

# Small Form Pluggable (SFP) Optical Transceivers



## Features

- 850/1310 nm multimode, 1310/1550 nm single mode
- CWDM and DWM, 155 Mb/s to 4.25 Gb/s, 150 m to 160 km
- Duplex LC connector, Z-axis hot pluggable
- AC coupling LVPECL differential I/O, TTL signal detect
- SFF-8472 MSA and RoHS Compliant

## Applications

- ✓ FTTH, FTTX, ATM/SONET, SDH, Ethernet, Fiber Channel
- ✓ High speed I/O bus extension, systems interconnects
- ✓ Data Communication for SAN and LAN
- ✓ Routers and switches, computer cluster cross-connect
- ✓ Industrial control links and media converters



## Products Selection Guide

Part Number *	Wavelength	Data Rate	Power Budget	Distance**	Temp. Range
<b>155 Mb/s, 1.25 Gb/s – 4.25 Gb/s Multimode Applications</b>					
SFP-155LX-AT2K	1310 nm	155 Mb/s	>11 dB	2 km	0 – 70/-40 – 85°C
SFP-155SX-AT2K	850 nm	155 Mb/s	>14 dB	2 km	0 – 70/-40 – 85°C
SFP-1250LX-AT2K	1310 nm	1.25 Gb/s	>11 dB	2 km	0 – 70/-40 – 85°C
SFP-1250SX-AT500M	850 nm	1.25 Gb/s	>8.5 dB	500 m	0 – 70/-40 – 85°C
SFP-2125SX-AT300M	850 nm	2.125 Gb/s	>8 dB	300 m	0 – 70/-40 – 85°C
SFP-4250SX-AT500M	850 nm	4.25 Gb/s	>6 dB	500 m	0 – 70/-40 – 85°C
<b>155 Mb/s, 1310 nm, Single Mode Applications, 20 – 60 km</b>					
SFP-155LX-AT20K	1310 nm	155 Mb/s	>15 dB	20 km	0 – 70/-40 – 85°C
SFP-155LX-AT40K	1310 nm	155 Mb/s	>24 dB	40 km	0 – 70/-40 – 85°C
SFP-155LX-AT60K	1310 nm	155 Mb/s	>30 dB	60 km	0 – 70/-40 – 85°C
<b>155 Mb/s, 1550 nm, Single Mode Applications, 80 – 150 km</b>					
SFP-155EX-AT80K	1550 nm	155 Mb/s	>27 dB	80 km	0 – 70/-40 – 85°C
SFP-155EX-AT100K	1550 nm	155 Mb/s	>30 dB	100 km	0 – 70/-40 – 85°C
SFP-155EX-AT120K	1550 nm	155 Mb/s	>35 dB	120 km	0 – 70/-40 – 85°C
SFP-155EX-AT150K	1550 nm	155 Mb/s	>38 dB	150 km	0 – 70°C
<b>1.25 Gb/s, 1310 nm, Single Mode Applications, 10 – 50 km</b>					
SFP-1250LX-AT10K	1310 nm	1.25 Gb/s	>11 dB	10 km	0 – 70/-40 – 85°C
SFP-1250LX-AT20K	1310 nm	1.25 Gb/s	>14 dB	20 km	0 – 70/-40 – 85°C
SFP-1250LX-AT40K	1310 nm	1.25 Gb/s	>19 dB	40 km	0 – 70/-40 – 85°C
SFP-1250LX-AT50K	1310 nm	1.25 Gb/s	>24 dB	50 km	0 – 70/-40 – 85°C

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# Small Form Pluggable (SFP) Optical Transceivers



## Products Selection Guide (Cont'd)

Part Number *	Wavelength	Data Rate	Power Budget	Distance**	Temp. Range
<b>1.25 Gb/s, 1550 nm, Single Mode Applications, 40 – 120 km</b>					
SFP-1250EX-AT40K	1550 nm	1.25 Gb/s	>19 dB	40 km	0 – 70/-40 – 85°C
SFP-1250EX-AT80K	1550 nm	1.25 Gb/s	>26 dB	80 km	0 – 70/-40 – 85°C
SFP-1250EX-AT120K	1550 nm	1.25 Gb/s	>32 dB	120 km	0 – 70°C
<b>1.25 Gb/s, Single Mode 1270 – 1610 nm, CWDM Applications, 40 – 160 km</b>					
SFP-1250CX-AT40K-YY	1270 - 1610 nm	1.25 Gb/s	19 dB	40 km	0 – 70/-40 – 85°C
SFP-1250CX-AT80K-YY	1270 - 1610 nm	1.25 Gb/s	26 dB	80 km	0 – 70/-40 – 85°C
SFP-1250CX-AT120K-YY	1270 - 1610 nm	1.25 Gb/s	32 dB	120 km	0 – 70/-40 – 85°C
SFP-1250CX-AT160K-YY	1470 - 1610 nm	1.25 Gb/s	36 dB	160 km	0 – 70°C
<b>1.25 Gb/s, Single Mode 100 GHz, ITU DWDM Applications, 80 – 120 km</b>					
SFP-1250DX-AT80K-YY	ITU 17 – 61	1.25 Gb/s	26 dB	80 km	0 – 70 °C
SFP-1250DX-AT120K-YY	ITU 17 – 61	1.25 Gb/s	30 dB	120 km	0 – 70 °C
<b>155 Mb/s – 2.7 Gb/s, 1310 nm, Single Mode Applications, 5 – 50 km</b>					
SFP-2670LX-AT5K	1310 nm	155Mb/s - 2.7Gb/s	>11 dB	5 km	0 – 70 °C
SFP-2670LX-AT20K	1310 nm	155Mb/s - 2.7Gb/s	>15 dB	20 km	0 – 70 °C
SFP-2670LX-AT50K	1310 nm	155Mb/s - 2.7Gb/s	>26 dB	50 km	0 – 70 °C
<b>155 Mb/s – 2.7 Gb/s, 1550 nm, Single Mode Applications, 30 – 110 km</b>					
SFP-2670EX-AT30K	1550 nm	155Mb/s - 2.7Gb/s	>15 dB	30 km	0 – 70 °C
SFP-2670EX-AT50K	1550 nm	155Mb/s - 2.7Gb/s	>20 dB	50 km	0 – 70 °C
SFP-2670EX-AT80K	1550 nm	155Mb/s - 2.7Gb/s	>26 dB	80 km	0 – 70 °C
SFP-2670EX-AT90K	1550 nm	155Mb/s - 2.7Gb/s	>28 dB	90 km	0 – 70 °C
SFP-2670EX-AT110K	1550 nm	155Mb/s - 2.7Gb/s	>30 dB	110 km	0 – 70 °C
<b>4.25 Gb/s, 1310 nm, Single Mode Applications, 4 – 30 km</b>					
SFP-4250LX-AT4K	1310 nm	4.25 Gb/s	>9 dB	4 km	0 – 70/-40 – 85°C
SFP-4250LX-AT10K	1310 nm	4.25 Gb/s	>10 dB	10 km	0 – 70/-40 – 85°C
SFP-4250LX-AT30K	1310 nm	4.25 Gb/s	>18 dB	30 km	0 – 70/-40 – 85°C

\*: Add "-T" in the Part Number for products with extended temperature range -40–85 °C. For example, SFP-155LX-AT15K-T.

