

1.25 Gb/s, SFP Package 850 nm Multimode 500 m Distance



Small Form Pluggable (SFP) Transceivers

Description

OptixCom's SFP transceiver offers advanced optical interconnect solution for general data communication links. This multimode fiber optics transceiver is designed with high performance 850 nm VCSEL light source. Dual LC connectors are used as standard interface and the package is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). This product can be used at 1.0625 Gb/s for Fiber Channel or 1.25 Gb/s for Gigabit Ethernet applications. The transceiver reaches more than 500 meters of transmission distance with high-grade multimode fibers and >8.5 dB of power budget. The products are RoHS compliant.

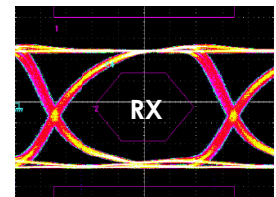
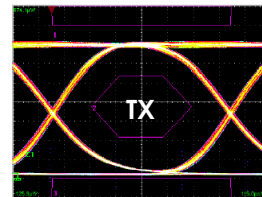


Lead-Free

SFP-1250SX-AT500M



1.25 Gb/s, 2⁷-1 NRZ Data Eye Pattern



Key Features

- 850 nm multimode, 1.0625/1.25 Gb/s data rates
- > 8.5 dB power budget, 500 m reach
- Duplex LC connector optical interface
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- AC coupling LVPECL differential I/O logics
- Single 3.3 V power supply
- TTL or PECL signal detect to monitor optical signals
- -40–85 °C operating temperatures available
- RoHS compliant

Applications

- ✓ Fiber Channel, Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Industrial Control Link
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

Ordering Information

Part Number: SFP-1250SX-AT500M

Description:

850 nm 1.0625/1.25 Gb/s, multimode, SFP fiber optics transceiver, 500 m reach, 0-70°C

* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-1250SX-AT500M-T.

Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-20	25	85	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	300	mA

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	T_{st}	-40	85	°C
Supply Voltage	V_{CC}	-0.5	6.0	V
Input Voltage	V_{IN}	-0.5	V_{CC}	V
Operating Current	I_{op}	---	400	mA
Output Current	I_o	---	50	mA
Soldering Temperature (10 sec. on leads)	T_{sd}	---	260	°C

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage ¹	ΔV_i	0.4	---	1.8	V
Differential Input Impedance ²	Z	---	100	---	ohm
Optical Output Power ³	P_o	-9.5	---	-4	dBm
Optical Wavelength	λ_o	830	850	860	nm
Extinction Ratio	ET	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	0.85	nm
Relative Intensity Noise	RIN	---	---	-117	dB/Hz
Rise/Fall Time (20% - 80%)	T_r/T_f	---	---	260	ps
TX Disable Voltage – High	V_{DH}	2.0	---	V_{CC}	V
TX Disable Voltage - Low	V_{DL}	0	---	0.8	V
TX Fault Output - High	V_{FH}	2.0	---	V_{CC}	V
TX Fault Output - Low	V_{FL}	0	---	0.8	V
TX Disable Assert Time	T_{ass}	---	---	10	μs
TX Disable Deassert Time	T_{disass}	---	---	1.0	ms
Time to Initialize	T_{as}	---	---	300	ms
TX Fault from Fault to Assertion	T_{fault}	---	---	100	μs
TX Disable Time to Start Reset	T_{reset}	10	---	---	μs
Total Jitter	T_j	---	---	227	ps

Notes:

1. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.
3. Output of coupling optical power into 50/125 μm or 62.5/125 μm MMF.
4. Optical eye diagram is compliant with IEEE 802.3z standard.

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11



Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	λ_c	770	---	860	nm
Receiver Overload	P_{max}	0	---	---	dBm
Receiver Sensitivity ¹	P_I	---	---	-18	dBm
Differential Output Voltage ²	ΔV_o	0.4	---	1.8	V
Differential Input Impedance	Z	---	100	---	Ohm
Optical Return Loss	OL	12	---	---	dB
Rise/Fall Time (20% - 80%)	T_r/T_f	---	---	350	ps
RX Signal Loss – Asserted	P_{RL+}	---	---	-18	dBm
RX Signal Loss – Deasserted	P_{RL-}	-30	---	---	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
Stressed Receiver Sensitivity	P_{Is}	---	---	-13	dBm
RX Signal Loss Assert Time	T_{RL+}	---	---	100	μ s
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	μ s
RX Signal Loss Output - High	V_{RL+}	2.0	---	V_{cc}	V
RX Signal Loss Output - Low	V_{RL-}	0	---	0.8	V

Notes:

1. Test at 1.25 Gb/s, 2⁷ – 1 PRBS data pattern, and > 1x10⁻¹² of Bit-Error-Rate (BER)
2. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.

Typical Transmission Distance for Multimode Fibers @ 850 nm

Data Rate	Fiber Type	Distance (m)	Data Rate	Fiber Type	Distance (m)
1.0625 Gb/s	50 μ m, 2000 MHz*km	860	2.125 Gb/s	50 μ m, 2000 MHz*km	500
	50 μ m, 500 MHz*km	500		50 μ m, 500 MHz*km	300
	50 μ m, 400 MHz*km	450		50 μ m, 400 MHz*km	260
	62.5 μ m, 200 MHz*km	300		62.5 μ m, 200 MHz*km	150
	62.5 μ m, 160 MHz*km	250		62.5 μ m, 160 MHz*km	120
1.25 Gb/s	50 μ m, 500 MHz*km	550	10 Gb/s	50 μ m, 2000 MHz*km	300
	50 μ m, 400 MHz*km	500		50 μ m, 500 MHz*km	150
	62.5 μ m, 200 MHz*km	275		62.5 μ m, 200 MHz*km	75
	62.5 μ m, 160 MHz*km	220		62.5 μ m, 160 MHz*km	---

Class 1 Laser Product
Complies with
21 CFR 1040.10 and 1040.11

