

NXS10-D176-S8D

SFP+ 10G ZR DWDM 80 km

Features

- SFP+ Form Factor
- 10 Gb/s bitrate
- Up to 80 km over Singlemode
- LC connector
- C17~C61, EML laser, APD photodiode
- Up to 1,5W power consumption
- +0/+70°C temperature range
- Built in digital diagnostic monitoring



Applications

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

Optical specifications



Optical budget : 24 dB

Transmitter & Receiver optical Specifications

Parameter	Min	Max	Unit
Tx Power	0	4	dBm
Rx Sensitivity	-24	-7	dBm

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	0		70	°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 _{EE} T		V _{EE} T + 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 _{EE} R		V _{EE} R + 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



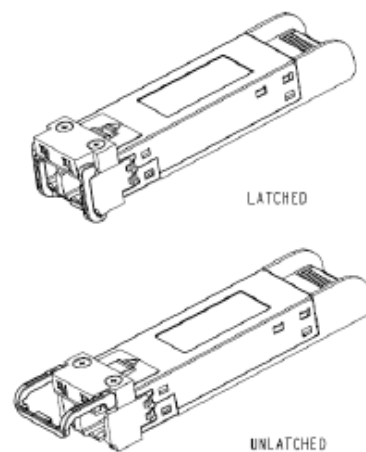
Bottom of Board



Mechanical Specifications

Module Weight: 16.5g

Dust Cap Weight: 0.95g



All Dimensions are ±0.2mm unless otherwise specified