

**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>	$P_o$	+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  $\mu\text{m}$  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.

### 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

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