QSFP28-OTU4-SR-OPC

MSA and TAA 100GBase-SR4 QSFP28 Transceiver (MMF, 850nm, 100m, MPO, DOM)

Features

- SFF-8665 Compliance
- MPO Connector
- Multi-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 100GBase Ethernet
- Access and Enterprise

Product Description

This MSA compliant QSFP28 transceiver provides 100GBase-SR4 throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. 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.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Ts	-40		+85	°C
Case Operating Temperature	Tc	0		70	°C
Operating Relative Humidity	RH	5		85	%

Notes:

1. Exceeding any one of these values may destroy the device immediately.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Power Consumption	P			3.5	W	
Transmitter						
Input Amplitude (Differential)	Vin	150		1050	mVpp	AC coupled inputs
Input Impedance (Differential)	Zin	85	100	115	ohms	Rin > 100 kohms @ DC
Receiver						
Output Amplitude (Differential)	Vout	200		1100	mVpp	AC coupled outputs
Output Impedance (Differential)	Zout	85	100	115	ohms	
Output Rise/Fall Time	tr/tf		12		ps	20%~80%

Optical Characteristics 100GBASE-SR4 Ethernet Operation

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane	BRAVE		25.78		Gbps	
Center Wavelength	λC	840	850	860	nm	
Average Launch Power, Each Lane	Pout/lane	-8.4		2.4	dBm	1
Optical modulation amplitude	Poma			3	dBm	
Extinction Ratio	ER	3			dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}		IEEE 802.3bm 100Gbase-SR4				2
Receiver						
Signaling Speed per Lane	BRAVE	25.78		28.05	Gbps	
Center Wavelength	λC	840	850	860	nm	
Average Receive Power per Lane	Rpow	-10.3		2.4	dBm	
Stressed Receive Sensitivity in OMA per Lane	Pmin			-5.2	dBm	3
Receive Sensitivity in OMA per Lane	Pmin			-8	dBm	3
LOS Assert	LOSA	-20			dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Output is coupled into a 50/125µm multi-mode fiber.
2. Filtered, measured with a PRBS 2^{31}-1 test pattern @25.78Gbps.
3. Receive sensitivity measured at BER less than 5E-5, with a 2^{31}-1 PRBS @25.78Gbps.

Normalized time (Unit Interval)
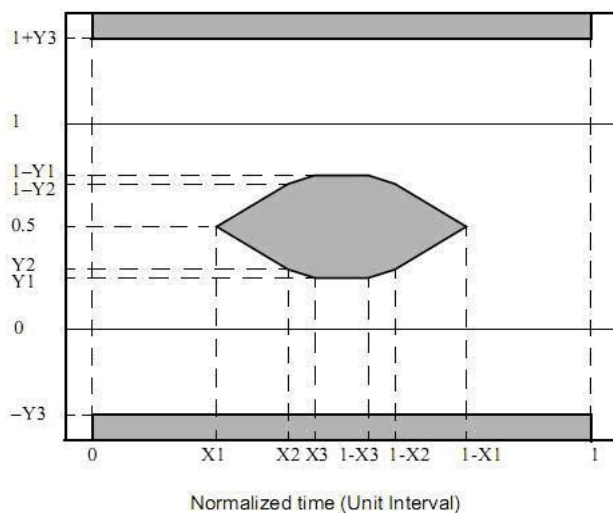
Optical Characteristics OTU4 and 128G Fiber Channel Operation

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Speed per Lane	BRAVE	27.95		28.05	Gbps	1
Center Wavelength	λC	840	850	860	nm	
Average Launch Power, Each Lane	Pout/lane	-2.5		2.4	dBm	2
Optical modulation amplitude	Poma			3	dBm	
Extinction Ratio	ER	3			dB	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}		FC-PI-6				3
Receiver						
Signaling Speed per Lane	BRAVE	27.95		28.05	Gbps	
Center Wavelength	λC	840	850	860	nm	
Average Receive Power per Lane	Rpow	-10.2		2.4	dBm	
Receive Sensitivity in OMA per Lane	Pmin			-6	dBm	4
LOS Assert	LOSA	-20			dBm	
LOS De-Assert	LOSD			-12	dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. This module will work at 103.1Gbps (25.78Gbpsx4) in default. To work at 112.2Gbps (28.05Gbpsx4), Page 00 bytes 87-88 (Rx and Tx Rate Select) need to be written with 0xFF to enable rate select (refer to SFF-8636), which will lose to default when powered off.