YY indicates wavelength selection for the 1270 - 1450 nm CWDM transceivers. See data sheet for details.

YY indicates wavelength selection for the 1470 – 1610 nm CWDM transceivers. See data sheet for details.

\*\* : The indicated distance is for reference only, not guaranteed specifications. The actual transmission distance depends on system configuration and power budget. For single mode fibers, the typical loss is 0.25 dB/km @ 1550 nm and 0.35 dB/km @ 1310 nm.

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# 155 Mb/s, 1310 nm Multimode, 2 km Distance Dual LC SFP Package

## Description

OptixCom's SFP transceiver offers advanced optical interconnect solution for general data communication links. This multimode transceiver is designed with low cost, high performance 1310 nm LED 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). It operates at 155 Mb/s and reaches 2 km of transmission distance with multimode fibers and >11 dB of power budget. This product is RoHS compliant.



Lead-Free

## SFP-155LX-AT2K



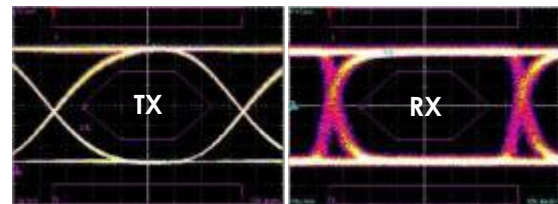
## Key Features

- 1310 nm multimode, 155 Mb/s
- >11 dB power budget, 2 km reach
- 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

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ Fast Ethernet
- ✓ High speed I/O for file server
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Industrial Control Link
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

155 Mb/s, 2<sup>23</sup>-1 NRZ data eye pattern



## Ordering Information

**Part Number:** SFP-155LX-AT2K

### Description:

1310 nm 155 Mb/s, multimode, SFP Fiber Optics Transceiver, 2 km reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-155LX-AT2K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	155	200	Mb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	200	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

### 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>	$P_o$	-20	---	-14	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1380	nm
Extinction Ratio	$ET$	10	---	---	dB
Spectral Width (RMS)	$\Delta\lambda$	---	---	4	nm
Duty Cycle Distortion	$T_{dc}$	---	---	0.6	ns
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	1.3	ns
Data Dependent Jitter	$T_{DJ}$	---	---	0.6	ns
Random Jitter	$T_{RJ}$	---	---	0.6	ns
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 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 or 62.5/125 μm MMF.
4. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 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	$\lambda_c$	1260	---	1600	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	---	-31	dBm
Differential Output Voltage	$\Delta V_o$	0.4	---	1.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	$OL$	12	---	---	dB
Rise/Fall Time (10% - 90%)	$T_r/T_f$	---	1	2	ns
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-31	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm
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. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
2. Single ended will be 50 ohm for each signal line.

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



# 155 Mb/s, 850 nm Multimode, 2 km Distance Dual LC SFP Package

## 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). It operates at 155 Mb/s and reaches 2 km of transmission distance with multimode fibers and >14 dB of power budget. This product is RoHS compliant.



## SFP-155SX-AT2K



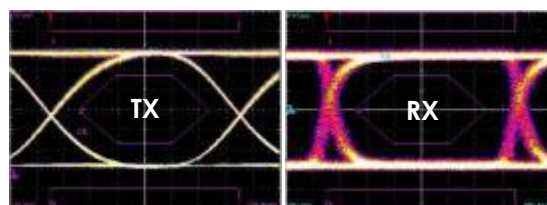
## Key Features

- 850 nm multimode, 155 Mb/s
- >14 dB power budget, 2 km reach
- Duplex LC connector optical interface
- Z-axis hot pluggable
- SFF-8472 MSA Compliant with DDM function
- AC coupling LVPECL differential I/O logics
- TTL Signal detect to monitor optical signals
- Single 3.3V power supply
- -20-85 °C operating temperatures available
- RoHS compliant

## Applications

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ Fast 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

155 Mb/s, 2<sup>23</sup>-1 NRZ data eye pattern



## Ordering Information

**Part Number:** SFP-155SX-AT2K

### Description:

850 nm 155 Mb/s, multimode, SFP Fiber Optics Transceiver, 2 km reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -20-85 °C, i.e., SFP-155SX-AT2K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-20	25	85	°C
Data Rate	---	155	200	Mb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	150	200	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

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.4	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power <sup>3</sup>	$P_o$	-10	---	-4	dBm
Optical Wavelength	$\lambda_o$	830	850	860	nm
Extinction Ratio	$ET$	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	0.85	nm
Total Jitter	$T_J$	---	---	1	ns
Rise/Fall Time (10% - 90%)	$T_r/T_f$	---	---	2	ns
TX Disable Voltage – High	$V_{DH}$	2.4	---	$V_{cc}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.5	V
TX Fault Output - High	$V_{FH}$	2.4	---	$V_{cc}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.5	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 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 or 62.5/125 μm MMF.
4. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 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>	$P_I$	---	---	-24	dBm
Differential Output Voltage	$\Delta V_o$	0.5	---	1.2	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	$OL$	12	---	---	dB
Rise/Fall Time (10% - 90%)	$T_r/T_f$	---	1	2	ns
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-24	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1	---	---	dB
Serial ID Clock Rate	$f_c$	---	---	100	kHz
RX Signal Loss Output - High	$V_{RL+}$	2.4	---	$V_{cc}$	V
RX Signal Loss Output - Low	$V_{RL-}$	0	---	0.5	V
RX Signal Loss Assert Time	$T_{RL+}$	---	---	100	$\mu s$
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu s$

Notes:

1. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
2. Single ended will be 50 ohm for each signal line.

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





# 1.25 Gb/s, SFP Package 1310 nm Multimode 2 km Distance



Small Form Pluggable (SFP) Transceivers

## Description

OptixCom's SFP transceiver offers advanced optical interconnect solution for general data communication links. This multimode transceiver is designed with low cost, high performance 1310 nm FP laser. Dual LC connectors are used as standard interface and the package is compliant with Small Form Pluggable (SFP) specifications.

The 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. It offers 2 km of transmission distance with multimode fibers and >10 dB of power budget. This product is RoHS compliant.

