

# 1.25 Gb/s, 850 nm Multimode, 500 m 2x5 Dual LC Package

## Description

OptixCom's 2x5 SFF transceiver provides a low cost and compact 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 the standard interface.

The transceiver modules use industry standard 2x5 pluggable package. 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

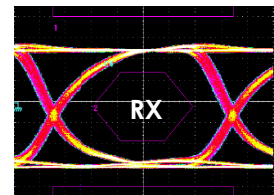
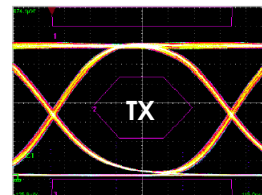
## SFF-1250SX-AT500M



## 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
- Industry standard 2x5 pluggable package
- AC coupling LVPECL differential I/O logics
- Single 3.3 V power supply
- TTL or PECL signal detect to monitor optical signals
- IEEE 802.3z Gigabit Ethernet standard compliant
- 1X Fiber Channel standard compliant
- -20–85 °C operating temperatures available
- RoHS compliant

1.25 Gb/s, 2<sup>7</sup>-1 NRZ Data Eye Pattern



## 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
- ✓ Computer cluster cross-connect

## Ordering Information

**Part Number:** SFF-1250SX-AT500M

### Description:

850 nm 1.0625/1.25 Gb/s, multimode, 2x5 SFF fiber optics transceiver, 500 m reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -20–85 °C, i.e., SFF-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	---	120	250	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>	$\Delta V_i$	0.3	---	1.6	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
Total Jitter	$T_j$	---	---	227	ps
Data Input Current - Low	$I_{LL}$	-350	---	---	$\mu A$
Data Input Current - High	$I_{HH}$	---	---	350	$\mu A$

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  $\mu m$  or 62.5/125  $\mu m$  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>	$\Delta V_o$	0.3	---	1.6	V
Differential Input Impedance	$Z$	---	100	---	Ohm
Optical Return Loss	OL	12	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	350	ps
Signal Detect– Asserted	$P_{SD+}$	---	---	-18	dBm
Signal Detect– Deasserted	$P_{SD-}$	-30	---	---	dBm
Signal Detect Hysteresis	$P_{SD+} - P_{SD-}$	1.0	---	---	dB
Stressed Receiver Sensitivity		---	---	-13	dBm
Signal Detect Assert Time	$T_{ass}$	---	---	100	$\mu$ s
Signal Detect Deassert Time	$T_{disass}$	---	---	100	$\mu$ s
Signal Detect Output – High	$V_{SD+}$	2.4	---	$V_{CC}$	V
Signal Detect Output – Low	$V_{SD-}$	0	---	0.5	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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