

Fiber Optic 1x9 Transceiver For 1310 FP 1.25 Gb/s with SC Connector

Data Sheet

OFN2332



Features

- 1310 nm Fabry-Perot (FP) laser diode with fiber stub in optical receptacle
- Data Rate: 1.25 Gbps, NRZ
- Single +3.3V to +5.0V power supply
- Metal packaging
- Internally terminated and AC coupled data IO
- Duplex SC Connector, singlemode fiber
- Industry Standard 1x9 Output Footprint
- TTL compatible Signal Detect (SD)
- ESD Class 2 per MIL-STD 883D Method 3015.7
- FCC (Class B) and EN 55022 compliant
- IEC 60793-2 Type B1.1 compliant fibers for a link distance up to 10 km

Applications

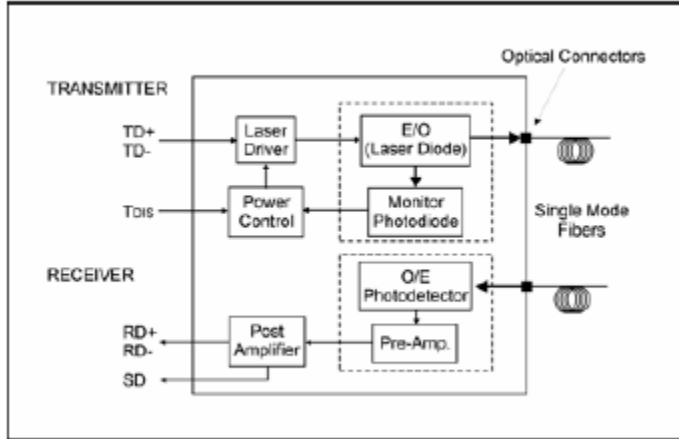
- Gigabit Ethernet (1000Base-LX)
- Fiber Channel (100-SM-LC-L)
- LAN, SAN, WAN
- Workstations, Servers, Storage Devices
- Bridges, Routers, Hubs, and Local/Wide Area Switches

Description

The OFN2332 is a high performance industry standard 1x9 transceiver module based on the Physical-Medium Dependent (PMD) sublayer and baseband medium, type 1000Base-LX (long wavelength). It operates with a single +3.3V to +5.0V power supply at a data rate of 1.25 Gb/s over 9/125 μm singlemode fiber compliant with IEC 60793-2 Type B1.1 for a link distance of 10 km.

Housed in a compact metal package, the transceiver module consists of a transmitter and receiver optical subassembly coupled with duplex SC receptacle. The transceiver module operates at a nominal wavelength of 1310 nm for intermediate reach applications. The differential data inputs and outputs are internally terminated and AC coupled.

Functional Diagram



The OFN2332 transceiver is designed to transmit serial data via singlemode cable. The receiver component converts the optical serial data into PECL compatible electrical data (RD+ and RD-). The Signal Detect (SD, active high) shows whether an optical signal is present.

The transmitter converts PECL compatible electrical serial data (TD+ and TD-) into optical serial data. Data lines are differentially 100Ω terminated.

The transmitter contains a laser driver circuit that drives the modulation and bias current of the laser diode. The currents are controlled by a power control circuit to guarantee constant output power of the laser over temperature and aging. The power control uses the output of the monitor PIN diode (mechanically built into the laser coupling unit) as a controlling signal, to prevent the laser power from exceeding the operating limits.

Safety

Laser Compliance Statement

The OFN2332 is classified as a Class I Laser Product and complies with IEC 60825-1 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated under recommended operating conditions. 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	Typical	Maximum	Unit
Storage Temperature	T _s	-40		85	°C
Lead Soldering Conditions, Temperature/Time (MIL-STD 883C, Method 2003)				250/5.5	°C/sec
Power Supply Voltage	V _{cc}	-0.5		6.0	V
Operating Temperature	T _A	0		70	°C
Differential Data Input Voltage				V _{cc} +0.5	V

Transmitter Electro-Optical Characteristics (T_A=25 °C)

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Voltage	V _{CC} T	3.15	3.30	5.5	V
Launched Power (Ave.) ¹	P _O	-10		-3	dBm
Center Wavelength	λ _C	1270	1310	1355	nm
Spectral Width (RMS)	Δλ			3.5	nm
Relative Intensity Noise	RIN			-120	dB/Hz
Extinction Ratio (Dynamic)	ER	9			dB
Optical Rise Time, 20% - 80%	t _R			260	ps
Optical Fall Time, 20% - 80%	t _F			260	ps
Total Contributed Jitter	TJ			225	ps
Input Differential Voltage Swing	V _{IN}	0.3		1.6	V
Supply Current	I _{TX}			160	mA

Note:

1. Into a singlemode fiber, 9-μm core diameter.

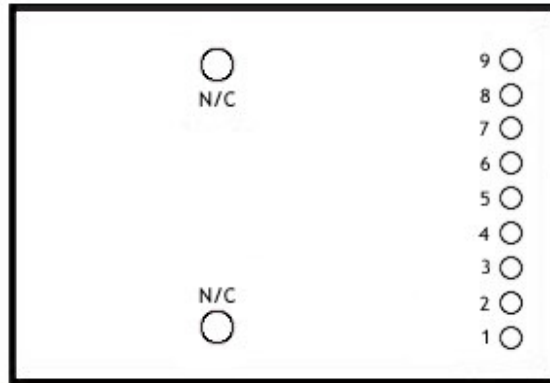
Receiver Electro-Optical Characteristics (T_A=25 °C)

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Voltage	V _{CC} R	3.15		5.5	V
Sensitivity (Ave. Power) ¹	P _{SEN}		-21	-19	dBm
Saturation (Ave. Power)	P _{SAT}	-3			dBm
Stressed Receive Sensitivity ²	P _{STR}			-14.4	dBm
Operating Center Wavelength	λ _R	1100		1600	nm
Signal Detect Assert Level ³	P _{SDA}			-19	dBm
Signal Detect Deassert Level ⁴	P _{SDD}	-30			dBm
Signal Detect Hysteresis	P _{SDA} - P _{SDD}	1		5	dB
Signal Detect Assert Time	t _{SDA}			100	μs
Signal Detect Deassert Time	t _{SDD}			350	μs
Signal Detect Output Voltage - LOW (TTL)	V _{SD_L}	0		0.6	V
Signal Detect Output Voltage - HIGH (TTL)	V _{SD_H}	2.3		V _{CC}	V
Differential Data Output Voltage Swing	V _{OUT}	0.4		1.6	V
Output Data Rise/Fall Time, 20% - 80%	t _r , t _f			400	ps
Return Loss of Receiver	RL	12			dB
Supply Current ⁵	I _{RX}			120	mA

Notes:

1. Average optical power at which the BER=1 x 10⁻¹². Measured with a 2⁷-1 NRZ PRBS and ER=9 dB.
2. Measurement is made through a 9/125 μm singlemode fiber.
3. Optical power above which the SIGNAL DETECT toggles from Low to High state.
4. Optical power below which the SIGNAL DETECT toggles from High to Low state.
5. Supply current including RX outputs into a 50Ω load.