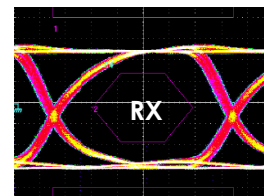
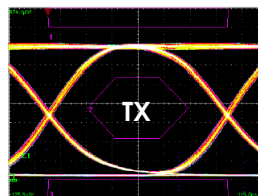


Lead-Free

## SFP-1250LX-AT2K



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



## Key Features

- 1310 nm multimode, 1.0625/1.25 Gb/s data rates
- >10 dB power budget, 2 km reach
- 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

## Ordering Information

**Part Number:** SFP-1250LX-AT2K

### Description:

1310 nm 1.0625/1.25 Gb/s, multimode, SFP Fiber Optics Transceiver, 2 km reach, 0-70°C.

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-1250LX-AT2K-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
Supply Current	---	200	250	mA

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### 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	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power <sup>3</sup>	$P_o$	-9	---	-1	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1355	nm
Extinction Ratio	$ET$	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	260	ps
TX Disable Voltage - High	$V_{DH}$	2.4	---	$V_{cc}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.5	V
TX Fault Output - High	$V_{FH}$	2.4	---	$V_{cc}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.5	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. 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.
3. Output of coupling optical power into 62.5/125 or 50/125μm 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	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-1	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	---	-19	dBm
Differential Output Voltage	$\Delta V_o$	0.5	---	1.2	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
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-19	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-35	---	---	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
Stressed Receiver Sensitivity		---	---	-17	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	$V_{RL+}$	2.4	---	$V_{cc}$	V
RX Signal Loss Output - Low	$V_{RL-}$	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. Single ended will be 50 ohm for each signal line.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



**155 Mb/s, SFP LC Package  
1310 nm Single mode  
20 – 60 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 1310 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). It operates at 155 Mb/s for 20 - 60 km transmission distance with single mode fibers. The products are RoHS compliant.

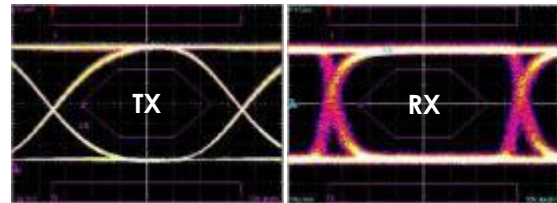


Lead-Free

**SFP-155LX-ATXXK**  
**(XX = 20, 40, 60)**



155 Mb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



**Key Features**

- 1310 nm single mode, 155 Mb/s
- 20 – 60 km reach, 15 – 30 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**

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ Fast 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:** SFP-155LX-ATXXK  
**Description:**  
 1310 nm, 155 Mb/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-155LX-AT15K-T.

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	155	200	Mb/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 (10% - 90%)	$T_r/T_f$	---	1	2	ns
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	---	1.2	V
Differential Input Impedance <sup>2</sup>	Z	---	100	---	Ohm
Optical Return Loss	OL	14	---	---	dB
Rise/Fall Time (10% - 90%)	$T_r/T_f$	---	1	2	ns
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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-15	---	-8	dBm
Optical Wavelength	$\lambda_o$	1260	1310	1360	nm
Extinction Ratio	$ET$	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-30	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-32	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-8	---	0	dBm
Optical Wavelength	$\lambda_o$	1260	1310	1360	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	nm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-32	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-34	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11





### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-5	---	0	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1355	nm
Extinction Ratio	$ET$	10	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	2.5	nm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-35	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-35	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 220 mA.

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



**155 Mb/s, SFP Package**  
**1550 nm Single mode**  
**80 – 150 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). It operates at 155 Mb/s for 80 - 150 km transmission distance with single mode fibers. The products are RoHS compliant.

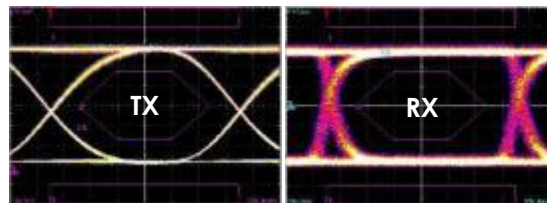


Lead-Free

**SFP-155EX-ATXXK**  
 (XX = 80, 100, 120, 150)



155 Mb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



**Key Features**

- 1550 nm single mode, 155 Mb/s
- 80 –150 km reach, 27 – 38 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**

- ✓ FTTH, FTTX, ATM/SONET OC-3, SDH STM-1
- ✓ Fast 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:** SFP-155EX-ATXXK

**Description:**

1550 nm, 155 Mb/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-155EX-AT80K-T.

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	155	200	Mb/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 (10% - 90%)	$T_r/T_f$	---	1	2	ns
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 (10% - 90%)	$T_r/T_f$	---	1	2	ns
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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### 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	$ET$	8.2	---	---	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>	$P_I$	---	---	-32	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-32	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 200 mA.

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



### 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	$ET$	10	---	---	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	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-35	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-35	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	10	---	---	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	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-35	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-35	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

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



**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	+1	---	+5	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	10	---	---	dB
Side Mode Suppression Ratio	$SMSR$	35	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1580	nm
Receiver Overload	$P_{max}$	-10	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-37	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-37	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 155 Mb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
3. Optical eye diagram is compliant with Telcordia GR-253-CORE and ITU-T G-957 standard.
4. Maximum supply current for the transceiver from Vcc is 300 mA.

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





**1.25 Gb/s, SFP Package  
1310 nm Single mode  
10 – 50 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 1310 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 10 - 50 km transmission distance using single mode fibers. The products are RoHS compliant.



Lead-Free

**SFP-1250LX-ATXXK**  
(XX = 10, 20, 40, 50)



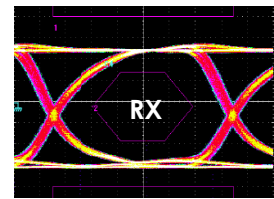
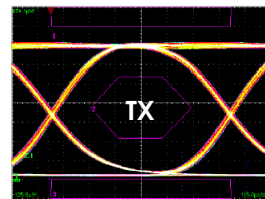
**Key Features**

- 1310 nm single mode, 1.0625/1.25 Gb/s data rates
- 10 – 50 km reach, 11 – 24 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-1250LX-ATXXK

**Description:**

1310 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-1250LX-AT10K-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>	$\Delta V_i$	0.4	---	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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-9	---	-3	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1355	nm
Extinction Ratio	$ET$	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	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>	$P_I$	---	---	-20	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ 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 250 mA.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-9	---	-3	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1355	nm
Extinction Ratio	$ET$	9	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	4	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>	$P_I$	---	---	-23	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-24	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ 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 250 mA.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-5	---	0	dBm
Optical Wavelength	$\lambda_o$	1280	1310	1340	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	$P_{RL+}$	---	---	-24	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-35	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ 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.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Optical Wavelength	$\lambda_o$	1280	1310	1340	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	$P_{max}$	-2	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-24	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-24	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<sup>7</sup> – 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



