

Multi-Mode 100GBASE-SR4 QSFP28 Transceiver RoHS6 Compliant

Features

- ✓ Supports 103.1Gbps aggregate bit rates
- ✓ Single 3.3V Power Supply and Power dissipation < 3.5W
- ✓ Up to 70m transmission on MMF OM3 and 100m transmission on MMF OM4
- ✓ Hot-Pluggable QSFP28 Footprint
- ✓ Class 1 FDA and IEC60825-1 Laser Safety Compliant
- ✓ RoHS6 Compliant
- ✓ Operating Case Temperature: 0°C to +70°C
- ✓ Compliant with QSFP28 MSA Specification
- ✓ I²C interface with integrated Digital Diagnostic Monitoring



Applications

- ✓ 100GBASE-SR4 Ethernet

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T _s	-40	+85	°C
Supply Voltage	V _{cc}	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

Exceeding any one of these values may destroy the device immediately

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T _c YQ21H-8501M	0		70	°C
Power Supply Voltage	V _{cc}	3.135	3.3	3.465	V
Power Consumption	P			3.5	W

Performance Specifications - Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Input Amplitude (Differential)	V _{in}	150		1050	mV	AC coupled inputs*(Note6)
Input Impedance (Differential)	Z _{in}	85	100	115	ohms	R _{in} > 100 kohms @ DC
Receiver Section:						
Output Amplitude (Differential)	V _{out}	200		1100	mV	AC coupled outputs*(Note6)
Output Impedance (Differential)	Z _{out}	85	100	115	ohms	
Output Rise/Fall Time	t _r /t _f		12		ps	20%~80%

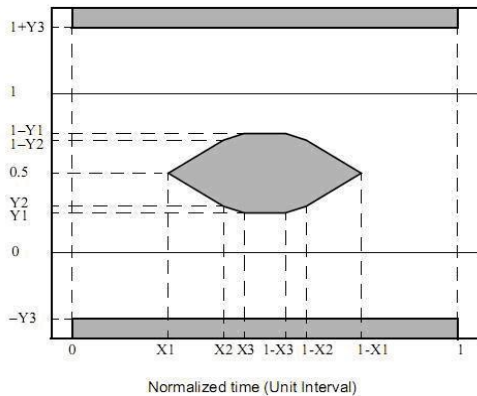
Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Signaling Speed per Lane	BR _{AVE}		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Center Wavelength	λ _C	840	850	860	nm
Average Launch Power, Each Lane*(note1)	P _{out/lane}	-9.1		2.4	dBm
Optical modulation amplitude	P _{oma}			4	dBm
Extinction Ratio*(note2)	ER	3			dB
Average launch power of OFF transmitter, per lane				-30	dB
Optical Return Loss Tolerance				12	dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}*(note3)			IEEE 802.3bm 100Gbase-SR4		
Receiver					
Signaling Speed per Lane	BR _{AVE}		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Center Wavelength	λ _C	840	850	860	nm
Average Receive Power per Lane	R _{pow}	-10.3		2.4	dBm
Receive Sensitivity in OMA per Lane*(note4)	P _{min}			-5.2	dBm
Damage Threshold per Lane	P _{max}	3.4			dBm
LOS Assert	LOSA	-20			dBm
LOS De-Assert	LOSD			-12	dBm
LOS Hysteresis*(Note5)		0.5			dB

Note1: Output is coupled into a 50/125 μ m multi-mode fiber.

Note2: Filtered, measured with a PRBS $2^{31}-1$ test pattern @25.78Gbps

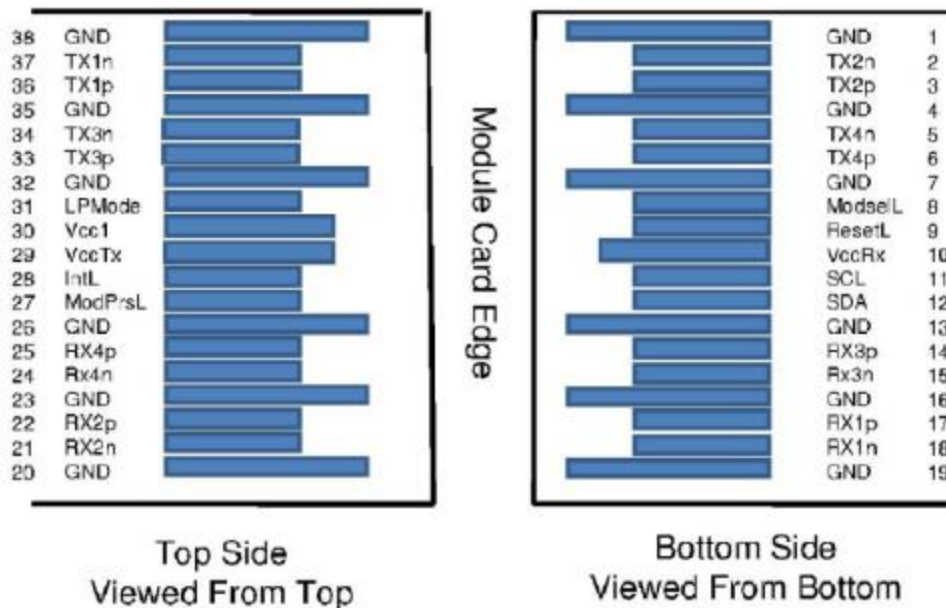
Note3: Filtered, measured with a PRBS $2^{31}-1$ test pattern @25.78Gbps



Note4: Minimum average optical power measured at BER less than $1E-12$, with a 231-1 PRBS.

