

QP40-MM85SR4C

QSFP40 40Gb/s SR4 850nm 100m Transceiver

PRODUCT FEATURES

- Hot Pluggable QSFP+ form factor
- Up to 100m on OM3
- Supports bit rate up to 10.3125Gb/s per lane
- Single MPO12 interface
- Low power consumption <1.5W
- Single +3.3V power supply
- Operating case temperature:0 to 70 °C
- RoHS compliant



APPLICATIONS

- 40G BASE-SR4 Ethernet
- InfiniBand QDR/DDR
- Data centers Switches to Routers

PRODUCT DESCRIPTION

- Photronics Valley's QP40-MM85SR4C is designed to meet the requirements of 40G ethernet including breaking out to 10G SR links over OM3 MMF up to 300m. It is compliant with QSFP+ MSA, IEEE 802.3ba. 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.

Ordering information

Part Number	Data Rate (Gbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range (Tcase) (°C)	
QP40-MM85SR4C	40	SMF	850	100m	0~70	Commercial

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	V _{CC}	-0.5		4	V
Storage Temperature Range	T _S	-40		85	°C
Relative Humidity - Storage	RH _S	0		95	%
Relative Humidity - Operating	RH _O	0		85	%

Recommended Operating Environment:

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature Range	T _C	0	-	70	°C
Power Supply Voltage	V _{CC}	3.14	3.3	3.47	V
Total Power Consumption	P	-	-	1.5	W
Data Rate	BR	-	10.3125	-	Gbps

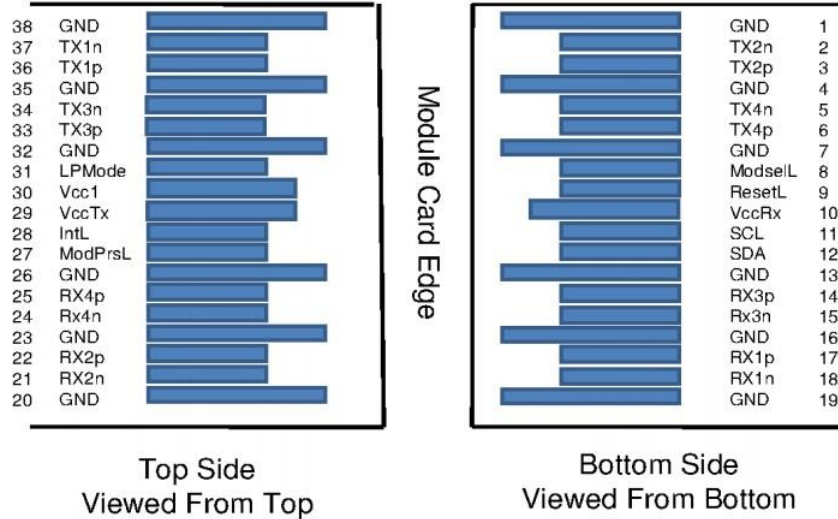
Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter						
Differential Input Voltage Swing	V _{IN}	180	-	1200	mV	
Tx Differential Input Impedence	Z _{IN}	-	100	-	Ω	
Differential input return loss		Per IEEE P802.3ba 86A.4.1.1			dB	10MHz to 11.1GHz
Differential to common-mode input return loss		10	-	-	dB	10MHz to 11.1GHz
J2 Jitter Tolerance	J2T	0.17	-	-	UI	Per IEEE P802.3ba 86A.4.1
J9 Jitter Tolerance	J9T	0.29	-	-	UI	
Receiver						
Differential output Voltage Swing	V _{OUT}	300	-	900	mV	
Rx Differential Output Impedence	Z _{OUT}	-	100	-	Ω	
Differential output return loss		Per IEEE P802.3ba 86A.4.2.1			dB	10MHz to 11.1GHz
Common mode output return loss		Per IEEE P802.3ba 86A.4.2.2			dB	10MHz to 11.1GHz
Output transition time,20% to 80%		28	-	-	ps	Per IEEE P802.3ba 86A.4.2
J2 Jitter output	J2O	-	-	0.42	UI	
J9 Jitter output	J9O	-	-	0.65	UI	