**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

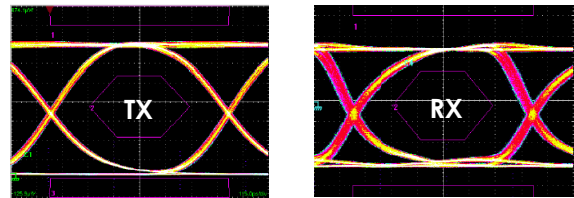
**SFP-1250EX-ATXXK**  
**(XX = 40, 80, 120)**



**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

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:** 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
- 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>	$\Delta V_i$	0.4	---	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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### 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  $\mu$ 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	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>	$P_I$	---	---	-26	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-27	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<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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	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	$P_{max}$	-10	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-32	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-34	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-40	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



# 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.

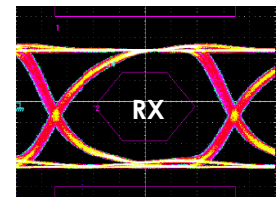
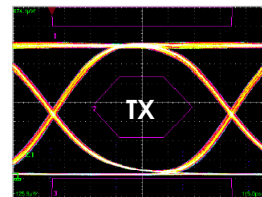


Lead-Free

## 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	---

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11





# 2.125 Gb/s, SFP Package 850 nm Multimode 300 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 2.125 Gb/s for 2x Fiber Channel applications. The transceiver reaches more than 300 meters of transmission distance with high-grade multimode fibers and >8 dB of power budget. The products are RoHS compliant.



Lead-Free

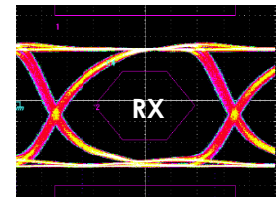
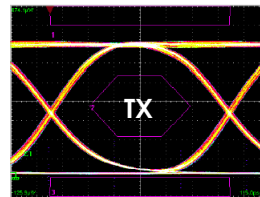
## SFP-2125SX-AT300M



## Key Features

- 850 nm multimode, 2.125 Gb/s data rate
- >8 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- > 300 m at 2.125 Gb/s with high-grade MMF
- Compliant with 2X Fiber Channel
- TTL Signal detect function to monitor optical signals
- Single 3.3 V power supply
- -40–85 °C operating temperatures available
- RoHS compliant

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



## Applications

- ✓ 2x 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-2125SX-AT300M

### Description:

850 nm 2.125 Gb/s, multimode, SFP fiber optics transceiver, 300 m reach, 0-70°C

\* Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-2125SX-AT300M-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	2.125	2.2	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	3.6	V
Input Voltage	$V_{IN}$	-0.5	$V_{CC}$	V
Operating Current	$I_{OP}$	---	400	mA
Output Current	$I_O$	---	50	mA

### 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>	$P_o$	-10	---	-3	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%)	$T_r/T_f$	---	---	150	ps
Total Jitter	$T_j$	---	---	120	ps
TX Disable Asserted	$P_{OFF}$	---	---	-35	dBm
TX Fault Output - High	$V_{FH}$	2.0	---	$V_{CC}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.8	V
TX Disable Voltage - High	$V_{DH}$	2.0	---	$V_{CC}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.8	V
TX Disable Assert Time	$T_{ass}$	---	---	10	μs
TX Disable Deassert Time	$T_{disass}$	---	---	1.0	ms
Time to Initialize	$T_{ini}$	---	---	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 coupling. DC voltage will be filtered by internal capacitors.
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 Fiber Channel standard.

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	770	---	860	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	---	-18	dBm
Differential Output Voltage	$\Delta V_o$	0.4	---	1.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	$OL$	12	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	220	ps
RX Signal Loss – Asserted	$P_{SD+}$	---	---	-18	dBm
RX Signal Loss – Deasserted	$P_{SD-}$	-30	---	---	dBm
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. Test at 2.125 Gb/s, 2<sup>23</sup> – 1 PRBS data pattern, and > 1x10<sup>-10</sup> of Bit-Error-Rate (BER).
2. Single ended will be 50 ohm for each signal line.

### 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			

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



**1.25 Gb/s, 40 - 160 km  
CWDM 1270 nm – 1610 nm  
SFP Dual LC Package**

**Description**

OptixCom's CWDM transceivers are designed with high performance DFB laser and cover the wavelength spectrum from 1270 nm to 1610 nm, with industry standard 20 nm spacing. 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. They offer 40 - 160 km of transmission distance with single mode fibers. The products are RoHS compliant.



Lead-Free

**SFP-1250CX-ATXXK-YY**  
(XX = 40, 80, 120, 160)



**Key Features**

- 1270 - 1610 nm single mode, 1.25 Gb/s
- 40 – 160 km with 19 - 36 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
- -40-85 °C operating temperatures available
- Single 3.3 V power supply
- RoHS compliant

**Applications**

- ✓ 1X Fiber Channel and Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

**Ordering Information**

**Part Number:** SFP-1250CX-ATXXK-YY

**Description:**

CWDM 1270 - 1610 nm 1.0625/1.25 Gb/s SFP Fiber Optics Transceiver, **XX** km reach, **YY**0 nm wavelength, 0 - 70°C.

- **YY** specifies the wavelength described below, i.e., SFP-1250CX-ATXXXK-27 is the 1270 nm module.
- Add "-T" in the Part Number for extended temperature range -40-85 °C, i.e., SFP-1250CX-ATXXXK-27-T.

YY	Wavelength	YY	Wavelength	YY	Wavelength
27	1270 nm	39	1390 nm	51	1510 nm
29	1290 nm	41	1410 nm	53	1530 nm
31	1310 nm	43	1430 nm	55	1550 nm
33	1330 nm	45	1450 nm	57	1570 nm
35	1350 nm	47	1470 nm	59	1590 nm
37	1370 nm	49	1490 nm	61	1610 nm

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°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	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

### 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
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	260	ps
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
TX Disable Asserted	$P_{OFF}$	---	---	-45	dBm
Total Jitter	$T_j$	---	---	227	ps
TX Fault Output - Low	$V_{FL}$	0	---	0.8	V
TX Fault Output - High	$V_{FH}$	2.0	---	$V_{CC}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.8	V
TX Disable Voltage - High	$V_{DH}$	2.0	---	$V_{CC}$	V
TX Disable Deassert Time	$T_{disass}$	---	---	1.0	ms
TX Disable Assert Time	$T_{ass}$	---	---	10	μs
TX Fault from Fault to Assertion	$T_{fault}$	---	---	100	μs
TX Disable Time to Start Reset	$T_{reset}$	10	---	---	μs
Time to Initialize	$T_{as}$	---	---	300	ms

Notes:

1. Module is designed for AC coupling. DC voltage will be filtered by internal capacitor.
2. Single ended will be 50 ohm for each signal line.
3. Optical eye diagram is compliant with IEEE 802.3z standard.

