

Features:

- Single-wavelength 100 Gbps transmission
- nCP4™ Silicon Photonics Optical Engine
- Fixed wavelengths on 100GHz DWDM grid
- Compatible with standard 100GHz DWDM filters
- Up to 100km over SMF (with DCM and EDFA)
- Duplex LC connector
- PAM4 optical signal with integrated FEC
- 4x25.78 Gbps CAUI-4 host interface
- Compliant with QSFP28 MSA SFF-8636



- QSFP28 MSA digital monitoring functions
- Operating Case Temperature: 0 to 70°C

Applications:

- 100GbE signal DWDM transmission

1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature (case)	Ts	-40	85	°C
Operating Case Temperature	Top	-5	75	V
Supply Voltage	Vcc	0	3.6	V
Relative Humidity (non-condensing)	RH	5	85	%
Optical Receiver Damage Threshold	Rxdmg	5		dBm
ESD Sensitivity		500		V

* Exceeding any of these maximum ratings may cause permanent damage to the device.

2. Specified Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Top	0	25	70	°C
Power Supply Voltage	Vcc	3.135	3.3	3.47	V
Power Consumption	PD		4.5	5.5	W

3. Electrical Characteristics

The host 4x25.78 Gb/s electrical interface complies with the CAUI-4 standard.

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Data Rate per Lane (host side)	BRavg		25.78125		Gbps	
Data Rate Variation		-100		100	ppm	
Transmitter						
Input Swing (Differential)	Vin			900	mVpp	AC coupled
Input Impedance (Differential)	Zin	90	100	110	Ohm	
Receiver						
Output Swing (Differential)	Vout			900	mVpp	AC coupled
Output Impedance (Differential)	Zout	90	100	110	Ohm	
Low Speed Signals						
LPMode, Reset, ModSel	VIL	-0.3		0.8	V	
	VIH	2		Vcc+0.3		
ModPrs, Int	VOL	0		0.4	V	IOL = 2.0mA
	VOH	Vcc-0.5		Vcc+0.3		
SCL, SDA	VIL	-0.3		0.3*Vcc	V	
	VIH	0.7*Vcc		Vcc+0.5		
SCL, SDA	VOL	0		0.4	V	IOLmax = 3.0mA
	VOH	Vcc-0.5		Vcc+0.3		

4. Optical Characteristics

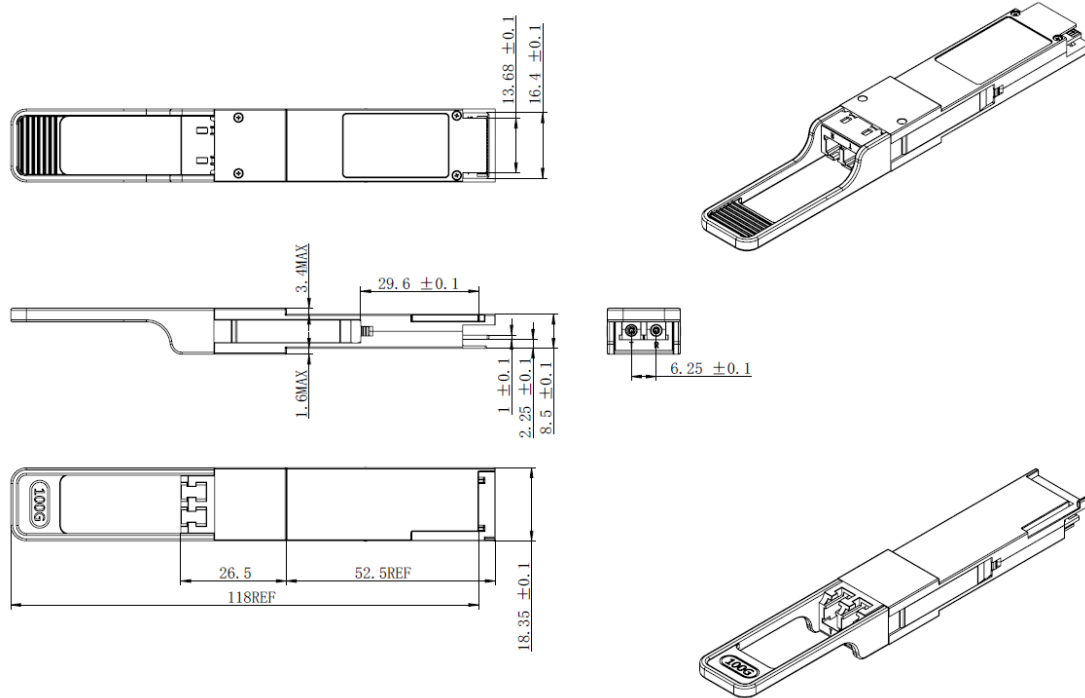
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Data Rate	BRavg	103.125			Gbps	1
Data Rate Variation		-100		100	ppm	
Transmitter						
Central Wavelength	λC	See Ordering Information			nm	
Central Wavelength Stability		$\lambda C-0.1$		$\lambda C+0.1$	nm	
Average Output Optical Power	P0		-0.5	2	dBm	5