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter						
Laser Type		VCSEL				
Data Rate per lane	-	-	10.3125	-	Gb/s	
Center Wavelength	λ	840	850	860	nm	
RMS Spectral Width	$\Delta\lambda$	-	-	0.45	nm	
Average Launch Power, each lane	P_{OUT}	-7.5	-	0.5	dBm	
Optical Modulation Amplitude, each lane	OMA	-5.6	-	3	dBm	
Difference in launch power between any two lanes (OMA)		-	-	4	dB	
Peak power, each lane		-	-	4	dBm	
Extinction Ratio	ER	3	-	-	dB	
Transmitter dispersion penalty	TDP	-	-	3.5	dB	1
		-	-	3.9	dB	2
Average Launch Power of OFF transmitter, each lane	P_{OFF}	-	-	-30	dBm	
Optical return loss tolerance		-	-	12	dB	
Transmitter eye mask margin (Hit ratio=5E-5 hits/ sample)		5	-	-	%	
Receiver Characteristics						
Receiver Type per lane		PIN				
Data Rate		-	10.3125	-	Gb/s	
Average power at receive input, each lane	P_{IN1}	-	-9.9	2.4	dBm	
Damage Threshold	DT	3.4	-	-	dBm	
Receiver Power (OMA), each lane (max)		-	-	3	dBm	
Stressed Receiver Sensitivity (OMA), each lane (max)	Sen_1	-	-	-7.5	dBm	3
Unstressed Receiver Sensitivity (OMA), each lane (max)	Sen_2	-	-	-11.1	dBm	4
Peak power, each lane (max)		-	-	4	dBm	
Receiver Reflectance	RFL	-	-	-12	dB	
LOS Assert	LOSA	-30	-	-	dBm	
LOS De-Assert	LOSD	-	-	-12	dBm	
LOS Hysteresis	LOSH	0.5	3	5	dB	
Notes						
1. TDP is up to 100m OM3; 2. TDP is up to 300m OM4; 3. BER=1E-12, per IEEE802.3ae; 4. BER=1E-12, per IEEE802.3ae;						

