100G QSFP28 PSM4 Transceiver

ET7402-PSM4-2

Edgecore's ET7402-PSM2-2 QSFP28 transceiver modules are designed for use in 100 Gigabit Ethernet links of up to 2 km of single mode fiber. They are compliant with the QSFP28 MSA and portions of IEEE P802.3bm . Digital diagnostics functions are available via the I2C interface, as specified by the QSFP28 MSA. The QSFP28 full-duplex optical module offers 4 independent transmit and receive channels, each capable of 25Gb/s operation for an aggregate data rate of 100Gb/s.

Product Features

- 4 parallel lanes design
- Compliant with QSFP28 MSA
- Compliant with IEEE 802.3bm 100GBASE PSM IR4
- 4-channel PIN photo detector
- Up to 25.78125Gb/s per channel data links
- Single +3.3 V power supply
- Class 1 laser safety certified
- Commercial operating temperature: -5°C to +70°C
- Up to 2 km on SMF
- MTP/MPO-12 (APC) connector
- RoHS 6/6 Compliant

Applications

- 100GBASE Ethernet links
- Data center

Ordering Information

Part No.	Data Rate	Fiber	Distance	Interface	Temp.	DDMI
ET7402-PSM4-2	100 Gbps	SMF	2km	MPO-12/APC	-5 ~+70°C	Yes

Transmitter Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Launch Optical Power per Lane	Po	-4	-	+2	dBm	1
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Center Wavelength Range	Λ	1295	1310	1325	nm	-
Extinction Ratio	EX	3.5	-	-	dB	2
Optical Return Loss Tolerance	ORLT	-	-	12	dB	-
Pout @TX-Disable Asserted	P_{off}	-	-	-30	dBm	1
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}			{0.31,0.4,0.45,0.34,0.38,0.4}			
Note 1: The optical power is launched into SMF.						
Note 2: Measured with a PRBS 2^{31}-1 test pattern @25.78125 Gbps.						