Page 00 Byte 87	Page 00 Byte 88	Data Rate
0xAA	0xAA	103.1Gbps (Default)
0xFF	0xFF	112.2Gbps

2. Output is coupled into a 50/125μm multi-mode fiber.
3. Filtered, measured with a PRBS 2^{31}-1 test pattern @28.05Gbps.
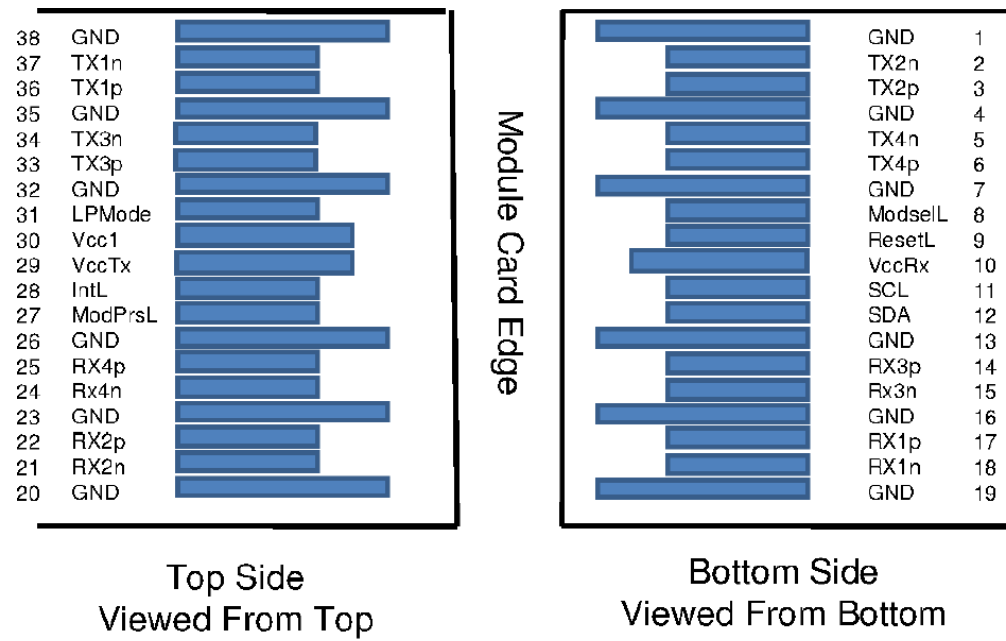4. Receive sensitivity measured at BER less than 1E-6, with a 2^{31}-1 PRBS @28.05Gbps.

Normalized time (Unit Interval)
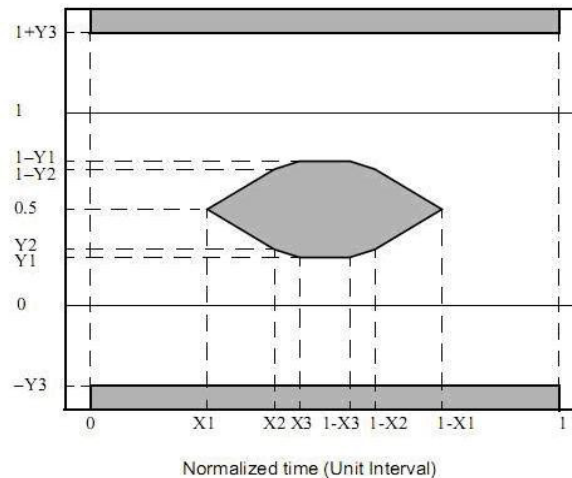
Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Ref.
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		VccRx	+3.3V Power Supply Receiver	2
11	LVCMOS- I/O	SCL	2-wire serial interface clock	
12	LVCMOS- I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3V Power supply transmitter	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connector pins are each rated for a maximum current of 500mA.

Electrical Pin-out Details

Top Side (Viewed From Top)		Module Card Edge	Bottom Side (Viewed From Bottom)	
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

Top Side
Viewed From Top

Bottom Side
Viewed From Bottom

Mechanical Specifications

Unit:mm