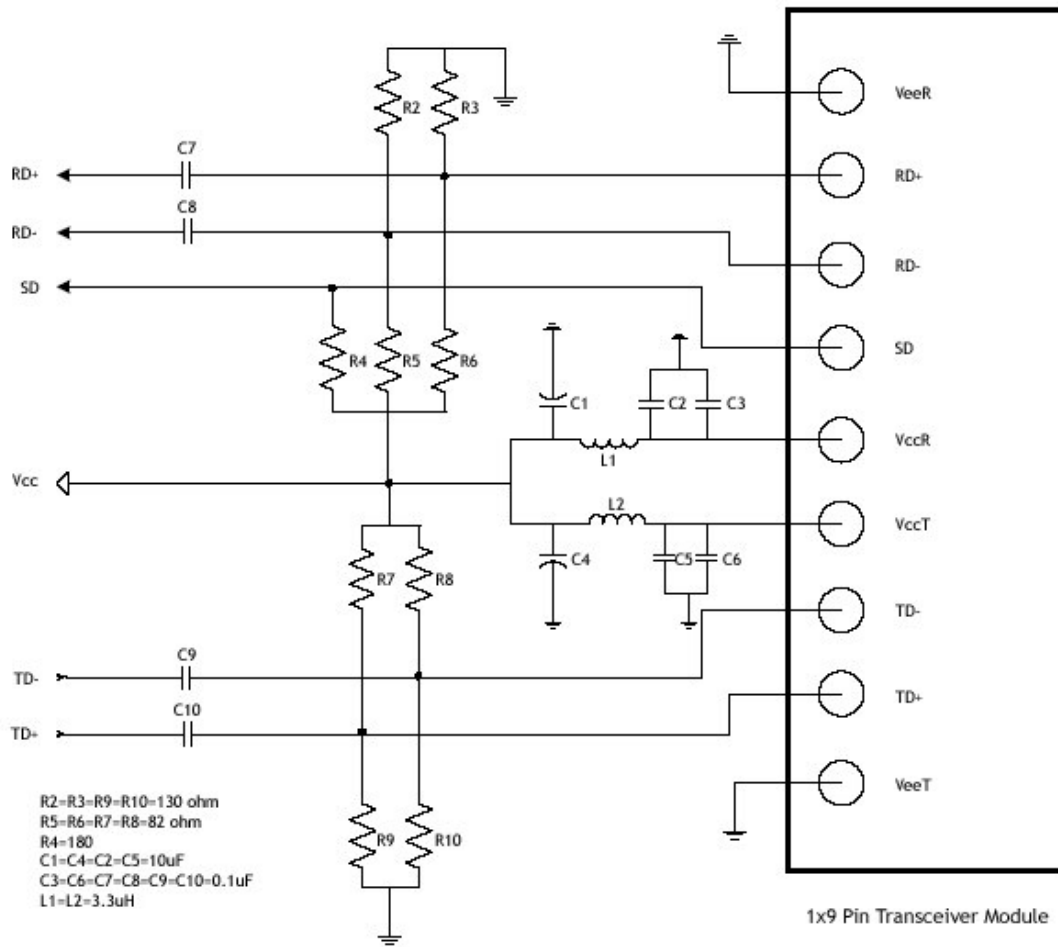
Pin Diagram



Pin Assignment

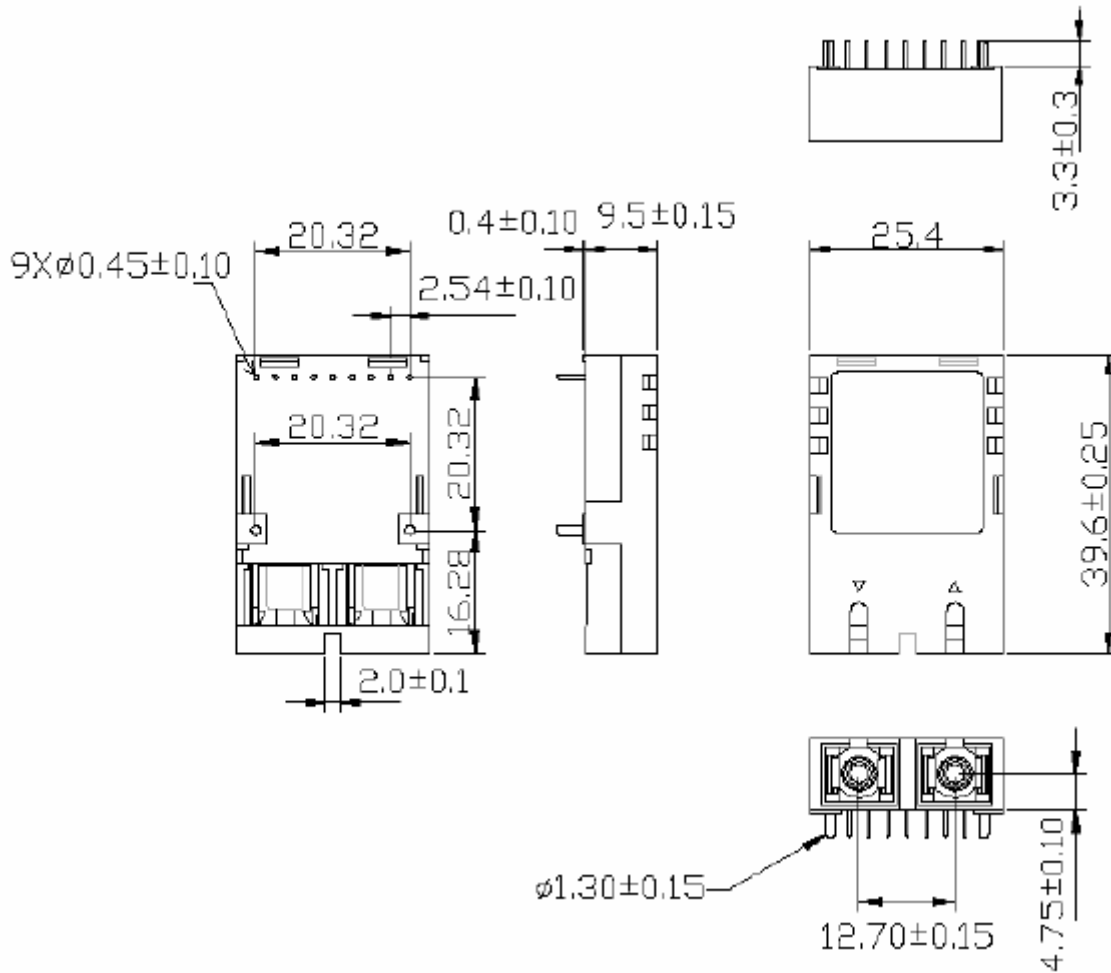
Pin No.	Symbol	Function
1	VeeR	Receiver Ground
2	RD+	Receiver Data Out
3	RD-	Receiver Data Out Bar
4	SD	Receiver Signal Detect Output
5	VccR	Receiver Power Supply
6	VccT	Transmitter Power Supply
7	TD-	Transmitter Data In Bar
8	TD+	Transmitter Data In
9	VeeT	Transmitter Ground

Recommended Interface Diagram



Package Outline Diagram

Dimensions for the device package are given in millimeters.



Additional Information

Contact

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