

DATA SHEET

MODULETEK – QSFP28-PSM4-2KM-C10 100Gb/s QSFP28 PSM4 2km Optical Transceiver

QSFP28-PSM4-2KM-C10 Overview

ModuleTek's QSFP28-PSM4-2KM-C10 QSFP28 100Gbps PSM4 optical transceiver offers 4 independent transmit and receive channels, each capable of 25.78125Gbps operation for an aggregate data rate of 103.1Gbps 2km of single mode fiber. An optical fiber ribbon cable with an MPO/MTP connector can be plugged into the QSFP28 module receptacle.

Product Features

- Supports 103.1Gb/s bit rate
- Compliant with 100G PSM4 Specification 2.0
- Compliant with 100G Ethernet IEEE 802.3bm
- Compliant with SFF-8665 (QSFP28 Solution) Revision 1.8
- MPO optical connector
- Built-in digital diagnostic functions
- Up to 2km transmission on SMF
- RoHS Compliant
- Operating temperature range: 0°C to 70°C

Applications

- 100G Ethernet
- InfiniBand QDR and DDR interconnects

Ordering Information

Part Number	Description
QSFP28-PSM4-2KM-C10	100G QSFP28 PSM4 MPO Connectors, up to 2km on SMF, with DOM function.

For More Information:

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General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Signaling Rate, Each Lane			25.78125		Gb/s	
Data speed tolerance		- 100		100	ppm	
Operating Temperature	T _{OP}	0		70	°C	1
Storage Temperature	T _{STO}	- 40		85	°C	2
Input Voltage	V _{CC}	3.14	3.3	3.46	V	
Supply Current	I _{CC}			1200	mA	
Power Consumption	P			3.5	W	

Notes:

1. Case temperature
2. Ambient temperature

Link Distances

Parameter	Fiber Type	Distance Range (km)
100 Gb/s	9/125um SMF	2

Optical Characteristics – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Average Launch Power, Each Lane	P	- 9.4		2	dBm	
Optical Center Wavelength, Each Lane	λ _C	1295	1310	1325	nm	
Optical Modulation Amplitude, Each Lane	OMA	- 5.15		2.2	dBm	
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance	TOL			20	dB	
Average Launch Power of OFF Transmitter, each lane	P _{OUT_OFF}			- 30	dBm	
Transmitter Eye Mask Margin	EMM	5			%	

Optical Characteristics – Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Center Wavelength	λ _C	1295	1310	1325	nm	
Optical Input Power, each lane	P _{IN}	- 12.66		2	dBm	1
Damage Threshold	P	3			dBm	
Receiver Sensitivity (OMA), Each Lane	R _{X_SEN1}			- 11.35	dBm	2
LOS Assert	LOS _A		TBD		dBm	
LOS De-Assert	LOS _D		TBD		dBm	
LOS Hysteresis	LOS _H		TBD		dB	

Notes:

1. Average, Informative

2. BER = 5×10^{-5}

Electrical Characteristics – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	R _{IN}	90	100	110	Ω	
Differential data input swing	V _{IN_PP}	200		900	mV	
TP1/TP1a Interface						
Compliant to IEEE802.3ba XLPI						

Electrical Characteristics – Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential Output Impedance	R _{OUT}	90	100	110	Ω	
Differential data output swing	V _{OUT_PP}	200		900	mV	
TP4 Interface						
Compliant to IEEE 802.3ba XLPI						

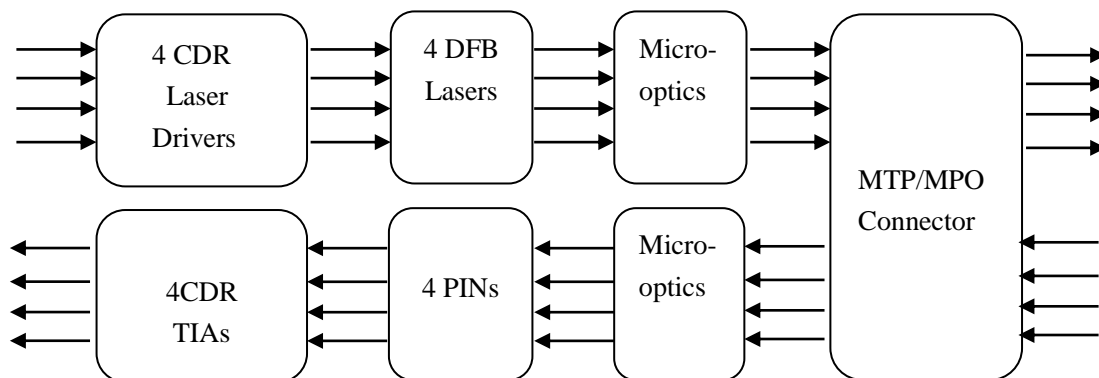
Digital Diagnostic Monitor Functions

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Temperature monitor absolute error	DMI_Temp	- 3		3	°C	1
Supply voltage monitor absolute error	DMI_VCC	- 0.15		0.15	V	2
Channel RX power monitor absolute error	DMI_RX_Ch	- 3		3	dB	3
Channel Bias current monitor	DMI_Ibias_Ch	- 10%		10%	mA	3
Channel TX power monitor absolute error	DMI_TX_Ch	- 3		3	dB	3