**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	$Z$	---	100	---	Ohm
Optical Return Loss	OL	12	---	---	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.

### Wavelength Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Center Wavelength – 1270 nm	$\lambda_c$	1264.5	1270	1277.5	nm
Center Wavelength – 1290 nm	$\lambda_c$	1284.5	1290	1297.5	nm
Center Wavelength – 1310 nm	$\lambda_c$	1304.5	1310	1317.5	nm
Center Wavelength – 1330 nm	$\lambda_c$	1324.5	1330	1337.5	nm
Center Wavelength – 1350 nm	$\lambda_c$	1344.5	1350	1357.5	nm
Center Wavelength – 1370 nm	$\lambda_c$	1364.5	1370	1377.5	nm
Center Wavelength – 1390 nm	$\lambda_c$	1384.5	1390	1397.5	nm
Center Wavelength – 1410 nm	$\lambda_c$	1404.5	1410	1417.5	nm
Center Wavelength – 1430 nm	$\lambda_c$	1424.5	1430	1437.5	nm
Center Wavelength – 1450 nm	$\lambda_c$	1444.5	1450	1457.5	nm
Center Wavelength – 1470 nm	$\lambda_c$	1464.5	1470	1477.5	nm
Center Wavelength – 1490 nm	$\lambda_c$	1484.5	1490	1497.5	nm
Center Wavelength – 1510 nm	$\lambda_c$	1504.5	1510	1517.5	nm
Center Wavelength – 1530 nm	$\lambda_c$	1524.5	1530	1537.5	nm
Center Wavelength – 1550 nm	$\lambda_c$	1544.5	1550	1557.5	nm
Center Wavelength – 1570 nm	$\lambda_c$	1564.5	1570	1577.5	nm
Center Wavelength – 1590 nm	$\lambda_c$	1584.5	1590	1597.5	nm
Center Wavelength – 1610 nm	$\lambda_c$	1604.5	1610	1617.5	nm

**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-4	---	0	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1620	nm
Receiver Overload	$P_{max}$	-1	---	---	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<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.

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



**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1620	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-26	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-27	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<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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11





**Transmitter Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1620	nm
Receiver Overload	$P_{max}$	-10	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-32	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-33	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-40	---	---	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.

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	+2	---	+6	dBm
Operating Wavelength	$\lambda_c$	1460	---	1620	nm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1620	nm
Receiver Overload	$P_{max}$	-10	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-34	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-36	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-42	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ 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.

### Wavelength Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Center Wavelength – 1470 nm	$\lambda_c$	1464.5	1470	1477.5	nm
Center Wavelength – 1490 nm	$\lambda_c$	1484.5	1490	1497.5	nm
Center Wavelength – 1510 nm	$\lambda_c$	1504.5	1510	1517.5	nm
Center Wavelength – 1530 nm	$\lambda_c$	1524.5	1530	1537.5	nm
Center Wavelength – 1550 nm	$\lambda_c$	1544.5	1550	1557.5	nm
Center Wavelength – 1570 nm	$\lambda_c$	1564.5	1570	1577.5	nm
Center Wavelength – 1590 nm	$\lambda_c$	1584.5	1590	1597.5	nm
Center Wavelength – 1610 nm	$\lambda_c$	1604.5	1610	1617.5	nm

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



# 1.25 Gb/s, 80 - 120 km DWDM ITU Channels 17-61 SFP Dual LC Package

## Description

OptixCom's DWDM SFP fiber optics transceivers are designed with high performance EML laser and PIN or APD receiver. They are used in 100 GHz channel spacing DWDM systems. Our transceivers cover the ITU channels from 17 to 61. This product can be used at 1.0625 Gb/s for Fiber Channel or 1.25 Gb/s for Gigabit Ethernet applications. It is compliant with SFP Multi-Source Agreement (MSA).

The transceiver uses duplex LC connector for the optical interface. It is hot pluggable in the z-axis with a 30-pin connector. They offer 80 - 120 km of transmission distance with single mode fibers. The products are RoHS compliant.



Lead-Free

**SFP-1250DX-ATXXK-YY**  
(XX = 80, 120)



## Key Features

- Cover ITU channels 17-61, 1.25 Gb/s
- 80 – 120 km with 26-30 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 3.3 V power supply
- RoHS compliant

## Applications

- ✓ 1X Fiber Channel and Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

## Ordering Information

**Part Number:** SFP-1250DX-ATXXK-YY

### Description:

DWDM, 1.25 Gb/s, single mode, SFP fiber optics transceiver, XX km, YY ITU channel code 17-61, 0 -70°C.

- XX = 80, 120
- YY specifies ITU channel code associated with the wavelength. For example, SFP-1250DX-AT80K-17 is the 11TU-17 channel with the 1563.86 nm wavelength and 191.7 THz frequency.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	360	400	mA

**DWDM ITU Grid Wavelength Guide**

ITU Code	Frequency (THz)	Wavelength (nm)	ITU Code	Frequency (THz)	Wavelength (nm)
17	191.7	1563.86	40	194.0	1545.32
18	191.8	1563.05	41	194.1	1544.53
19	191.9	1562.23	42	194.2	1543.73
20	192.0	1561.42	43	194.3	1542.94
21	192.1	1560.61	44	194.4	1542.14
22	192.2	1559.79	45	194.5	1541.35
23	192.3	1558.98	46	194.6	1540.56
24	192.4	1558.17	47	194.7	1539.77
25	192.5	1557.36	48	194.8	1538.98
26	192.6	1556.56	49	194.9	1538.19
27	192.7	1555.75	50	195.0	1537.40
28	192.8	1554.94	51	195.1	1536.61
29	192.9	1554.13	52	195.2	1535.82
30	193.0	1553.33	53	195.3	1535.04
31	193.1	1552.52	54	195.4	1534.25
32	193.2	1551.72	55	195.5	1533.47
33	193.3	1550.92	56	195.6	1532.68
34	193.4	1550.12	57	195.7	1531.90
35	193.5	1549.32	58	195.8	1531.12
36	193.6	1548.52	59	195.9	1530.33
37	193.7	1547.72	60	196.0	1529.55
38	193.8	1546.92	61	196.1	1528.77
39	193.9	1546.12			

