

# 1.25 Gb/s, SFP Package 1550 nm Single mode 40 – 120 km Distance

## Description

OptixCom's SFP transceiver offers advanced optical interconnect solution for general data communication links. This single mode transceiver is designed with high performance 1550 nm laser. 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 with 40 - 120 km transmission distance using single mode fibers. The products are RoHS compliant.



Lead-Free

**SFP-1250EX-ATXXK**  
(XX = 40, 80, 120)



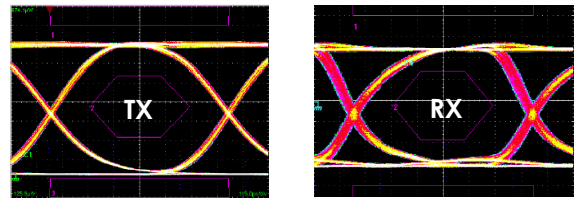
## Key Features

- 1550 nm single mode, 1.0625/1.25 Gb/s data rates
- 40 – 120 km reach, 19 – 32 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- SFF-8472 MSA Compliant
- AC coupling LVPECL differential I/O logics
- TTL Signal detect to monitor optical signals
- Single 3.3V power supply
- -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
- ✓ Computer cluster cross-connect

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



## Ordering Information

**Part Number:** SFP-1250EX-ATXXK

### Description:

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

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-1250EX-AT40K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
	-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>	$\Delta V_i$	0.4	---	1.8	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
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Total Jitter	$T_j$	---	---	227	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

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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



**General Receiver Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Differential Input Impedance <sup>2</sup>	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	350	ps
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1	---	---	dB
Serial ID Clock Rate	$f_C$	---	---	100	kHz
RX Signal Loss Output - High	$V_{RL+}$	2.0	---	$V_{CC}$	V
RX Signal Loss Output - Low	$V_{RL-}$	0	---	0.8	V
RX Signal Loss Assert Time	$T_{RL+}$	---	---	100	$\mu$ s
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu$ s

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.

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### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-5	---	0	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	9	---	---	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>	$P_I$	---	---	-24	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-25	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 1.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  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.

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