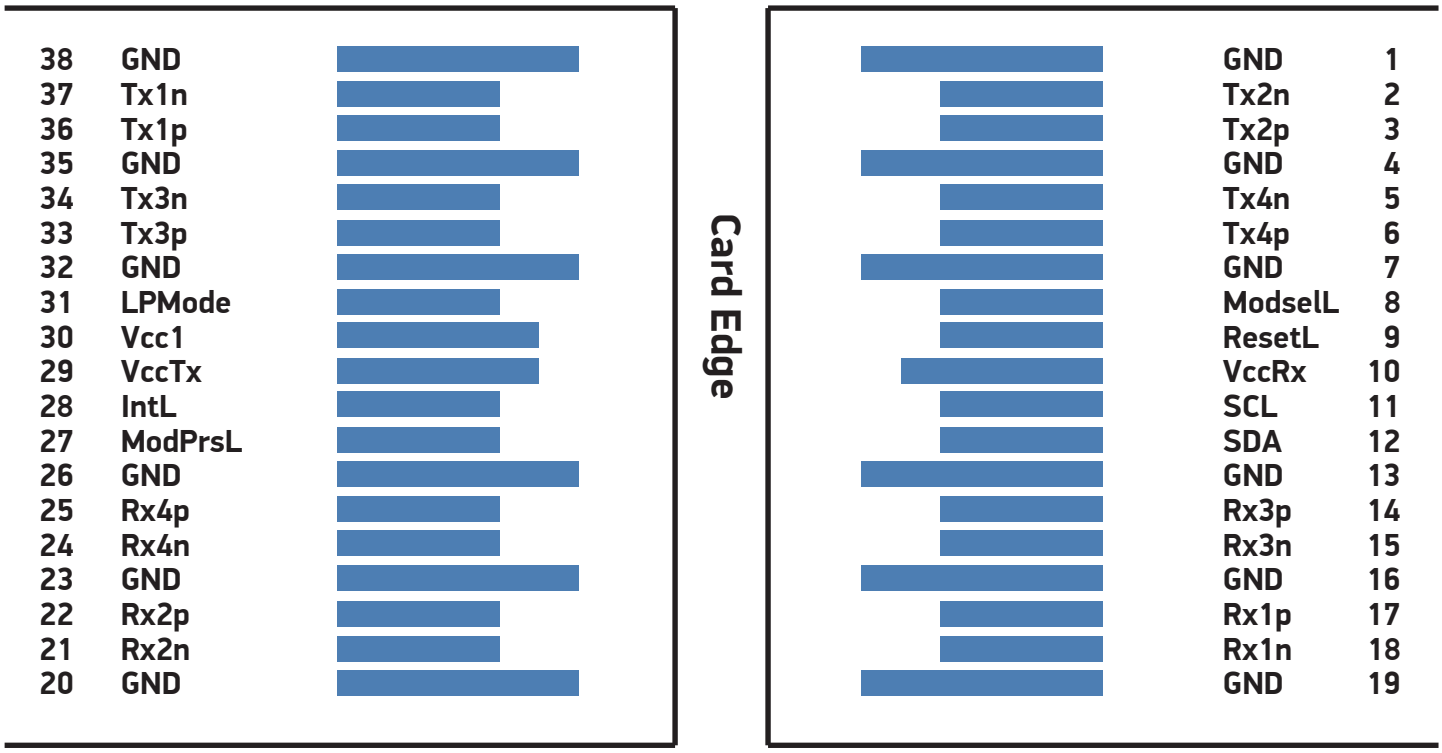
Receiver Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Center Wavelength	∩c	1295	-	1325	nm	-
Receiver Sensitivity	S	-	-	-12.0	dBm	1
Overload (Each Channel)	P_{OL}	2.0	-	-	dBm	1
Damage Threshold	P_{damage}	3.0	-	-	dBm	-
LOS De-Assert	LOS_D	-	-	-11.6	dBm	-
LOS Assert	LOS_A	-24	-	-	dBm	-
LOS Hysteresis	-	0.5	-	-	dB	-
Note 1: Measured with PRBS 2^{31}-1 test pattern, 25.78125Gb/s, BER of 5×10^{-5} (informative)						

Pin Definition

PIN	Name	Function/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3 V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3 V power supply transmitter	
30	Vcc1	3.3 V power supply	
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1
Note 1.	The module signal grounds are isolated from the module case.		
Note 2.	This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.		

Host PCB QSFP28 Pad Assignment Top View



Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the datasheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_S	-40	85	oC
Relative Humidity	RH	5	95	%
Supply Voltage	V_{CC}	-0.5	4.0	V

Recommended Operating Conditions

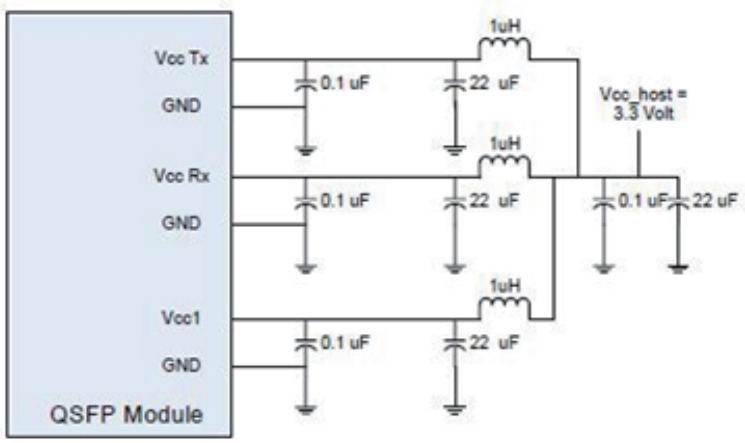
Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T_C	-5	25	70	oC
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Data Rate per Channel	-	-	25.78125	-	Gb/s