**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

### 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
Side Mode Suppression Ratio	SMSR	30	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	260	ps
Relative Intensity Noise	RIN	---	---	-120	dB/Hz
TX Disable Asserted	$P_{OFF}$	---	---	-45	dBm
Total Jitter	$T_j$	---	---	227	ps
TX Fault Output - Low	$V_{FL}$	0	---	0.8	V
TX Fault Output - High	$V_{FH}$	2.0	---	$V_{CC}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.8	V
TX Disable Voltage - High	$V_{DH}$	2.0	---	$V_{CC}$	V
TX Disable Deassert Time	$T_{disass}$	---	---	1.0	ms
TX Disable Assert Time	$T_{ass}$	---	---	10	$\mu$ s
TX Fault from Fault to Assertion	$T_{fault}$	---	---	100	$\mu$ s
TX Disable Time to Start Reset	$T_{reset}$	10	---	---	$\mu$ s
Time to Initialize	$T_{as}$	---	---	300	ms

### General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage <sup>3</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
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 coupling. DC voltage will be filtered by internal capacitor.
2. Single ended will be 50 ohm for each signal line.
3. Module is designed for AC LVPECL coupling. See the design guide for proper termination.
4. Optical eye diagram is compliant with IEEE 802.3z standard.

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+4	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB
Center Wavelength (Start of Life)	$\lambda_c$	$\lambda_c - 25$	$\lambda_c$	$\lambda_c + 25$	pm
Center Wavelength (End of Life)	$\lambda_c$	$\lambda_c - 100$	$\lambda_c$	$\lambda_c + 100$	pm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1528	---	1564	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-26	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-27	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.

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB
Center Wavelength (Start of Life)	$\lambda_c$	$\lambda_c - 25$	$\lambda_c$	$\lambda_c + 25$	pm
Center Wavelength (End of Life)	$\lambda_c$	$\lambda_c - 100$	$\lambda_c$	$\lambda_c + 100$	pm

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1528	---	1564	nm
Receiver Overload	$P_{max}$	-6	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-30	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-31	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-40	---	---	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.

**Multi-Rate 155 Mb/s – 2.7 Gb/s  
1310 nm Single mode, 5 – 50 km  
SFP Dual LC Connector**

**Description**

OptixCom's multi-rate fiber optics transceiver is designed for OC3/OC12/FC/GbE/2xFC/OC48 applications with data rate up to 2.7 Gb/s. This single mode module uses high performance 1310 nm laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 5 - 50 km of distance with standard single mode fibers and 11 - 26 dB of power budget. The products are RoHS compliant.



Lead-Free

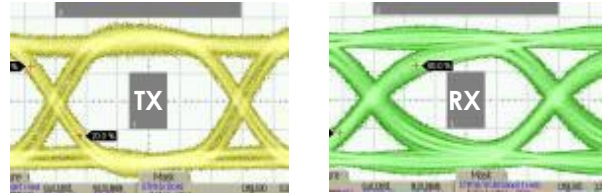
**SFP-2670LX-ATXXK**  
**(XX = 5, 20, 50)**



**Key Features**

- 1310 nm single mode
- Multi-rate 155 Mb/s to 2.67 Gb/s
- 5 – 50 km with 11 – 26 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

2.5 Gb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



**Applications**

- ✓ OC3/OC12/FC/GbE/2xFC/OC48
- ✓ High speed I/O for file server
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

**Ordering Information**

**Part Number:** SFP-2670LX-ATXXK

**Description:**

1310 nm single mode, multi-rate 155Mb/s - 2.7 Gb/s SFP Transceiver, **XX** km reach. 0 - 70°C.

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	---	2.67	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	5.0	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	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	160	ps
Total Jitter	$T_j$	---	---	0.1	Ulp-p
TX Disable Asserted	$P_{OFF}$	---	---	-45	dBm
TX Fault Output - High	$V_{FH}$	2.4	---	$V_{cc}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.5	V
TX Disable Voltage – High	$V_{DH}$	2.4	---	$V_{cc}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.5	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 coupling. DC voltage will be filtered by internal capacitor.
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>	$\Delta V_o$	0.5	---	1.2	V
Differential Input Impedance <sup>2</sup>	Z	---	100	---	Ohm
Optical Return Loss	OL	27	---	---	dB
Rise/Fall Time	$T_r/T_f$	---	---	250	ps
RX Signal Loss Output - High	$V_{RL+}$	2.4	---	$V_{CC}$	V
RX Signal Loss Output - Low	$V_{RL-}$	0	---	0.5	V
RX Signal Loss Assert Time	$T_{RL+}$	---	---	100	$\mu$ s
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu$ s
Serial ID Clock Rate	$f_C$	---	---	100	kHz

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



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-9	---	-3	dBm
Optical Wavelength	$\lambda_o$	1270	1310	1355	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	2.5	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>	$P_I$	---	---	-20	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 2.5 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 250 mA.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-5	---	0	dBm
Optical Wavelength	$\lambda_o$	1280	1310	1355	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-20	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 2.5 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-2	---	+3	dBm
Optical Wavelength	$\lambda_o$	1280	1310	1355	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-8	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-28	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-28	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 2.5 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 350 mA.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



**Multi-Rate 155 Mb/s – 2.7 Gb/s  
1550 nm Single mode, 30 – 110 km  
SFP Dual LC Connector**



**Description**

OptixCom's multi-rate fiber optics transceiver is designed for OC3/OC12/FC/GbE/2xFC/OC48 applications with data rate up to 2.7 Gb/s. This single mode module uses high performance 1550 nm DFB laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 30 - 110 km of distance with standard single mode fibers and 15 - 30 dB of power budget. The products are RoHS compliant.



Lead-Free

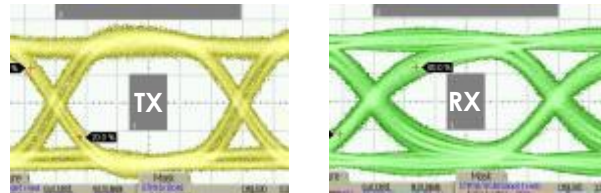
**SFP-2670EX-ATXXK**  
**(XX = 30, 50, 80, 90, 110)**



**Key Features**

- 1550 nm single mode
- Multi-rate 155 Mb/s to 2.67 Gb/s
- 30 – 110 km with 15 – 30 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

2.5 Gb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



**Applications**

- ✓ OC3/OC12/FC/GbE/2xFC/OC48
- ✓ High speed I/O for file server
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

**Ordering Information**

**Part Number:** SFP-2670EX-ATXXK

**Description:**

1550 nm single mode, multi-rate 155Mb/s - 2.7 Gb/s SFP Transceiver, XX km reach. 0 - 70°C.