Optical Extinction Ratio (outer)	ER	6			dB	
Optical Output Power, TX: OFF	Poff			-30	dBm	
TX Reflectance				-26	dB	
Receiver						
Operating Wavelength		1526		1567	nm	
RX Sensitivity, Avg Power	RXsens		-9		dBm	2, 5
RX Overload, Avg Power	RXsat	4			dBm	2
RX Damage Threshold	RXdmg	4			dBm	
RX Sensitivity, Avg Power at OSNR 32dB/0.1nm				-7	dBm	3, 5
Dispersion Tolerance		-30		+30	ps/nm	4, 5
RX Reflectance				-26	dB	
LOS Assert	LOSA	-15			dBm	
LOS De-Assert	LOSD			-10.5	dBm	
LOS Hysteresis			1		dB	

Notes:

1. The raw data rate is minimum 103.125 Gbps, when FEC code is added, the actual optical signal data rate is higher.
2. Rx average power sensitivity and overload are for post-FEC BER < 1E-15 with integrated FEC without dispersion and noise load at BOL.
3. Rx average power sensitivity at OSNR 32 dB is for post-FEC BER < 1E-15 with integrated FEC without dispersion at OSNR 32 dB/0.1nm at BOL. A 100 GHz spacing DWDM filter with enough bandwidth should be used to remove the extra noises of the optical signal with noises for the RX test.
4. Dispersion tolerance is for dispersion values that cause Rx OSNR penalty less than 2 dB when compared with no dispersion at RX power -6 dBm and PRBS15 signal at BER 2E-3 at the operating data rate at BOL. A 100 GHz spacing DWDM filter with enough bandwidth should be used to remove the extra noises of the optical signal with noises for the RX BER test.
5. The Average output optical power, RX sensitivity, RX sensitivity at OSNR 32 dB/0.1nm, and Dispersion tolerance parameters are specified for beginning of life (BOL) over the operating temperature with clean fiber connectors.

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

Part Number	Data Rate	Applications	Case Temperature Range	DWDM Channel
100GEQ-Dxx-SL-PAM4	100Gbps	Up to 100km with EDFA & DCM	0°C to 70°C	XX (see table below)

Channel Number (XX)	Freq (THz)	Central Wavelength (nm)	Channel Number (XX)	Freq (THz)	Central Wavelength (nm)
21	192.1	1560.61	41	194.1	1544.53
22	192.2	1559.79	42	194.2	1543.73
23	192.3	1558.98	43	194.3	1542.94
24	192.4	1558.17	44	194.4	1542.14
25	192.5	1557.36	45	194.5	1541.35
26	192.6	1556.55	46	194.6	1540.56
27	192.7	1555.75	47	194.7	1539.77

28	192.8	1554.94	48	194.8	1538.98
29	192.9	1554.13	49	194.9	1538.19
30	193.0	1553.33	50	195.0	1537.40
31	193.1	1552.52	51	195.1	1536.61
32	193.2	1551.72	52	195.2	1535.82
33	193.3	1550.92	53	195.3	1535.04
34	193.4	1550.12	54	195.4	1534.25
35	193.5	1549.32	55	195.5	1533.47
36	193.6	1548.51	56	195.6	1532.68
37	193.7	1547.72	57	195.7	1531.90
38	193.8	1546.92	58	195.8	1531.12
39	193.9	1546.12	59	195.9	1530.33
40	194.0	1545.32	60	196.0	1529.55

OEM	Part Number	OEM	Part Number
Cisco	100GEQ-D34-PAM4-CSC	MSA Champion ONE	100GEQ-D33-PAM4
Cisco	100GEQ-D35-PAM4-CSC	MSA Champion ONE	100GEQ-D34-PAM4
Cisco	100GEQ-D36-PAM4-CSC	MSA Champion ONE	100GEQ-D35-PAM4
Cisco	100GEQ-D37-PAM4-CSC	MSA Champion ONE	100GEQ-D36-PAM4
Cisco	100GEQ-D38-PAM4-CSC	MSA Champion ONE	100GEQ-D37-PAM4
Cisco	100GEQ-D40-PAM4-CSC	MSA Champion ONE	100GEQ-D38-PAM4
		MSA Champion ONE	100GEQ-D40-PAM4

7. Contact Information

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