Transceiver Electrical Characteristics

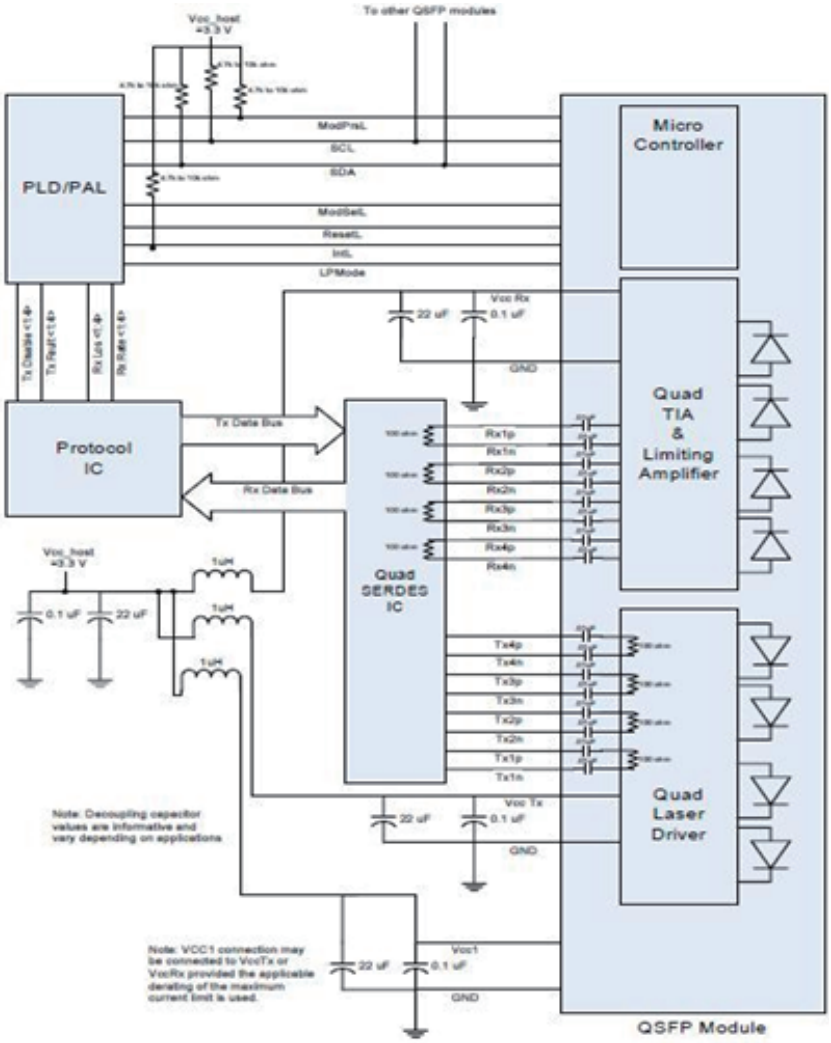
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Module Supply Current	Icc	-	-	1100	mA	-
Power Dissipation	P_D	-	-	3500	mW	-
Transmitter						
Input Differential Impedance	Z_{IN}	90	100	110	Ω	-
Differential Data Input Swing	$V_{IN, P-P}$	190	-	700	mV_{P-P}	-
AC Common Mode Input Voltage Tolerance	-	15	-	-	mV	-
Receiver						
Output Differential Impedance	Z_O	90	100	110	Ω	-
Differential Data Output Swing	$V_{OUT, P-P}$	300	-	850	mV_{P-P}	1
AC Common Mode Output Voltage	-	-	-	7.5	mV	-
Single-ended Output Voltage	-	-0.3	-	4	V	-

Note 1: Internally AC coupled, but requires a external 100Ω differential load termination.

