

SFP-10GB-DW21-80-I-CX-OPC

Calix® Compatible TAA 10GBase-DWDM SFP+ Transceiver C-Band 100GHz (SMF, 1560.61nm, 80km, LC, DOM, -40 to 85C)

Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Temperature-stabilized EML transmitter and APD receiver
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 10x Gigabit Ethernet over DWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Calix® compatible SFP+ transceiver provides 10GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1560.61nm via an LC connector. It is capable of withstanding rugged environments and can operate at temperatures between -40 and 85C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Calix®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Wavelength Guide (100GHz ITU-T Channel)

ITU Channel #	Frequency (THZ)	Center Wavelength (nm)
61	196.1	1528.77
60	196.0	1529.55
59	195.9	1530.33
58	195.8	1531.12
57	195.7	1531.90
56	195.6	1532.68
55	195.5	1533.47
54	195.4	1534.25
53	195.3	1535.04
52	195.2	1535.82
51	195.1	1536.61
50	195.0	1537.40
49	194.9	1538.19
48	194.8	1538.98
47	194.7	1539.77
46	194.6	1540.56
45	194.5	1541.35
44	194.4	1542.14
43	194.3	1542.94
42	194.2	1543.73
41	194.1	1544.53
40	194.0	1545.32
39	193.9	1546.12
38	193.8	1546.92
37	193.7	1547.72
36	193.6	1548.51
35	193.5	1549.32
34	193.4	1550.12
33	193.3	1550.92
32	193.2	1551.72
31	193.1	1552.52
30	193.0	1553.33
29	192.9	1554.13
28	192.8	1554.94
27	192.7	1555.75
26	192.6	1556.55
25	192.5	1557.36
24	192.4	1558.17
23	192.3	1558.98
22	192.2	1559.79
21	192.1	1560.61
20	192.0	1561.42

19	191.9	1562.23
18	191.8	1563.05
17	191.7	1563.86

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V _{cc}	0.5		4.0	V	
Storage Temperature	T _{stg}	-40		+85	°C	1
Operating Case Temperature	T _c	-40		+85	°C	
Data Rate	BR	1.2	10.3125	11.3	Gbps	2
Bit Error Rate	BER			10 ⁻¹²		
Supply Current	I _{cc}		450	500	mA	3

Notes:

1. Ambient temperature.
2. IEEE 802.3ae.
3. For electrical power interface.

Electrical Characteristics V_{cc}=3.4 to 3.46V, T_c

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Input Voltage	V _{cc}	3.14	3.3	3.46	V	
Power Consumption	P _D			1.5	W	
Transmitter						
Differential Input Impedance	Z _{IN}		100		Ω	
Differential Data Input Swing	V _{IN,pp}	300		850	mV	
Transmit Enable voltage	V _D	2		V _{cc}	V	
Transmit Enable voltage	V _{EN}	V _{eeT}		V _{eeT} + 0.8	V	
Receiver						
Differential Data Output Swing	V _{OUT_pp}	300		850	mV	
Data Output Rise/Fall Time (20%-80%)	T _r /T _f	28			ps	
LOS Asserted	LOSA	2		Host_V _{cc}	V	
LOS De-Asserted	LOSD	V _{eeR}		V _{eeR} + 0.5	V	

Notes:

1. For electrical power interface.

Optical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Notes
Transmitter						
Optical Power	PTX	0		4	dBm	1
Optical Wavelength	λ	$\lambda-0.1$	λ	$\lambda+0.1$	nm	2
Extinction Ratio	ER	9			dB	
Spectral Width (-20dB)	$\Delta\lambda$			0.6	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Dispersion Penalty	TDP			3.2	dB	
Launch Power of OFF Transmitter	P _{off}			-30	dBm	1
Receiver						
Optical Center Wavelength	λ_c	1260		1620	nm	
Average Receive Power	P _{RX}	-24		-7	dBm	
Receiver Sensitivity @ 10.3 Gbps	PX_SEN			-24	dBm	3
Receiver Reflectance	TR _{RX}			-27	dB	
LOS Assert	LOSA	-35			dB	
LOS De-assert	LOSD			-27	dB	
LOS Hysteresis	LOSH	0.5			dB	

Notes:

1. Average.
2. λ = specified ITU Grid wavelength.
3. Measured with PRBS 2³¹-1 test mode, BER<10⁻¹².

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX_Fault	Transmitter Fault.	
3	TX_Disable	Transmitter Disable. Laser output disabled on “high” or “open.”	2
4	SDA	2-Wire Serial Interface Data.	3
5	SCL	2-Wire Serial Interface Clock.	3
6	MOD_ABS	Module Absent. Grounded within the module.	3
7	RS0	Rate Select 0. Not used.	
8	LOS	Loss of Signal indication. “Logic 0” indicates normal operation.	4
9	RS1	Rate Select 1. Not used.	1
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted Data out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted Data In. AC Coupled.	
19	TD-	Transmitter Inverted Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

Notes:

1. Circuit ground is isolated form chassis ground.
2. Disable TDIS>2V or open. Enable TDIS<0.8V.
3. Should be pulled up with 4.7kΩ-10KΩ on host board to a voltage between 2V and 3.46V.
4. LOS is open collector output.

Typical eye Diagram



Block Diagram



Electrical Pad Layout



Top of Board



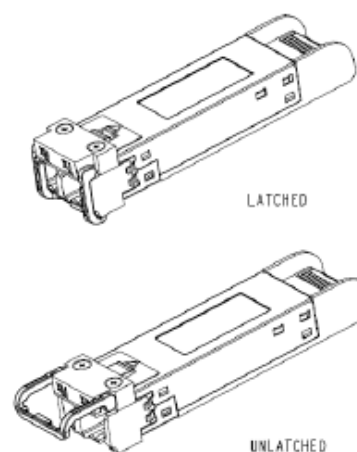
Bottom of Board



Mechanical Specifications

Module Weight: 16.5g

Dust Cap Weight: 0.95g



All Dimensions are ±0.2mm unless otherwise specified