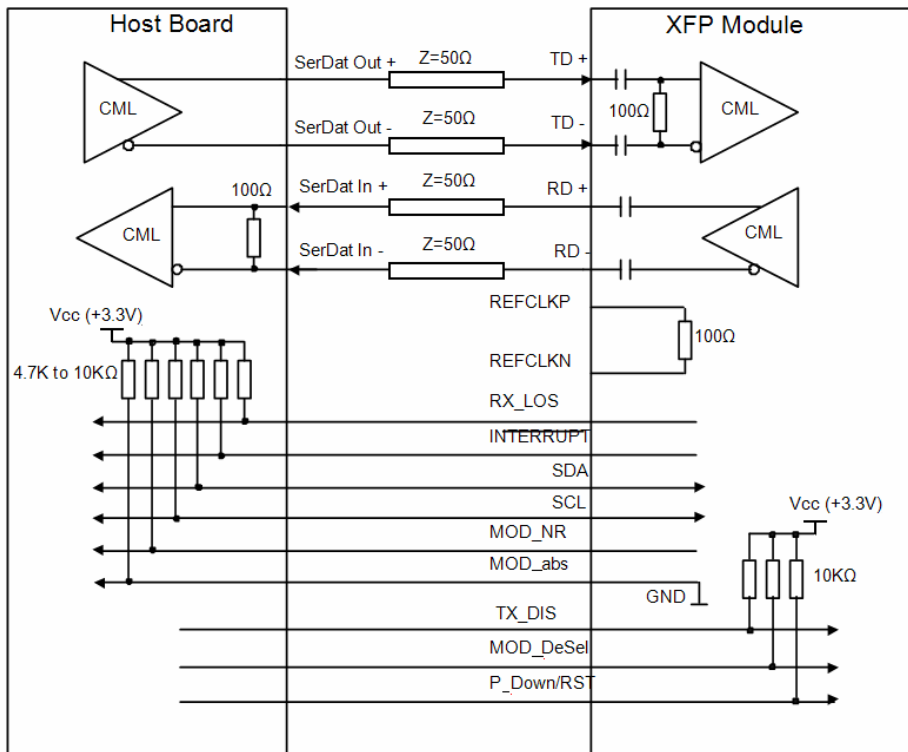
The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented. The digital diagnostic memory map specific data field defines as following.



