

100Gbps 850nm SR 100m QSFP28 Optical Transceiver Module

S-QP1A85M01-CD

Features

- Hot Pluggable QSFP28 form factor
- Supports aggregate bit rate up to 103.1Gb/s
- Single MPO12 interface
- 4x25G/s 850nm VCSEL transmitter, PIN array detector
- Low power consumption <3.5W
- Maximum link length of 100m on OM4 Multimode Fiber (MMF)
- All-metal housing for superior EMI performance
- IIC management interface
- Single +3.3V power supply
- Operating Temperature:0 to +70°C
- RoHS compliant (lead free)

Applications

- **100G ethernet**
- **Other optical links**

Standards

- IEEE 802.3bm
- SFF-8636, SFF-8665, SFF-8679

Description

100GBase-SR4 QSFP28 transceiver is designed to meet the requirements of 100G ethernet links over MMF up to 100m. It is compliant with QSFP28 MSA, IEEE 802.3bm and CAUI-4. It is cost-effective, low power consumption with a single 3.3V power supply. It is fabricated with all-metal and compact size housing for superior EMI performance.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	Vcc	-0.5		4	V
Storage Temperature Range	Ts	-40		85	°C
Relative Humidity - Storage	RH _s	0		95	%
Relative Humidity - Operating	RH _o	0		85	%

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Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature Range	T _c	0	-	70	°C
Power Supply Voltage	V _{cc}	3.14	3.3	3.46	V
Total Power Consumption	P _w	-	-	2.5	W
Data Rate	BR	-	25.78125	-	Gbps

Electrical Characteristics

Transmitter Electrical Characteristics					
Parameter	Symbol	Min	Typ	Max	Unit
Differential Input Voltage Swing	V _{IN}	180	-	1000	mV
Tx Differential Input Impedence	Z _{IN}	-	100	-	Ω
Differential input return loss		Per IEEE P802.3bm			dB
Common mode input return loss		Per IEEE P802.3bm			dB
Receiver Electrical Characteristics					
Parameter	Symbol	Min	Typ	Max	Unit
Differential output Voltage Swing	V _{OUT}	300	-	900	mV
Rx Differential Output Impedence	Z _{OUT}	-	100	-	Ω
Differential output return loss		Per IEEE P802.3bm			dB
Common mode output return loss		Per IEEE P802.3bm			dB

Optical Characteristics

Transmitter Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Center Wavelength	λ	840	850	860	nm	
RMS Spectral Width	Δλ	-	-	0.6	nm	
Average Launch Power, each lane	P _{OUT}	-8.4	-	2.4	dBm	
Optical Modulation Amplitude, each lane	OMA	-6.4	-	3	dBm	
Transmitter and dispersion eye closure(TDEC),each lane	TDEC			4.3	dB	
Extinction Ratio	ER	2.0	-	-	dB	
Average Launch Power of OFF transmitter, each lane	P _{OFF}	-	-	-30	dBm	
Optical return loss tolerance	ORL	-	-	12	dB	
Transmitter eye mask definition{X1,X2,X3,Y1,Y2,Y3}	{0.23,0.34,0.43,0.27,0.35,0.4}					
Receiver Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Receiver Wavelength	λ	840	850	860	nm	

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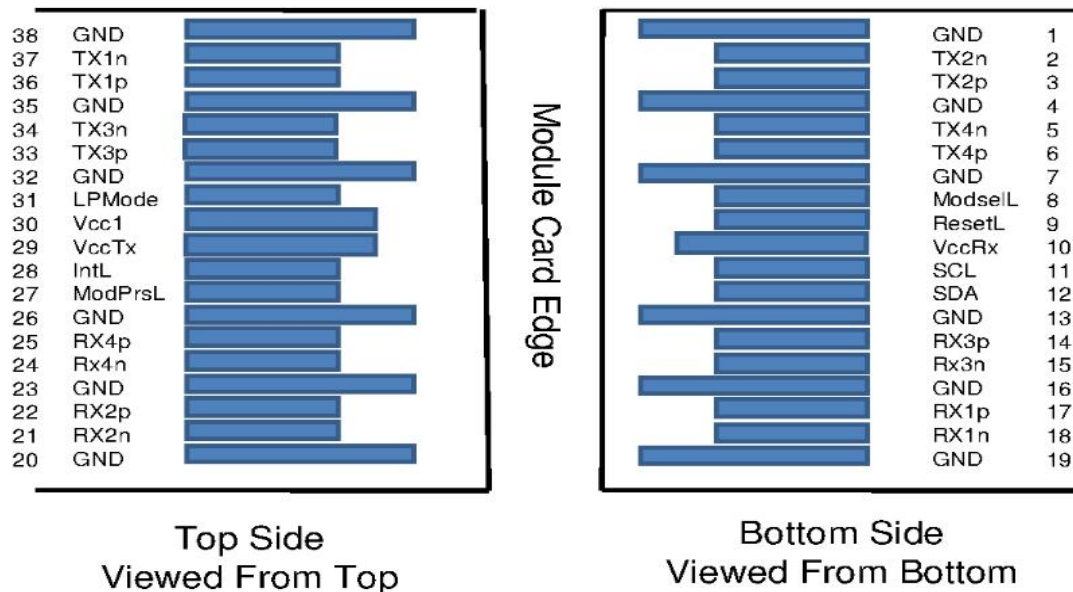
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Average power at receive input, each lane	PXPx	- 10.3	-	2.4	dBm	
Stressed Receiver Sensitivity in OMA	SRS	-	-	-5.2	dBm	1
LOS Assert	LOSA	-30	-	-	dBm	
LOS De-Assert	LOSD	-	-	-13	dBm	
LOS Hysteresis	LOSH	0.5			dB	
Receiver Reflectance	Rfl			-12	dB	