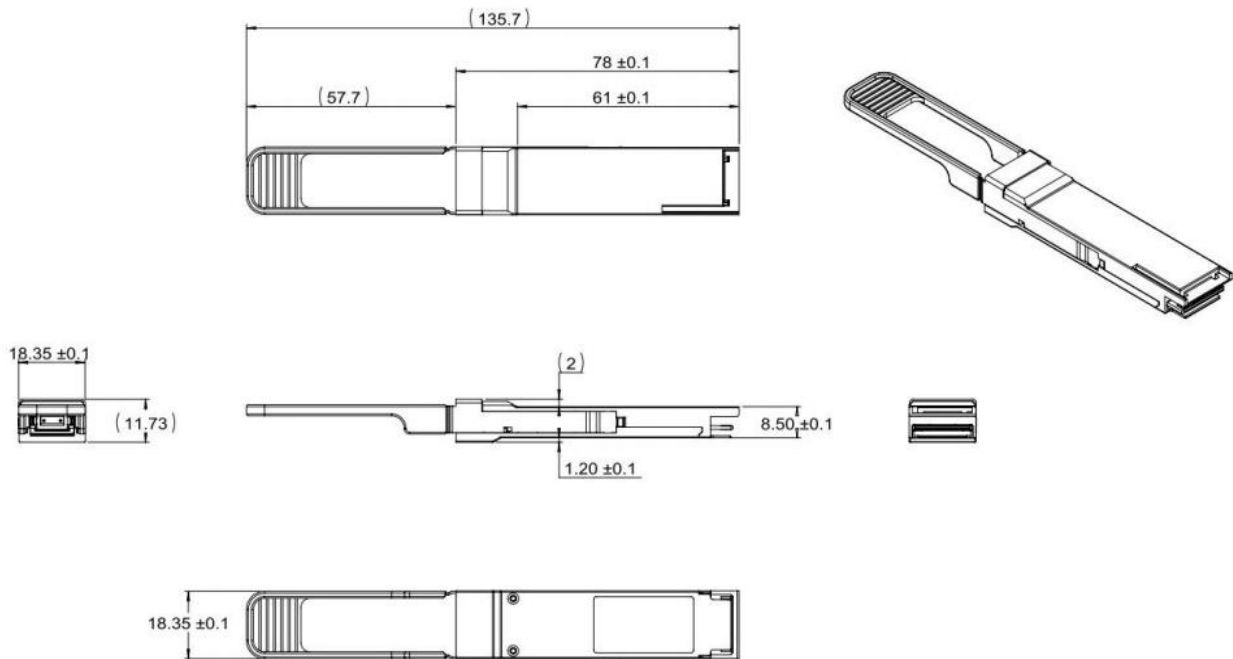
Notes:

1. Over operating temp
2. Full operating range
3. Ch1 ~ Ch4

Block Diagram of Transceiver

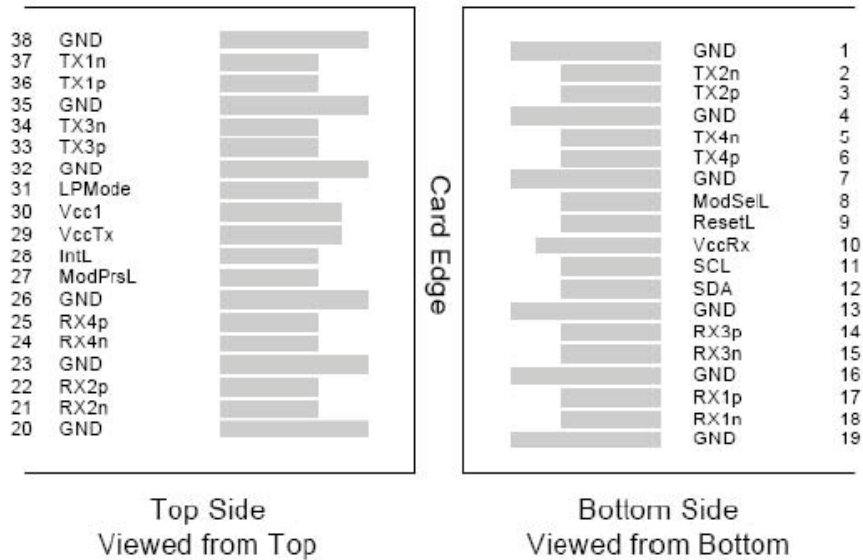


Dimensions



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Electrical Pad Layout



Pin Assignment

PIN #	Symbol	Description	Remarks
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	ResetL	Module Reset
10	V _{cc} 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	V _{cc} Tx	+3.3V Power Supply transmitter
30	V _{cc1}	+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

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GND

Ground

References

1. 100G Ethernet IEEE 802.3bm.
2. 100G PSM4 Specification 2.0