

**Модуль QSFP28, 100G, SR4, 70m/100m, MPO**



**Особенности:**

- передача данных до 103.1Gbps
- одно питание 3.3В с потреблением < 3.5Вт
- до 70м по многомодовому волокну MMF OM3 и до 100м по MMF OM4
- поддержка горячей замены
- соответствие спецификации на QSFP28 MSA
- I2C интерфейс с монитором цифровой диагностики

**Области применения:**

- 100GBASE-SR4 Ethernet

Part No.	Data Rate	Distance	Interface	Temp.	DDMI
QSFP28.SR4.MPO8F	103.1Gbps	MMF OM3 for 70m MMF OM4 for 100m	MPO	Standard	Yes

\*The product image only for reference purpose.

**Absolute Maximum Ratings<sup>\*note1</sup>**

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

Note1: Exceeding any one of these values may destroy the device immediately.

**Recommended Operating Conditions**

Parameter	Symbol		Min.	Typical	Max.	Unit
Operating Case Temperature	T <sub>c</sub>	QSFP28.SR4.MPO8F	0		70	°C
Power Supply Voltage	Vcc		3.135	3.3	3.465	V
Power Consumption	P				3.5	W

**Performance Specifications - Electrical**

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
<b>Transmitter</b>						
Input Amplitude (Differential)	Vin	150		1050	mVpp	AC coupled inputs <sup>*(Note6)</sup>
Input Impedance (Differential)	Zin	85	100	115	ohms	Rin > 100 kohms @ DC
<b>Receiver</b>						
Output Amplitude	Vout	200		1100	mVpp	AC coupled

(Differential)						outputs <sup>*(Note6)</sup>
Output Impedance (Differential)	Zout	85	100	115	ohms	
Output Rise/Fall Time	t <sub>r</sub> /t <sub>f</sub>		12		ps	20%~80%

**Optical and Electrical Characteristics**

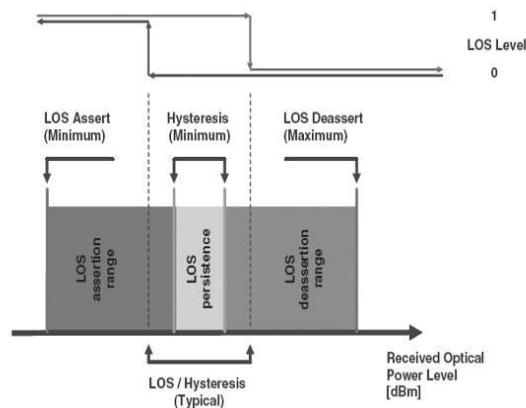
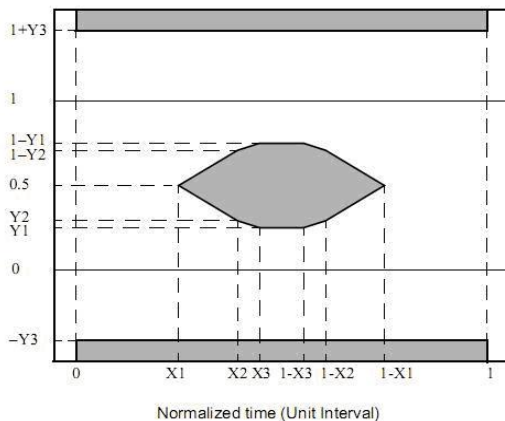
Parameter	Symbol	Min.	Typical	Max.	Unit
<b>Transmitter</b>					
Signaling Speed per Lane	BR <sub>AVE</sub>		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Center Wavelength	λ <sub>C</sub>	840	850	860	nm
Average Launch Power, Each Lane <sup>*(note2)</sup>	P <sub>out/lane</sub>			2.4	dBm
Optical modulation amplitude	P <sub>oma</sub>			3	dBm
Extinction Ratio <sup>*(Note3)</sup>	ER	2			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3} <sup>*(Note4)</sup>		IEEE 802.3bm 100Gbase-SR4			
<b>Receiver</b>					
Signaling Speed per Lane	BR <sub>AVE</sub>		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Center Wavelength	λ <sub>C</sub>	840	850	860	nm
Average Receive Power per Lane	R <sub>pow</sub>			2.4	dBm
Receive Sensitivity in OMA per Lane <sup>*(Note5)</sup>	P <sub>min</sub>			-5.2	dBm
LOS Assert	LOSA	-13			dBm
LOS De-Assert	LOSD			-9.5	dBm
LOS Hysteresis <sup>*(Note6)</sup>		0.5			dB

Note2: Output is coupled into a 50/125µm multi-mode fiber.

Note3: Filtered, measured with a PRBS 2<sup>31</sup>-1 test pattern @25.78Gbps

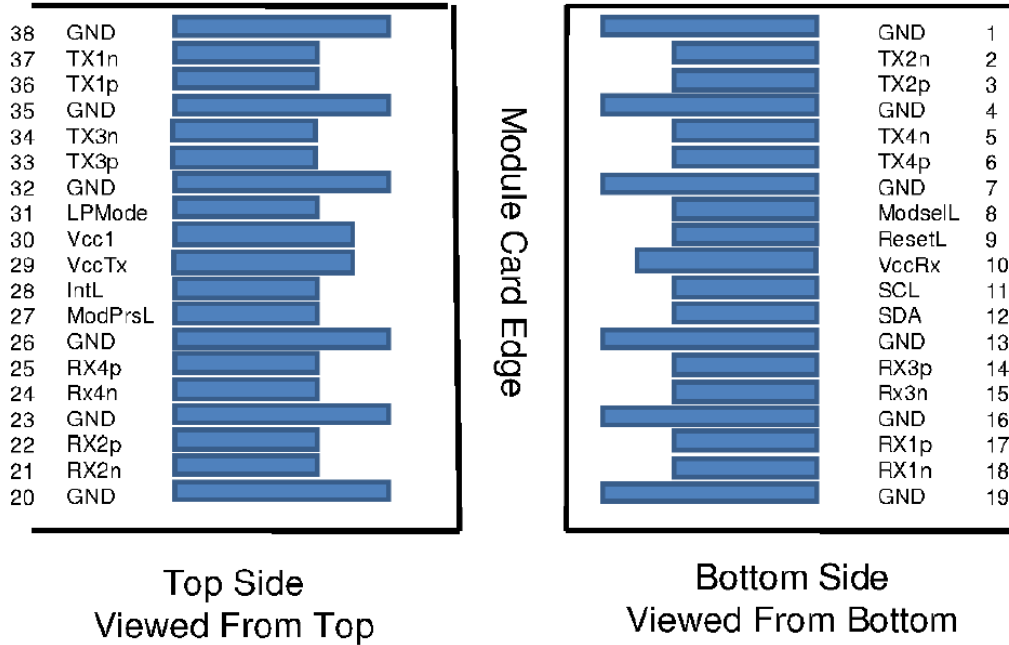
Note4: Filtered, measured with a PRBS 2<sup>31</sup>-1 test pattern @25.78Gbps

Note5: Minimum average optical power measured at BER less than 1E-12, with a 2<sup>31</sup>-1 PRBS.



Note6: LOS Hysteresis

QSFP28 Transceiver Electrical Pad Layout



Pin Function Definitions

Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		VccRx	+3.3V Power Supply Receiver	2	2
11	LVC MOS- I/O	SCL	2-wire serial interface clock	3	
12	LVC MOS- I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	

22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	+3.3V Power supply transmitter	2	2
30		Vcc1	+3.3V Power supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	1

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. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figures 3 and 4. 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.

**Mechanical Specifications**

