

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

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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 ¹	ΔV_i	0.4	---	1.8	V
Differential Input Impedance ²	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	μ s
TX Fault from Fault to Assertion	T_{fault}	---	---	100	μ s
TX Disable Time to Start Reset	T_{reset}	10	---	---	μ s
Time to Initialize	T_{as}	---	---	300	ms

General Receiver Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Output Voltage ³	ΔV_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	μ s
RX Signal Loss Deassert Time	T_{RL-}	---	---	100	μ 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 ¹	P_o	0	---	+5	dBm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	ET	9	---	---	dB
Center Wavelength (Start of Life)	λ_c	$\lambda_c - 25$	λ_c	$\lambda_c + 25$	pm
Center Wavelength (End of Life)	λ_c	$\lambda_c - 100$	λ_c	$\lambda_c + 100$	pm

Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	λ_c	1528	---	1564	nm
Receiver Overload	P_{max}	-6	---	---	dBm
Receiver Sensitivity ²	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 μm 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.