QSFP28-100GB-LR-CW27-OPC

MSA and TAA 100GBase-CWDM QSFP28 Transceiver Single Lambda (SMF, 1270nm, 10km w/FEC, LC, DOM)

Features

- Supports 100Gbps
- 100G Lambda MSA 100G-LR Specification Compliant
- Single 3.3V Power Supply
- Power Dissipation < 4.5W
- Up to 10km over SMF with FEC
- QSFP28 MSA Compliant
- SFF-8636 Rev 2.10a Compliant
- 4x25G Electrical Interface
- LC Duplex Connector
- Operating Case Temperature: 0C to 70C
- I2C Interface with Integrated Digital Diagnostic Monitoring
- RoHS compliant

Applications:

- 100GBase Ethernet over CWDM
- Access, Metro and Enterprise

Product Description

This MSA compliant QSFP28-100GB-LR-CW27 QSFP28 transceiver provides 100GBase-CWDM throughput up to 10km w/host FEC over single-mode fiber (SMF) using a single lambda wavelength of 1270nm via an LC connector. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure 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.

CWDM Available Wavelengths

Wavelengths	Min.	Typ.	Max.
27	1264.5	1271	1277.5
29	1284.5	1291	1297.5
31	1304.5	1311	1317.5
33	1324.5	1331	1337.5

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		4.0	V
Storage Temperature	TS	-40		+85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Relative Humidity	RH	5		85	%
Damage threshold	Rxdmg	5.5			dBm

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Dissipation	PD			4.5	W	
Transmitter						
Differential data input swing per lane		900			mVp-p	
Differential input impedance	Zin	90	100	110	ohm	
DC common mode voltage (Vcm)		-350		2850	mV	
Receiver						
Differential output amplitude				900	mVp-p	
Differential output impedance	Zout	90	100	110	ohm	
Output Rise/Fall Time	tr/tf	12			ps	20%~80%
AC Common Mode Output Voltage				7.5	mV	
Eye width		0.57			UI	
Eye height differential		228			mV	@TP4, 1E-15
DC common mode voltage (Vcm)		-350		2850	mV	1

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling speed			53.125		Gbaud	
Modulation format		PAM4				
Optical center wavelength	λ	λc–6.5	λc	λc+6.5	nm	
Side-mode suppression ratio	SMSR	30			dB	
Extinction ratio	ER	3.5			dB	
Transmit OMA	TxOMA	0.7		4.7	dBm	
Transmit average	TxAVG	-1.4		4.5	dBm	1
Launch power in OMA_{outer} minus TDECQ		-0.7			dBm	2
Launch power in OMA_{outer} minus TDECQ		-0.6			dBm	3
Transmitter and dispersion eye closure	TDECQ			3.4	dB	
Optical return loss tolerance				15.6	dB	4
Receiver						
Signaling speed			53.125		Gbaud	
Damage threshold		5.5			dBm	
Receive power (OMAouter)	RxOMA			4.7	dBm	
Average receive power	RxAVG	-7.7		4.5	dBm	
Receiver sensitivity (OMAouter)	SenOMA			Max(-6.1, SECQ-7.5)	dBm	5
Receiver reflectance				-26	dB	
LOS assert	LOSA	-15			dBm	
LOS De-assert	LOSD			-12	dBm	
LOS hysteresis		0.5			dB	

Notes:

1. Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. For ER≥4.5dB
3. For ER<4.5dB
4. Transmitter reflectance is defined looking into the transmitter.
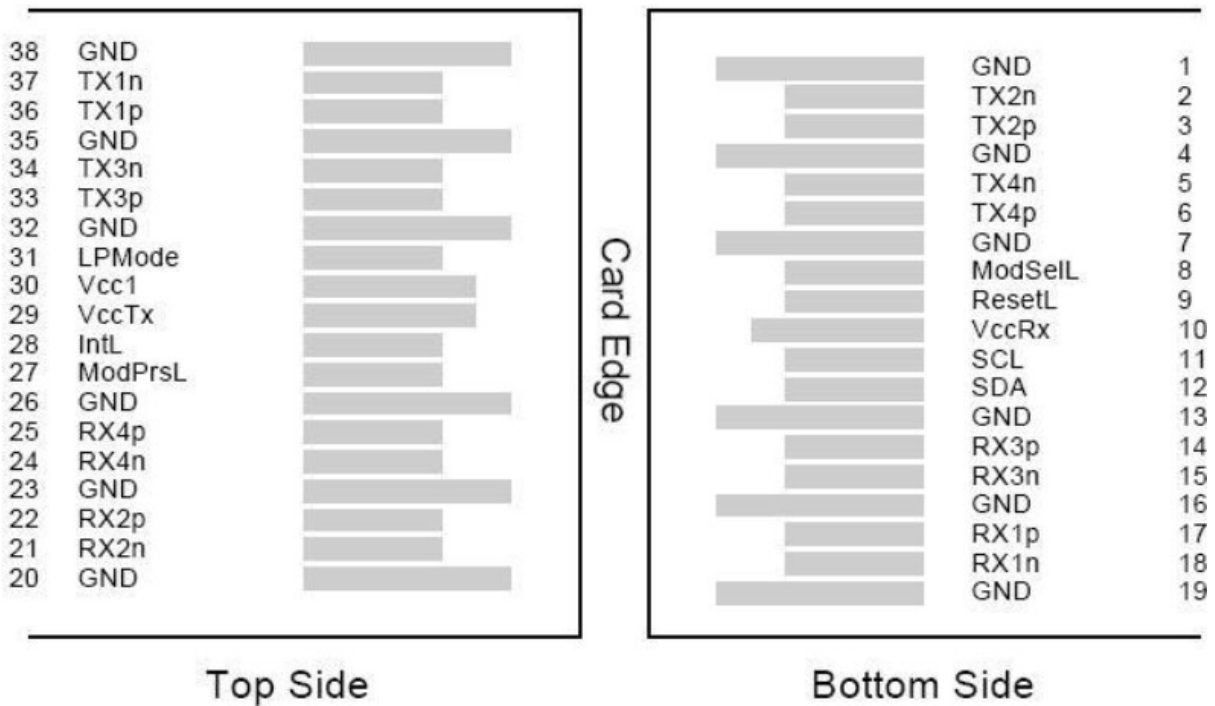5. Sensitivity is specified at 2.4×10^{-4} BER.

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	
30	Vcc1	3.3V power supply	
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Output	

35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.

Electrical Pin-out Details

Top Side		Bottom Side	
38	GND	GND	1
37	TX1n	TX2n	2
36	TX1p	TX2p	3
35	GND	GND	4
34	TX3n	TX4n	5
33	TX3p	TX4p	6
32	GND	GND	7
31	LPMode	ModSelL	8
30	Vcc1	ResetL	9
29	VccTx	VccRx	10
28	IntL	SCL	11
27	ModPrsL	SDA	12
26	GND	GND	13
25	RX4p	RX3p	14
24	RX4n	RX3n	15
23	GND	GND	16
22	RX2p	RX1p	17
21	RX2n	RX1n	18
20	GND	GND	19

Card Edge

Mechanical Specifications

13.68 ±0.1

1.90 ±0.1

29.60 ±0.1

1.55 ±0.1

8.50 ±0.1

2.25 ±0.1

5.20 ±0.15

6.25 ±0.1

18.35 ±0.1

65.60 ±0.4

52.40 ±0.1 REF