Recommended Host Board Power Supply Circuit

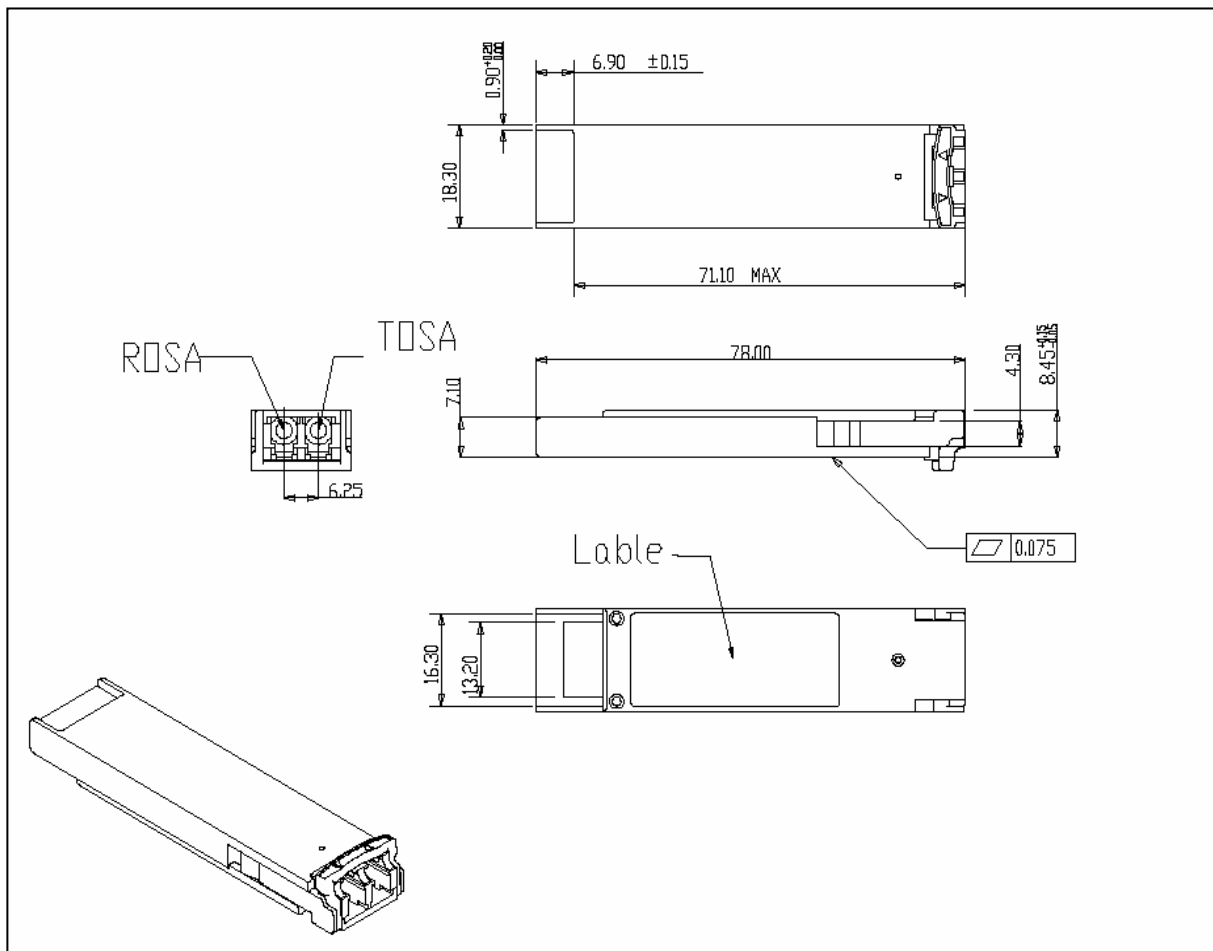


Recommended High-speed Interface Circuit



### Mechanical Dimensions

XFP transceivers are compliant with the dimensions defined by the XFP Multi-Sourcing Agreement (MSA).