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	---	2.67	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	5.0	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	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	160	ps
Total Jitter	$T_j$	---	---	0.1	Ulp-p
TX Disable Asserted	$P_{OFF}$	---	---	-45	dBm
TX Fault Output - High	$V_{FH}$	2.4	---	$V_{cc}$	V
TX Fault Output - Low	$V_{FL}$	0	---	0.5	V
TX Disable Voltage – High	$V_{DH}$	2.4	---	$V_{cc}$	V
TX Disable Voltage - Low	$V_{DL}$	0	---	0.5	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 coupling. DC voltage will be filtered by internal capacitor.
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>	$\Delta V_o$	0.5	---	1.2	V
Differential Input Impedance <sup>2</sup>	Z	---	100	---	Ohm
Optical Return Loss	OL	27	---	---	dB
Rise/Fall Time	$T_r/T_f$	---	---	250	ps
RX Signal Loss Output - High	$V_{RL+}$	2.4	---	$V_{cc}$	V
RX Signal Loss Output - Low	$V_{RL-}$	0	---	0.5	V
RX Signal Loss Assert Time	$T_{RL+}$	---	---	100	$\mu$ s
RX Signal Loss Deassert Time	$T_{RL-}$	---	---	100	$\mu$ s
Serial ID Clock Rate	$f_c$	---	---	100	kHz

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





### 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	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-20	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 2.5 Gb/s, 2<sup>7</sup> – 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-1	---	+4	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-21	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-21	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu$ m SMF.
2. Test at 2.5 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	-2	---	+3	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-8	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-28	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-28	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 2.5 Gb/s, 2<sup>7</sup> – 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-8	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-28	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-28	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 2.5 Gb/s, 2<sup>7</sup> – 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Optical Output Power <sup>1</sup>	$P_o$	0	---	+5	dBm
Optical Wavelength	$\lambda_o$	1530	1550	1570	nm
Extinction Ratio	$ET$	8.2	---	---	dB
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-8	---	---	dBm
Receiver Sensitivity <sup>2</sup>	$P_I$	---	---	-30	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-30	dBm
RX Signal Loss – Deasserted	$P_{RL-}$	-45	---	---	dBm

Notes:

1. Output of coupling optical power into 9/125  $\mu\text{m}$  SMF.
2. Test at 2.5 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.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11



# Multi-Rate 1.0625 – 4.25 Gb/s 850 nm Multimode, 500 m SFP Dual LC Connector

## Description

OptixCom's multi-rate fiber optics transceiver is designed for 1X, 2X, 4X FC, GbE, and OC48 applications with data rate up to 4.25 Gb/s. 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). The transceiver reaches more than 500 meters of transmission distance with high-grade multimode fibers and >6 dB of power budget. The products are RoHS compliant.



Lead-Free

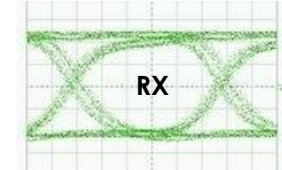
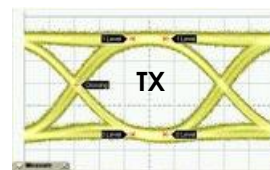
## SFP-4250SX-AT500M



## Key Features

- 850 nm multimode,
- Multi-rate from 1.0625 to 4.25 Gb/s
- > 6 dB power budget, 500 m reach
- Duplex LC connector optical interface
- Z-axis hot pluggable
- SFF-8472 MSA
- 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

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



## Ordering Information

**Part Number:** SFP-4250SX-AT500M

### Description:

850 nm 1.0625 to 4.25 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-4250SX-AT500M-T.

## 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

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
- T Transceivers	-40	25	85	°C
Data Rate	---	---	4.25	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	150	200	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	---	-3	dBm
Optical Wavelength	$\lambda_o$	830	850	860	nm
Relative Intensity Noise	$RIN$	---	---	-118	dB/Hz
Spectral Width (rms)	$\Delta\lambda$	---	---	0.85	nm
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. 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 MMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X FC standards.

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



### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Impedance	$Z$	---	100	---	Ohm
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Operating Wavelength	$\lambda_c$	770	---	860	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup> (@4.25 Gb/s)	$P_I$	---	---	-15	dBm
Receiver Sensitivity <sup>2</sup> (@2.125 Gb/s)	$P_I$	---	---	-18	dBm
Receiver Sensitivity <sup>3</sup> (1.0625 Gb/s)	$P_I$	---	---	-20	dBm
Optical Return Loss	$OL$	12	---	---	dB
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
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. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 4.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER)
3. Test at 1.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER)

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





# Multi-Rate 1 Gb/s – 4.25 Gb/s 1310 nm Single mode, 4 km SFP Dual LC Connector



Small Form Pluggable (SFP) Transceivers

## Description

OptixCom's multi-rate fiber optics transceiver is designed for Gigabit Ethernet and 1X/2X/4X Fiber Channel applications with data rate up to 4.25 Gb/s. This single mode module uses high performance 1310 nm FP laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 4 km of distance with standard single mode fibers and 9 dB of power budget. The products are RoHS compliant.



Lead-Free

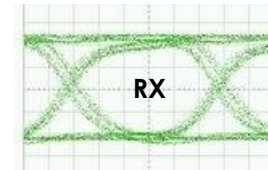
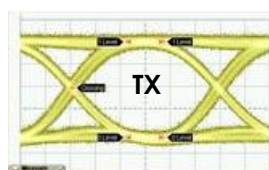
## SFP-4250LX-AT4K



## Key Features

- FC 1X, 2X, and 4X compliant
- IEEE 802.3 Gigabit Ethernet compliant
- Multi-rate 1.0625 to 4.25Gb/s
- 4 km with 9 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

4.25 Gb/s, 2<sup>23</sup>-1 NRZ Data Eye Pattern



## Applications

- ✓ Fiber Channel 1X, 2X, and 4X
- ✓ IEEE 802.3z Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

## Ordering Information

**Part Number:** SFP-4250LX-AT4K

### Description:

1310 nm 1.0625 to 4.25 Gb/s, single mode, SFP fiber optics transceiver, 4 km reach, 0 - 70°C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-4250LX-AT4K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	1	---	4.25	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	---	300	mA

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**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>	$P_o$	-8	---	0	dBm
Optical Wavelength	$\lambda_o$	1285	1310	1345	nm
Relative Intensity Noise	$RIN$	---	---	-118	dB/Hz
OMA	OMA	290	---	---	$\mu W$
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	$\mu s$
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	$\mu s$
TX Disable Time to Start Reset	$T_{reset}$	10	---	---	$\mu s$

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 9/125  $\mu m$  SMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X FC standards.