Notes

1. Measured with a PRBS 231 -1 test pattern, @25.78125Gb/s, BER<5E-5.

Pin Definitions



Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VCCRx	3.3V Power Supply Receiver	2

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11	SCL	2-Wire serial Interface Clock	
12	SDA	2-Wire serial Interface Data	
13	GND	Receiver Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Receiver Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Receiver Ground	1
20	GND	Receiver Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Receiver Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Receiver Ground	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	
29	VccTx	3.3V power supply transmitter	2
30	Vcc1	3.3V power supply	2
31	LPMODE	Low Power Mode, not connect	
32	GND	Transmitter Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Output	
35	GND	Transmitter Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Transmitter Ground	1

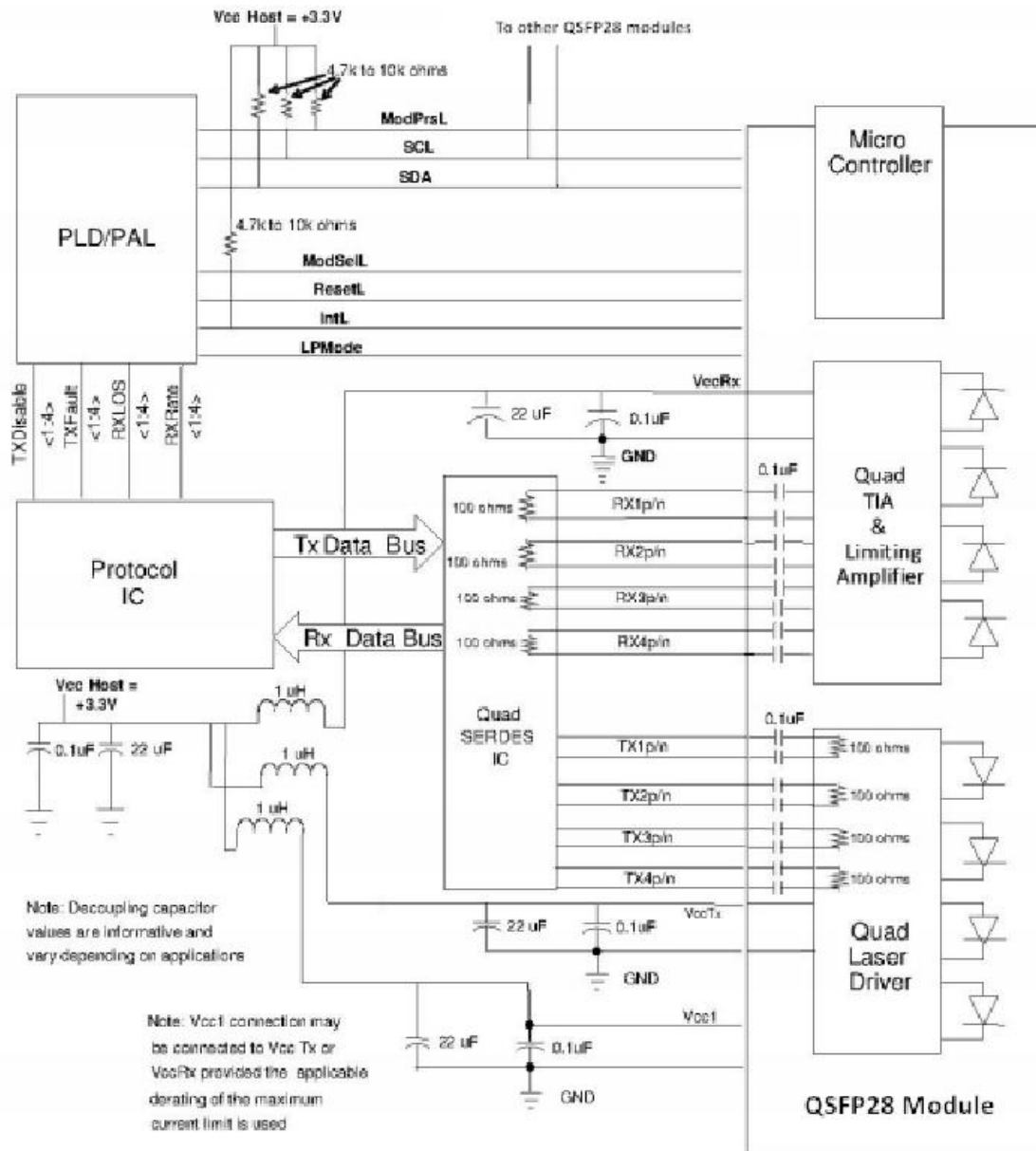
Notes:

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. 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 500 mA.

