

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

## 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.

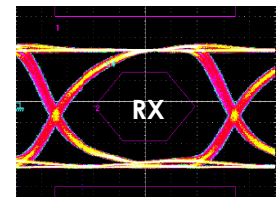
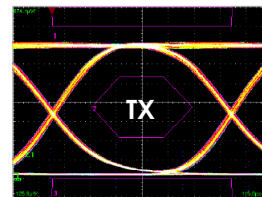


Lead-Free

## SFP-1250SX-AT500M



1.25 Gb/s, 2<sup>7</sup>-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 <sup>1</sup>	$\Delta V_i$	0.4	---	1.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power <sup>3</sup>	$P_o$	-9.5	---	-4	dBm
Optical Wavelength	$\lambda_o$	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	$\lambda_c$	770	---	860	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	---	-18	dBm
Differential Output Voltage <sup>2</sup>	$\Delta V_o$	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	$\mu$ s
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu$ 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, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> 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 $\mu$ m, 2000 MHz*km	860	2.125 Gb/s	50 $\mu$ m, 2000 MHz*km	500
	50 $\mu$ m, 500 MHz*km	500		50 $\mu$ m, 500 MHz*km	300
	50 $\mu$ m, 400 MHz*km	450		50 $\mu$ m, 400 MHz*km	260
	62.5 $\mu$ m, 200 MHz*km	300		62.5 $\mu$ m, 200 MHz*km	150
	62.5 $\mu$ m, 160 MHz*km	250		62.5 $\mu$ m, 160 MHz*km	120
1.25 Gb/s	50 $\mu$ m, 500 MHz*km	550	10 Gb/s	50 $\mu$ m, 2000 MHz*km	300
	50 $\mu$ m, 400 MHz*km	500		50 $\mu$ m, 500 MHz*km	150
	62.5 $\mu$ m, 200 MHz*km	275		62.5 $\mu$ m, 200 MHz*km	75
	62.5 $\mu$ m, 160 MHz*km	220		62.5 $\mu$ m, 160 MHz*km	---

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