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



**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Impedance	Z	---	100	---	Ohm
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Operating Wavelength	$\lambda_c$	1260	---	1600	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup> (@4.25 Gb/s)	$P_I$	---	---	-17	dBm
Receiver Sensitivity <sup>2</sup> (@2.125 Gb/s)	$P_I$	---	---	-21	dBm
Receiver Sensitivity <sup>2</sup> (@1.0625 Gb/s)	$P_I$	---	---	-22	dBm
Optical Return Loss	OL	12	---	---	dB
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
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. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 4.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER)
3. Test at 1.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER)

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



# Multi-Rate 1 Gb/s – 4.25 Gb/s 1310 nm Single mode, 10 km SFP Dual LC Connector

## Description

OptixCom's multi-rate fiber optics transceiver is designed for Gigabit Ethernet and 1X/2X/4X Fiber Channel applications with data rate up to 4.25 Gb/s. This single mode module uses high performance 1310 nm DFB laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 10 km of distance with standard single mode fibers and 10 dB of power budget. The products are RoHS compliant.



Lead-Free

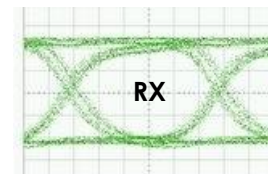
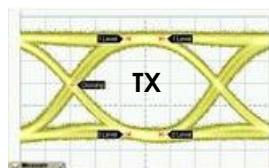
## SFP-4250LX-AT10K



## Key Features

- FC 1X, 2X, and 4X compliant
- IEEE 802.3 Gigabit Ethernet compliant
- Multi-rate 1.0625 to 4.25Gb/s
- 10 km with 10 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

4.25 Gb/s,  $2^{23}-1$  NRZ Data Eye Pattern



## Applications

- ✓ Fiber Channel 1X, 2X, and 4X
- ✓ IEEE 802.3z Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

## Ordering Information

**Part Number:** SFP-4250LX-AT10K

### Description:

1310 nm 1.0 to 4.25 Gb/s, single mode, SFP fiber optics transceiver, 10 km reach, 0 - 70°C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-4250LX-AT4K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	1	---	4.25	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	---	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>	$P_o$	-8	---	0	dBm
Optical Wavelength	$\lambda_o$	1285	1310	1345	nm
Relative Intensity Noise	$RIN$	---	---	-118	dB/Hz
OMA	OMA	290	---	---	μW
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. 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 9/125 μm SMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X FC standards.

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



**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Impedance	$Z$	---	100	---	Ohm
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Operating Wavelength	$\lambda_c$	1260	---	1600	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup> (@4.25 Gb/s)	$P_I$	---	---	-18	dBm
Receiver Sensitivity (@2.125 Gb/s)	$P_I$	---	---	-21	dBm
Receiver Sensitivity <sup>3</sup> (@1.0625 Gb/s)	$P_I$	---	---	-22	dBm
Optical Return Loss	$OL$	12	---	---	dB
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
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. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 4.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)
3. Test at 1.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)

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



# Multi-Rate 1 Gb/s – 4.25 Gb/s 1310 nm Single mode, 30 km SFP Dual LC Connector



Small Form Pluggable (SFP) Transceivers

## Description

OptixCom's multi-rate fiber optics transceiver is designed for Gigabit Ethernet and 1X/2X/4X Fiber Channel applications with data rate up to 4.25 Gb/s. This single mode module uses high performance 1310 nm DFB laser and is compliant with Small Form Pluggable (SFP) specifications.

The module is compliant with SFP Multi-Source Agreement (MSA). The transceiver reaches 30 km of distance with standard single mode fibers and 18 dB of power budget. The products are RoHS compliant.



Lead-Free

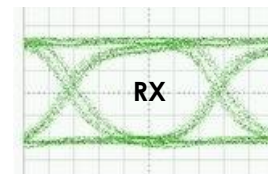
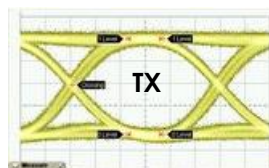
## SFP-4250LX-AT30K



## Key Features

- FC 1X, 2X, and 4X compliant
- IEEE 802.3 Gigabit Ethernet compliant
- Multi-rate 1.0625 to 4.25Gb/s
- 30 km with 18 dB power budget
- Duplex LC connector optical interface
- Z-axis hot pluggable
- AC coupling LVPECL differential I/O logics
- SFF-8472 MSA Compliant with DDM function
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

4.25 Gb/s,  $2^{23}$ -1 NRZ Data Eye Pattern



## Applications

- ✓ Fiber Channel 1X, 2X, and 4X
- ✓ IEEE 802.3z Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect

## Ordering Information

**Part Number:** SFP-4250LX-AT30K

### Description:

1310 nm 1.0 to 4.25 Gb/s, single mode, SFP fiber optics transceiver, 30 km reach, 0 - 70°C.

Add "-T" in the Part Number for extended temperature range -40–85 °C, i.e., SFP-4250LX-AT30K-T.

## Operating Conditions

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	1	---	4.25	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	---	300	mA

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### 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>	$P_o$	0	---	+5	dBm
Optical Wavelength	$\lambda_o$	1285	1310	1345	nm
Relative Intensity Noise	$RIN$	---	---	-118	dB/Hz
OMA	OMA	290	---	---	$\mu$ W
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	$\mu$ s
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	$\mu$ s
TX Disable Time to Start Reset	$T_{reset}$	10	---	---	$\mu$ s

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 9/125  $\mu$ m SMF.
4. Optical eye diagram is compliant with IEEE 802.3z and 1x/2x/4X FC standards.

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





**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Impedance	Z	---	100	---	Ohm
Differential Output Voltage <sup>1</sup>	$\Delta V_o$	0.4	---	1.8	V
Operating Wavelength	$\lambda_c$	1260	---	1600	nm
Receiver Overload	$P_{max}$	0	---	---	dBm
Receiver Sensitivity <sup>2</sup> (@4.25 Gb/s)	$P_I$	---	---	-18	dBm
Receiver Sensitivity (@2.125 Gb/s)	$P_I$	---	---	-21	dBm
Receiver Sensitivity <sup>3</sup> (@1.0625 Gb/s)	$P_I$	---	---	-22	dBm
Optical Return Loss	OL	12	---	---	dB
RX Signal Loss – Deasserted	$P_{RL-}$	-30	---	---	dBm
RX Signal Loss – Asserted	$P_{RL+}$	---	---	-20	dBm
Signal Detect Hysteresis	$P_{RL+} - P_{RL-}$	1.0	---	---	dB
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. Applied to AC LVPECL I/O coupling. See the design guide for proper termination.
2. Test at 4.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)
3. Test at 1.25 Gb/s,  $2^7 - 1$  PRBS data pattern, and  $> 1 \times 10^{-12}$  of Bit-Error-Rate (BER)

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