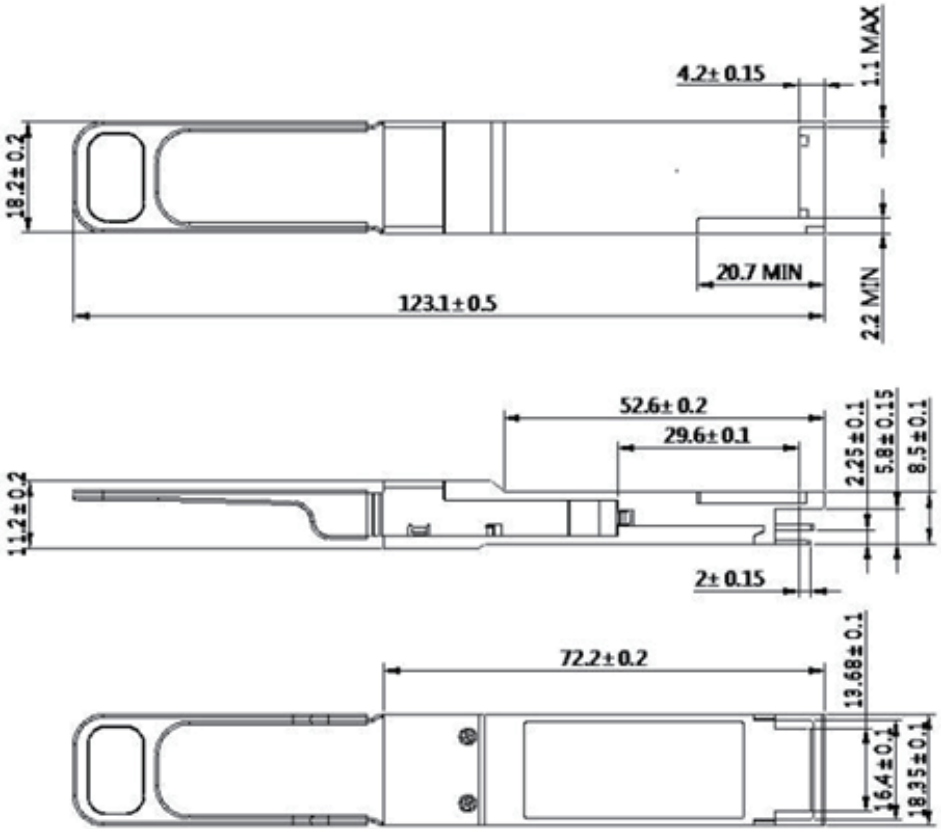
Recommended Host Board Power Supply Filter Network



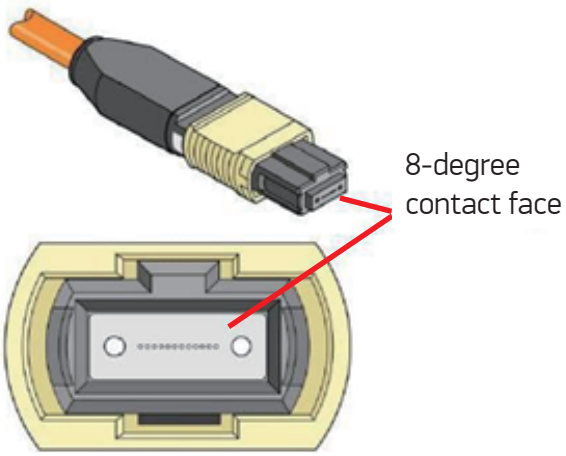
Recommended Application Interface Block Diagram



Mechanical Specifications



Attention: To minimize MPO connection-induced reflections, an MPO receptacle with 8-degree angled end-face is utilized for this product. A female MPO connector with 8-degree end-face should be used with this product as illustrated in below Figure.



Warranty
Please check www.edge-core.com for the warranty terms in your country.

For More Information
To find out more about Edgecore Networks Corporation products and solutions, visit www.edge-core.com.

About Edgecore Networks Corporation
Edgecore Networks Corporation is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edgecore Networks Corporation delivers the software and systems that transform the way the world connects. Edgecore Networks Corporation serves customers and partners worldwide. Additional information can be found at www.edge-core.com.

Edgecore Networks Corporation is a subsidiary of Accton Technology Corporation, the leading network ODM company. The Edgecore data center switches are developed and manufactured by Accton.

To purchase Edgecore Networks solutions, please contact your Edgecore Networks Corporation representatives at +886 3 563 8888 (HQ) or +1 (949)-336-6801 or authorized resellers.