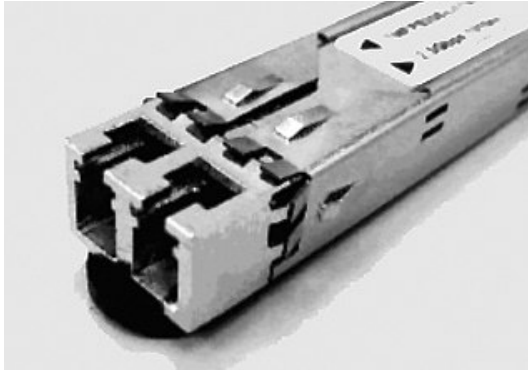


Fiber Optic SFP FP 1310nm 1.25G Lightwave Transceiver

Data Sheet

OFP2332



The OFP2332 transceiver module operates at a wavelength of 1310 nm and at 1.25 Gb/s for Gigabit Ethernet 1000BASE-LX and 1x Fiber Channel applications.

Features

- Hot-pluggable
- Single +3.3 V supply
- Duplex LC connector interface
- Fabry-Perot 1310 type LD
- Low power dissipation
- IEEE 802.3z Gigabit Ethernet 1000BASE-Lx compliant
- Fiber Channel compliant
- Power Output: -9 to -3 dBm
- 10 km link distance
- Compliant with ATM/SONET OC-3/SDH STM-1
- Multi-Source Agreement (MSA) for Small Form Factor Pluggable (SFP) Compliant
- ESD Class 2 per MIL-STD 883D Method 3015.7
- FCC (Class B) and EN 55022 compliant
- EEPROM with Serial ID Functionality

Applications

- Telecommunications and Data Communications system networks
- Gigabit Ethernet
- Point-to-Point networking
- Metro Access Rings
- 1x Fiber Channel
- LAN, SAN, WAN

Description

The OFP2332 transceiver provides signal conversion and processing for serial optical data communication applications. It operates over single mode fiber by converting 1310 nm wavelength lightwave information into an electrical signal and vice versa at a data rate of 1.25 Gb/s.

Housed in a compact metal package, the transceiver module consists of a transmitter and receiver optical subassembly coupled with a duplex LC receptacle. The module is hot-pluggable and is designed for distances of up to 10 km with 9/125 μm single mode fibers compliant with IEC 60793-2 Type B1.1.

This dual-fiber connector transceiver is designed at 1.25Gb/s for use in Gigabit Ethernet 1000BASE-LX and 1x Fiber Channel applications.

Serial Identification (EEPROM)

An SFP having module definition 4 provides access to sophisticated identification information that describes the SFP transceiver’s capabilities, standard interface, manufacturer and other information. An EEPROM containing the detailed product information for the host equipment is accessed by the 2-wire serial CMOS EEPROM protocol. See SFP MSA for detailed description.

Safety

Laser Compliance Statement

The OFP2332 is classified as a Class I Laser Product. It complies with IEC 60825-1 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated under recommended operating conditions; otherwise classification for laser product safety is invalid. Because the transceiver is designed to be inherently eye safe, it does not require open fiber control thus eliminating complex electronics or mechanics.

Caution - use of device other than those specified herein may result in hazardous laser radiation exposure or other damage. Please embrace all customary precautions and discretion while handling this device.

Performance Specifications

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause damage to the optical device. Operations of the optical device are suggested to remain within the recommended operating conditions. Exposure to the absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Minimum	Maximum	Unit
Storage Temperature	T _S	-40	+85	°C
Supply Voltage	V _{CC}	0	4.0	V
Relative Humidity	RH	5	85	%

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T _{OP}	0		70	°C
Supply Voltage	V _{CC}	3.1	3.3	3.5	V
Supply Current	I _{TX} + I _{RX}		200	300	mA

Transmitter Electro-Optical Interface (T_C = 0~70°C; V_{CC,T,R} = 3.1V < V_{CC} < 3.5V)

Parameter	Symbol	Minimum	Maximum	Unit
Transmitter Differential Input Voltage	TD +/-	400	2000	mVp-p
Optical Output Power ¹	P _O	-9	-3	dBm
Optical Extinction Ratio ¹	E _R	9		dB
Center Wavelength ¹	λ _C	1280	1355	nm
Spectral Width ¹	Δλ		< 2.5	nm
Optical Rise/ Fall Time ²	t _r / t _f		0.25	nsec
Tx_Fault - HIGH	V _{Fault_H}	2	V _{CC}	V

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Tx_Fault - LOW	V_{Fault_L}	V_{ee}	$V_{ee} + 0.5$	V
Tx_Disable - High	$V_{Disable_H}$	2	V_{CC}	V
Tx_Disable - LOW	$V_{Disable_L}$	V_{ee}	$V_{ee} + 0.8$	V

Note:

1. Measured at 1250 Mbps, PRBS 2²³-1, NRZ.
2. 20%-80%

Receiver Electro-Optical Specifications ($T_C = 0\sim 70^\circ C$; $V_{CC T,R} = 3.1V < V_{CC} < 3.5V$)

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Receiver Differential Output Voltage	RD +/-	600	800		mV _{p-p}
Receiver Overload ^{1,2}	P_{INMAX}	-3			dBm
Receiver Sensitivity ^{1,2}	P_{INMAX}		-24	-18	dBm
Operating Center Wavelength	λ_C	1270		1620	nm
Receiver LOS Assert Level ²	$P_{RX_LOS A}$	-35			dBm
Receiver LOS Deassert Level ²	$P_{RX_LOS D}$			-18.5	dBm
Receiver Loss of Signal Hysteresis ²		0.5	2		dB

Note:

1. With BER better than or equal to 1×10^{-12} .
2. Measured in center of eye opening with 2⁷-1 PRBS, NRZ.

Pin Assignment

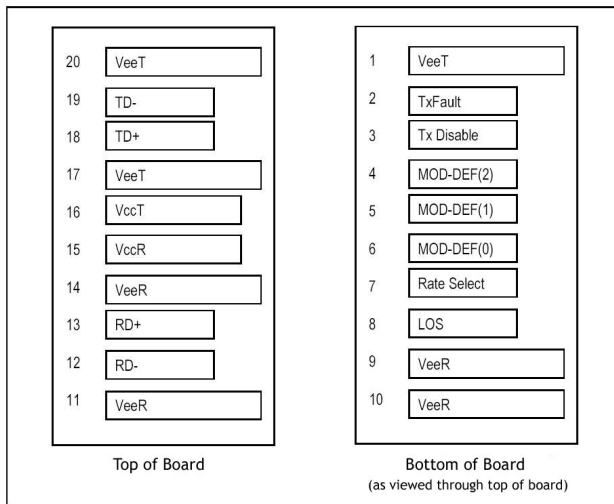


Figure 1. SFP Transceiver Electric Pad Layout

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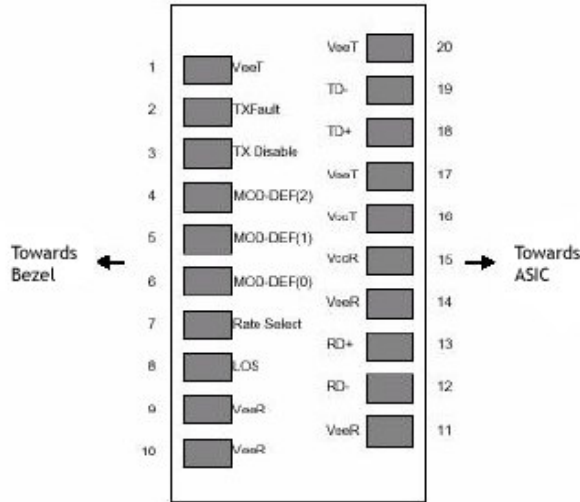


Figure 2. Diagram of Host Board Connector Block Pin

Pin Description and Plug-in Sequence¹ (1-Grd, 2-Power, 3-Signal)

Pin No.	Name	Description	Plug-in Sequence	Notes
1	VeeT	Transmitter Ground	1	Circuit ground is internally isolated from chassis ground.
2	TX Fault	Transmitter Fault Indication	3	Open-Collector outputs, asserted when LD and/or APC function fail.
3	TX Disable	Transmitter Disable	3	Disable when high voltage (>2.0V or Open).
4	MOD-DEF 2	Module Definition 2	3	Should be pulled up with 4.7k - 10 kΩ on host board to voltage between 2.0V and 5.5V. MOD-DEF (0) pulls line low to indicate module is plugged in.
5	MOD-DEF 1	Module Definition 1	3	See notes for Pin 4.
6	MOD-DEF 0	Module Definition 0	3	See notes for Pin 4.
7	Rate Select	Bandwidth Selection	3	No connection required.
8	LOS	Loss of Signal	3	LOS is Open-Collector output. Should be pulled up with 4.7k - 10kΩ on host board to a voltage between 2.0V and 5.5V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
9	VeeR	Receiver Ground	1	See notes for Pin 1.
10	VeeR	Receiver Ground	1	See notes for Pin 1.
11	VeeR	Receiver Ground	1	See notes for Pin 1.
12	RD-	Inv. Received Data Out	3	
13	RD+	Received Data Out	3	
14	VeeR	Receiver Ground	1	See notes for Pin 1.
15	VccR	Receiver Power	2	
16	VccT	Transmitter Power	2	

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17	VeeT	Transmitter Ground	1	See notes for Pin 1.
18	TD+	Transmit Data In	3	
19	TD-	Inv. Transmit Data In	3	
20	VeeT	Transmitter Ground	1	See notes for Pin 1.

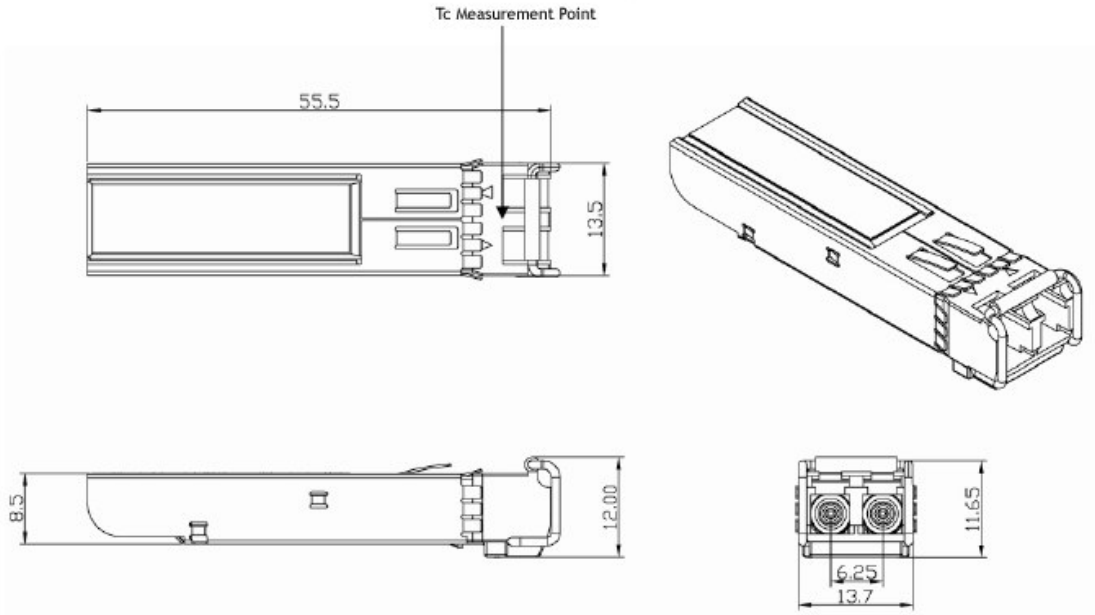
Note:

1. Pin engagement sequence during hot plugging.

Physical Characteristics

Outline Diagram

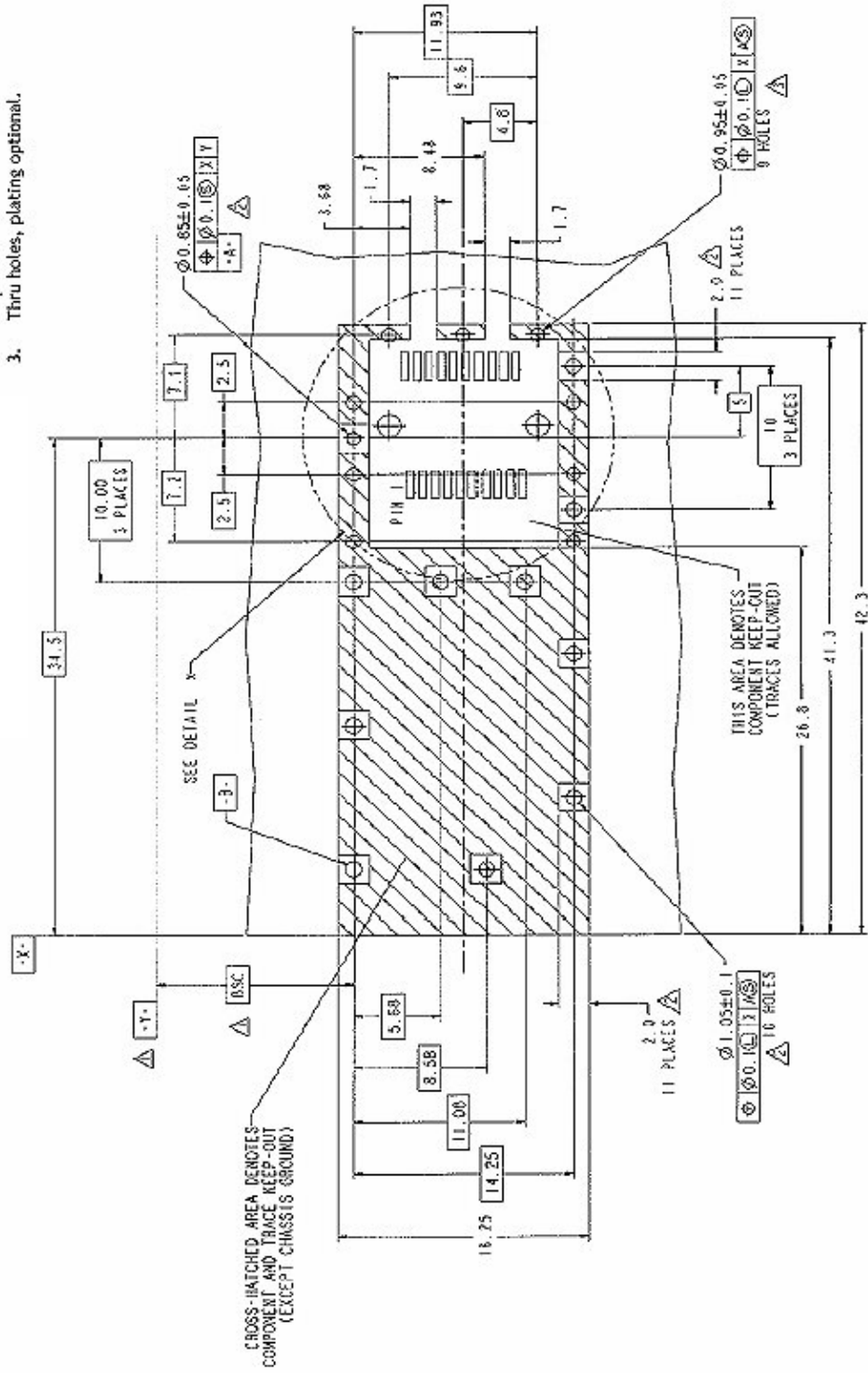
Dimensions for the device package are given in millimeters.



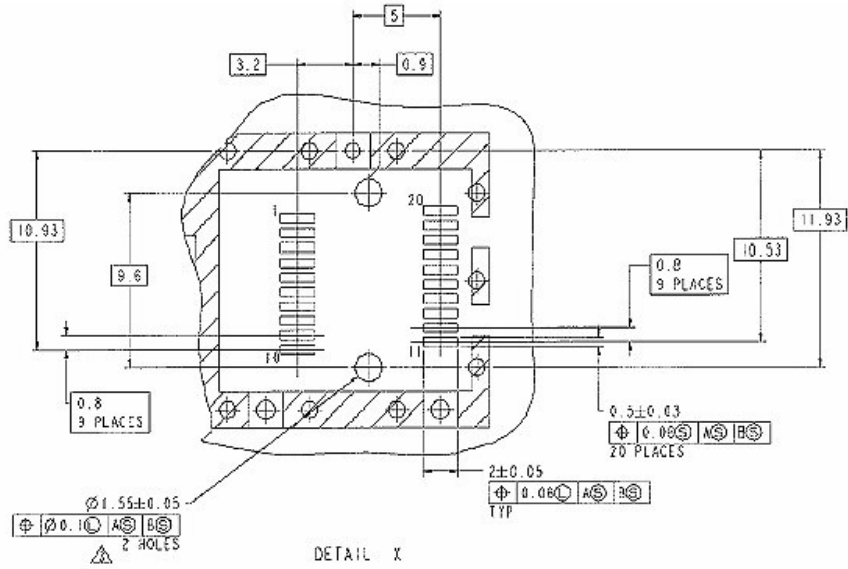
References (from SFP MSA)

SFP Host PCB Layout

- Notes:
1. Datum and basic dimensions established by customer.
 2. Pads and vias are chassis ground, 11 places.
 3. Thru holes, plating optional.