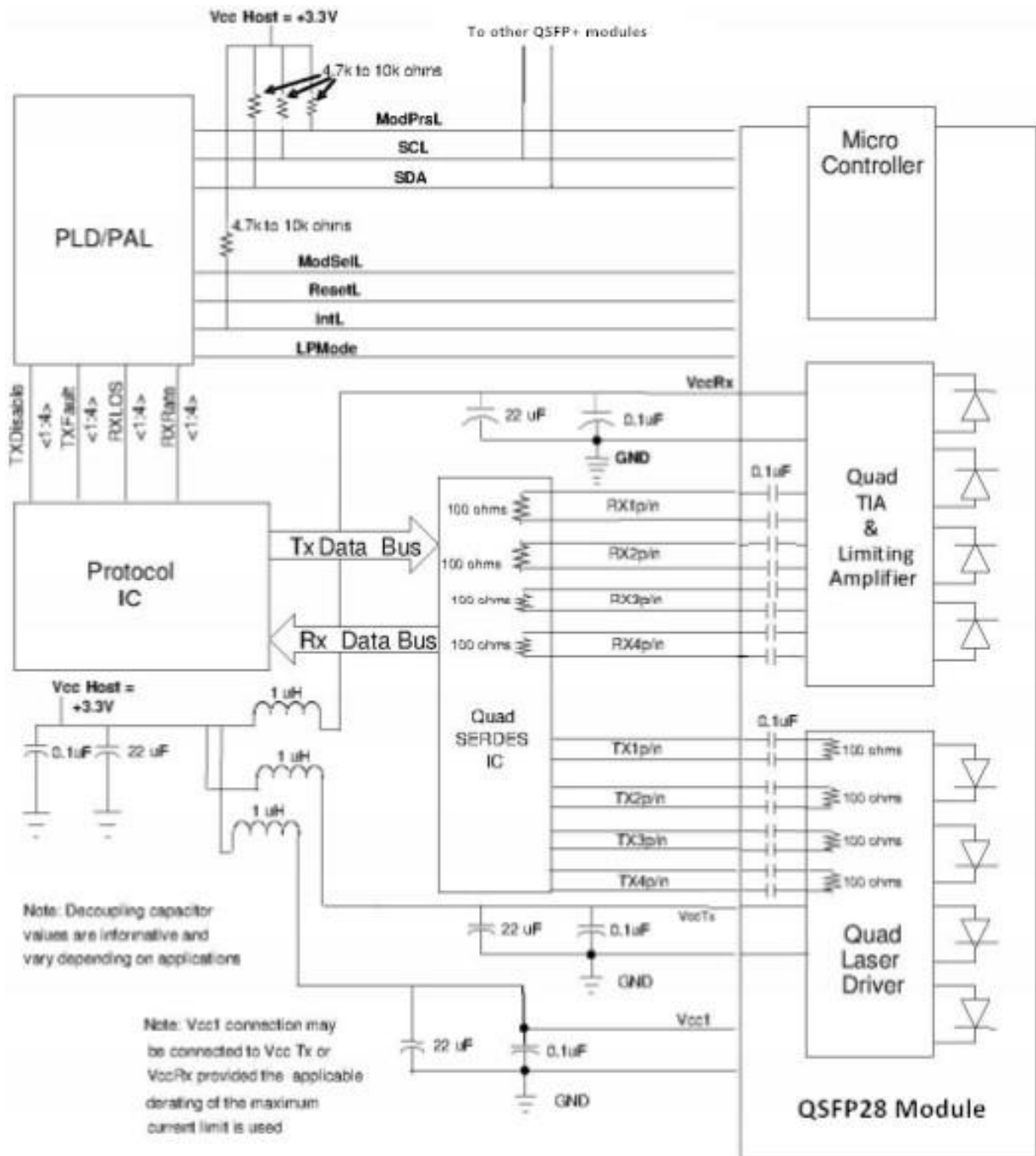
Pin Definitions



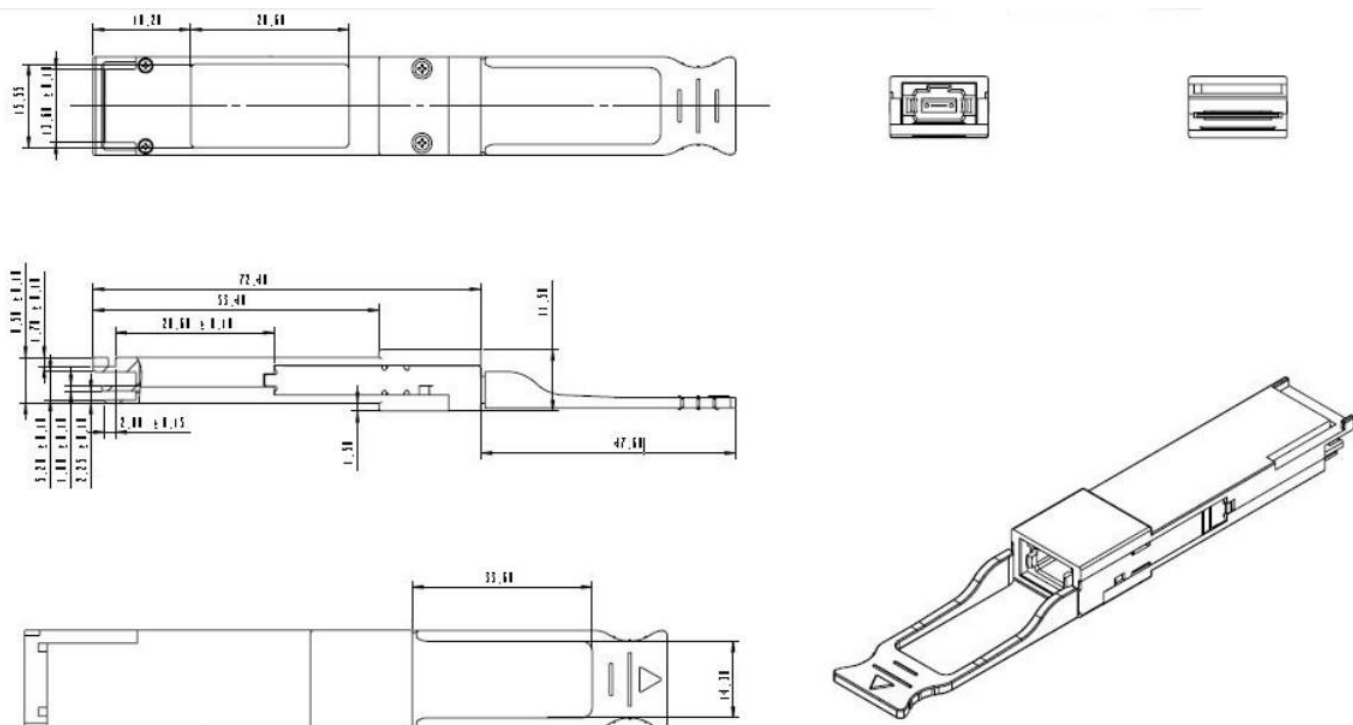
Pin	Symbol	Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non -Inverted Data Input	
7	GND	Ground	
8	ModselL	Module Select	
9	RetsetL	Module Reset	
10	VCC Rx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	

24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VCC Tx	+3.3V Power Supply transmitter	
30	VCC1	+3.3V Power Supply	
31	LPMode	Low Power Mode	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	

Recommended Interface Circuit



Mechanical Dimensions



Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards