

# 1.25 Gb/s, 1550 nm Single Mode, 30 – 80 km 2x5 Dual LC Package



2x5 Small Form Factor (SFF) Transceivers

## Description

OptixCom's 2x5 SFF transceiver provides a low cost and compact solution for general data communication links. This single mode transceiver is designed with high performance 1550 nm laser. 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 with 30 - 80 km transmission distance with single mode fibers. The products are RoHS compliant.



Lead-Free

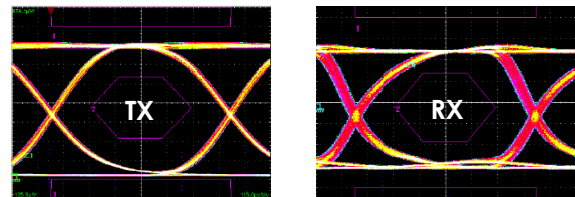
**SFF-1250EX-ATXXK**  
(XX = 30, 60, 80)



## Key Features

- 1550 nm single mode, 1.0625/1.25 Gb/s data rates
- 30 – 80 km reach, 12 – 24 dB power budget
- Duplex LC connector optical interface
- Industry standard 2x5 pluggable package
- AC coupling LVPECL differential I/O logics
- Single 3.3 V power supply
- TTL signal detect to monitor optical signals
- IEEE 802.3z Gigabit Ethernet standard compliant
- 1X Fiber Channel standard compliant
- -40–85 °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-1250EX-ATXXK

### Description:

1550 nm 1.0625/1.25 Gb/s, single mode, 2x5 SFF Fiber Optics Transceiver, XX km reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFF-1250EX-AT60K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage	$V_{cc}$	-0.5	4.0	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

### General Transmitter 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
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	260	ps
Data Input Current - High	$I_{IH}$	---	---	350	$\mu A$
Data Input Current - Low	$I_{IL}$	-350	---	---	$\mu A$
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Total Jitter	$T_j$	---	---	227	ps

### General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.3	---	1.6	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	$OL$	12	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Signal Detect Output - Low	$V_{SD-}$	0	---	0.5	V
Signal Detect Output - High	$V_{SD+}$	2.4	---	$V_{cc}$	V

Notes:

1. Module is designed for AC LVPECL coupling. See the design guide for proper termination.
2. Single ended will be 50 ohm for each signal line.

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-9	---	-3	dBm
Optical Wavelength	$\lambda_o$	1520	1550	1580	nm
Extinction Ratio	$ET$	7	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-21	dBm
Signal Detect– Asserted	$P_{SD+}$	---	---	-21	dBm
Signal Detect– Deasserted	$P_{SD-}$	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 1.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with IEEE 802.3z standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA for 3.3V and 400 mA for 5V.

**Class 1 Laser Product**  
Complies with  
**21 CFR 1040.10 and 1040.11**

