

# 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

**U.S.A. Office: Optix Communications, Inc.**

17901 Von Karman Avenue, Suite 600,  
Irvine, CA 92614

Tel: (949) 679-5712 Fax: (949) 420-2134

<http://www.OptixCom.com>  
<http://www.OpticalTransceiver.com>  
Email: [Support@OptixCom.com](mailto:Support@OptixCom.com)

**Germany Office: OptixCom GmbH**

Freiherr vom Stein Strasse 19, 60323  
Frankfurt am Main, Germany

Tel: +49 (0)69 7953-3646

**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.