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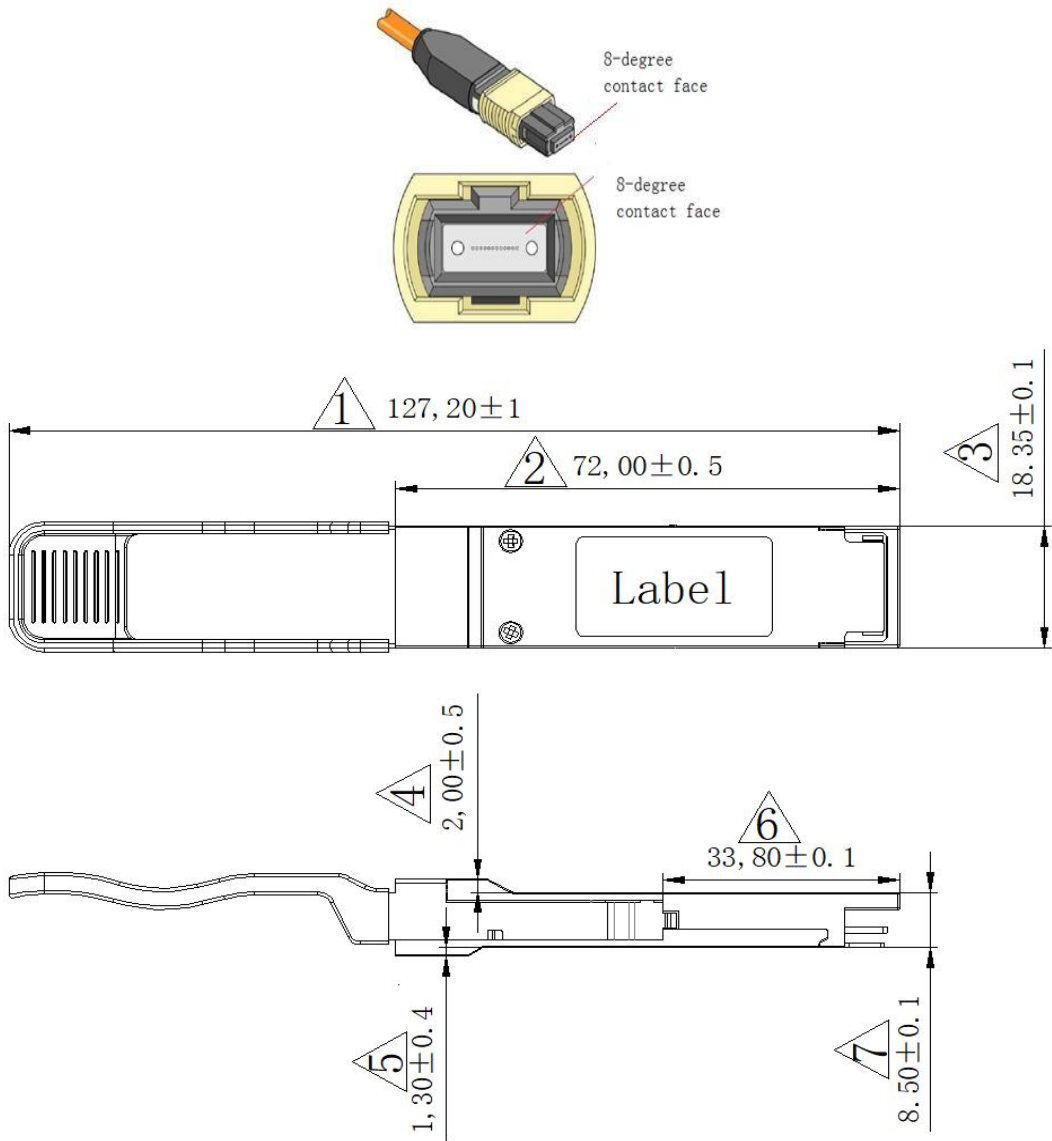
Recommended Interface Circuit



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Mechanical Dimensions



Ordering information

Part Number	Product Description
S-QP1A85M01-CD	QSFP28, 100Gbps, 850nm, MM, MPO,100m, 0°C~+70°C, With DDM