Note5: LOS Hysteresis

QSFP28 Transceiver Electrical Pad Layout



Pin Function Definitions

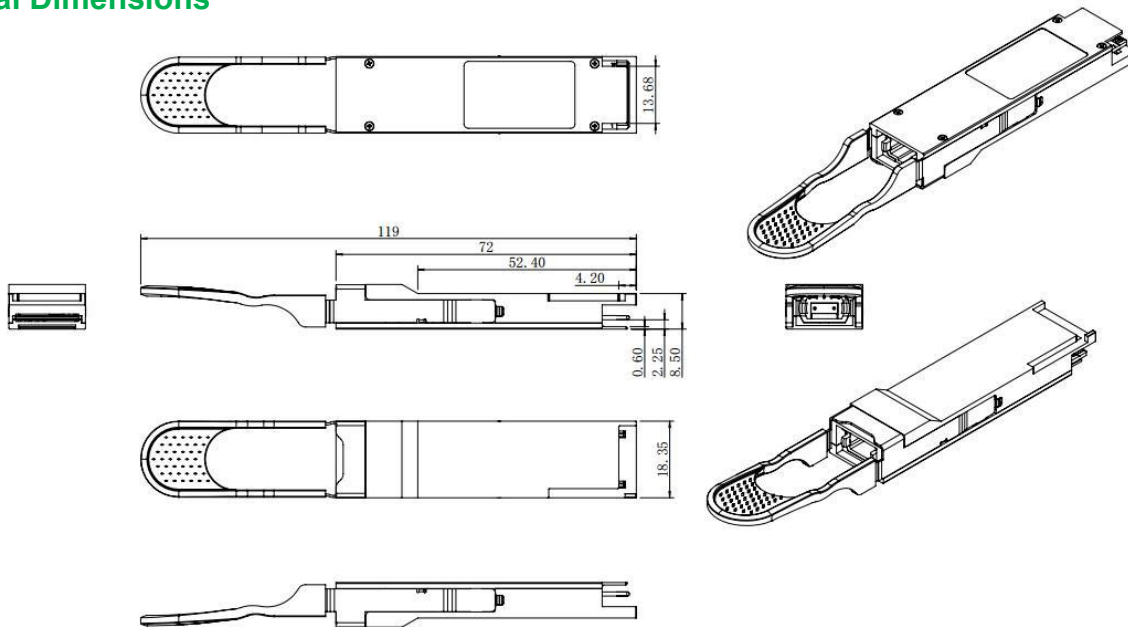
Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	

7		GND	Ground	1	1
8	<u>LVTTL-I</u>	<u>ModSelL</u>	Module Select	3	
9	<u>LVTTL-I</u>	<u>ResetL</u>	Module Reset	3	
10		<u>VccRx</u>	+3.3V Power Supply Receiver	2	2
11	<u>LVC MOS-I/O</u>	SCL	2-wire serial interface clock	3	
12	<u>LVC MOS-I/O</u>	SDA	2-wire serial interface data	3	
13		GND	Ground	1	1
14	<u>CML-O</u>	Rx3p	Receiver Non-Inverted Data Output	3	
15	<u>CML-O</u>	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	1
17	<u>CML-O</u>	Rx1p	Receiver Non-Inverted Data Output	3	
18	<u>CML-O</u>	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	<u>CML-O</u>	Rx2n	Receiver Inverted Data Output	3	
22	<u>CML-O</u>	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	<u>CML-O</u>	Rx4n	Receiver Inverted Data Output	3	
25	<u>CML-O</u>	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	<u>LVTTL-O</u>	<u>ModPrsL</u>	Module Present	3	
28	<u>LVTTL-O</u>	<u>IntL</u>	Interrupt	3	
29		<u>VccTx</u>	+3.3V Power supply transmitter	2	2
30		<u>Vcc1</u>	+3.3V Power supply	2	2
31	<u>LVTTL-I</u>	<u>LPMode</u>	Low Power Mode	3	
32		GND	Ground	1	1
33	<u>CML-I</u>	Tx3p	Transmitter Non-Inverted Data Input	3	
34	<u>CML-I</u>	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	<u>CML-I</u>	Tx1p	Transmitter Non-Inverted Data Input	3	
37	<u>CML-I</u>	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 Dimensions



Ordering information

Part Number	Data Rate	Fiber	Distance	Interface	Temp	DDMI
YQ21H-8501M	103.1Gbps	MMF	OM3 for 70m OM4 for 100m	MPO	0 to +70°C	Yes

Important Notice

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