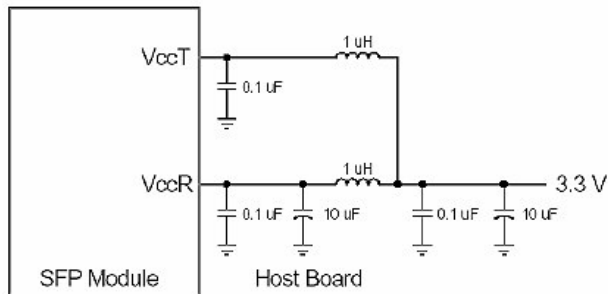
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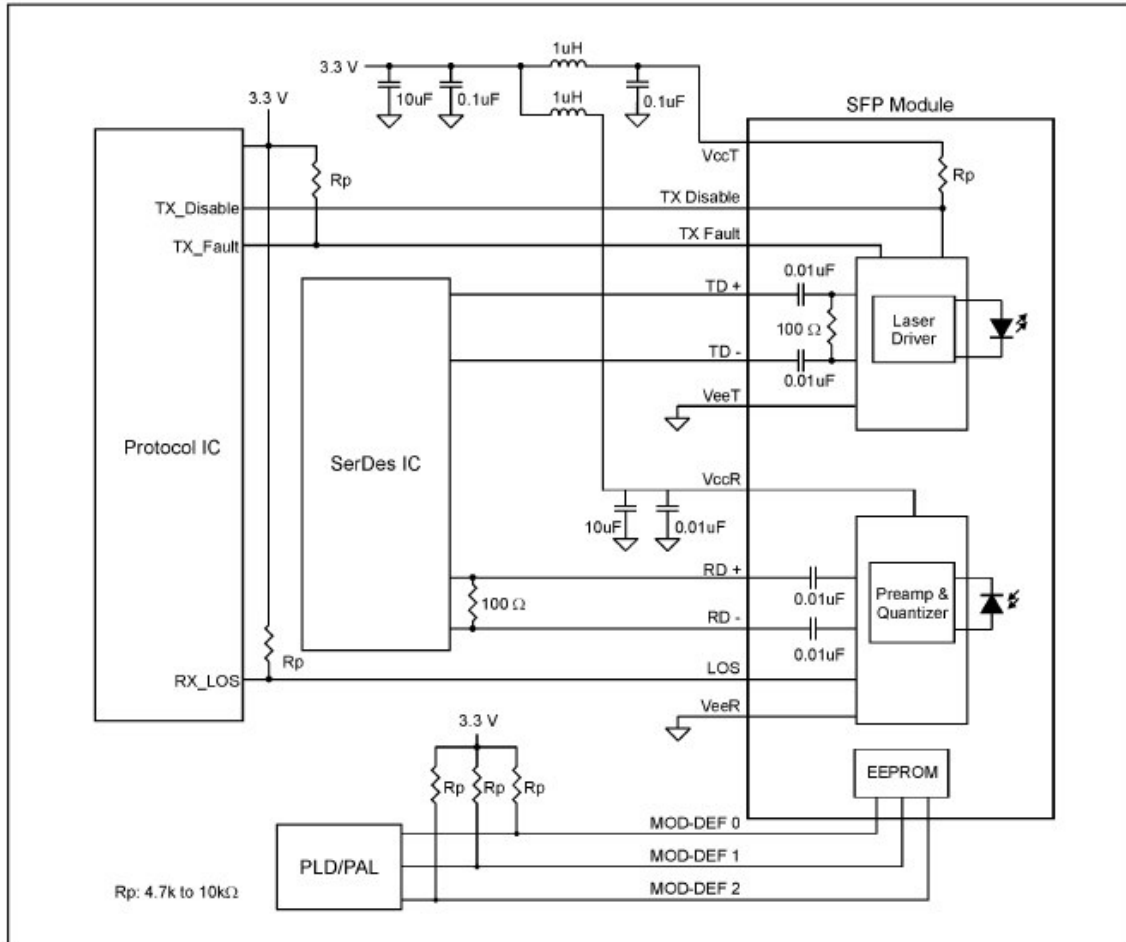
- NOTES:
- 1. MINIMUM PITCH ILLUSTRATED, ENGLISH DIMENSIONS ARE FOR REFERENCE ONLY
 - 2. NOT RECOMMENDED FOR PCI EXPANSION CARD APPLICATIONS

Application Circuit

Recommended Host Board Supply Filtering Network



Recommended Interface Diagram



Additional Information

Contact

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