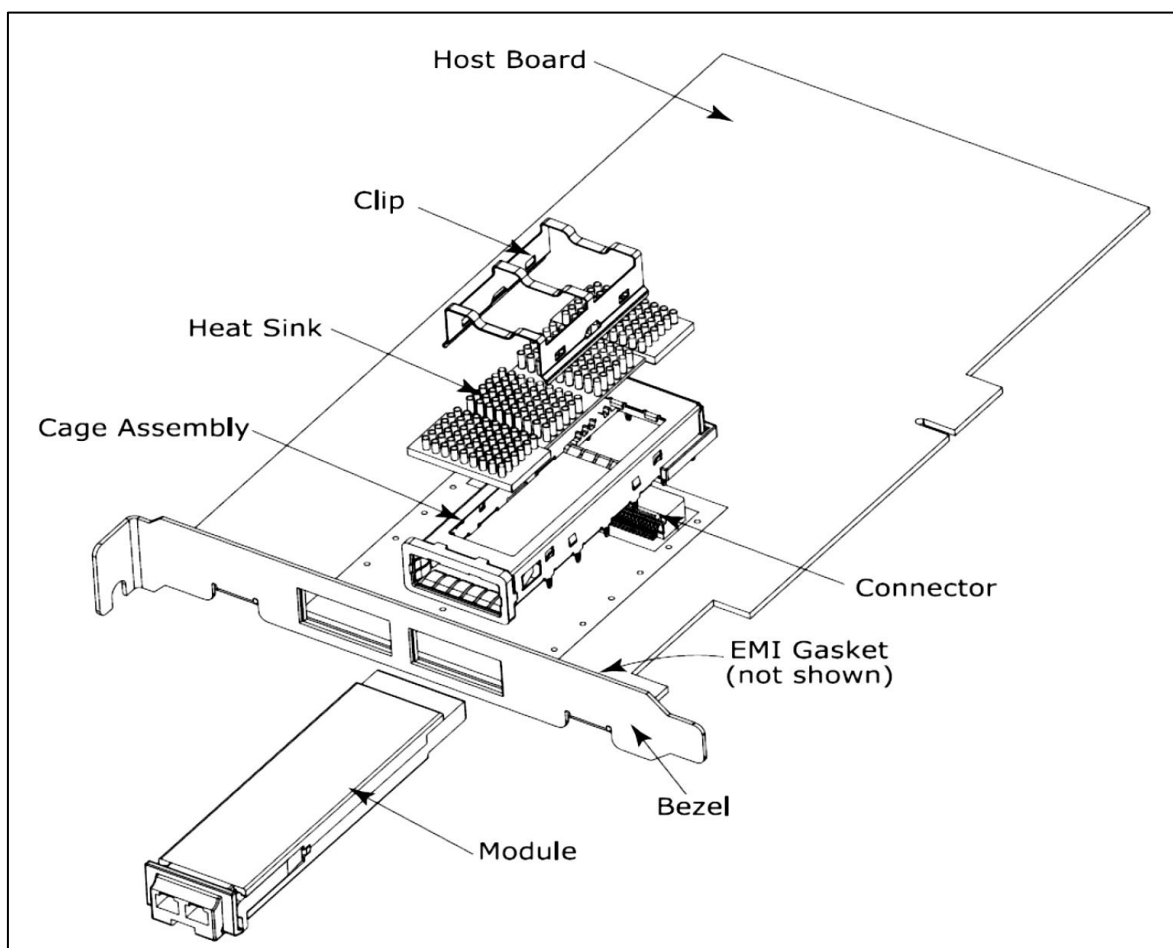




## XFP Mechanical Components

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 heat sink option allows host system design optimization of module location, heat sink 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

Form Factor	Date Rate	Media	Distance	Wavelength	TX Power (dBm)	RX Sensitivity (dBm)	DDM (Y/N)	Temperature (°C)	Part Number
XFP-Dual-LC	10G	MMF	300m *	850nm	-1 ~ -7.3	≤ -9.9	Y	-5 ~ +70	ATRG-8985-SBMDD-xx
XFP-Dual-LC	10G	MMF	300m *	850nm	-1 ~ -7.3	≤ -9.9	Y	-40 ~ +85	ATRG-8985-SMMDD-xx
XFP-Dual-LC	10G	SMF	10km	1310nm-DFB	+0.5 ~ -6.5	≤ -14.5	Y	-5 ~ +70	ATRG-8913-LBSDD-xx
XFP-Dual-LC	10G	SMF	10km	1310nm-DFB	+0.5 ~ -6.5	≤ -14.5	Y	-40 ~ +85	ATRG-8913-LMSDD-xx
XFP-Dual-LC	10G	SMF	40km	1550nm-EML	+2 ~ -1	≤ -15.0	Y	-5 ~ +70	ATRG-8915-DBSDD-xx
XFP-Dual-LC	10G	SMF	40km	1550nm-EML	+2 ~ -1	≤ -15.0	Y	-40 ~ +85	ATRG-8915-DMSDD-xx
XFP-Dual-LC	10G	SMF	80km	1550nm-EML	+4 ~ 0	≤ -23	Y	-5 ~ +70	ATRG-8915-ZBSDD-xx
XFP-Dual-LC	10G	SMF	80km	1550nm-EML	+4 ~ 0	≤ -23	Y	-40 ~ +85	ATRG-8915-ZMSDD-xx

\* Multi Mode Fiber Transmission Distance:

- OM3 fiber: 300m
- OM2 fiber: 82m
- OM1 fiber: 33m

