Product Specification

ECX-QSFP28-PSM4-GN-03
100Gb/s 10Km QSFP28 PSM4 SMF Transceivers

Features

- Hot-pluggable QSFP28 form factor
- Uncooled DFB Laser (4 x1310 nm)
- PIN Photo Detector
- -5°C to +70°C case operating temperature range
- 10Km transmission with SMF
- 3.3V power supply
- Contain clock and recovery (CDR)
- Power consumption < 3.5W
- Compliant with QSFP28 MSA-SFF-8665
- Compliant with IEEE 802.3bm/100G-PSM4 Specification
- Digital diagnostic functions (Via I^2C)
- Compliant with RoHS
- Compliant with UL & TUV
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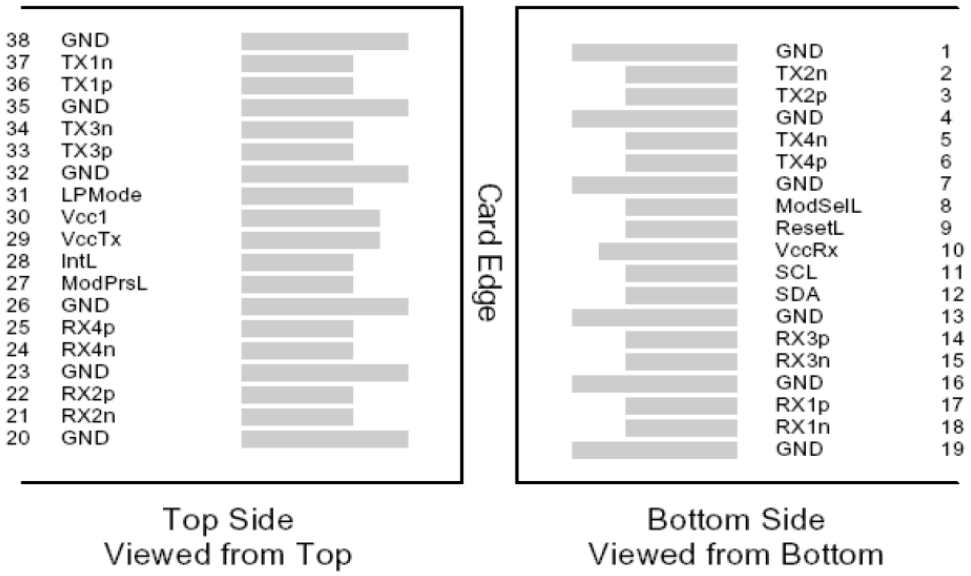
Applications

- 100 Gigabit Ethernet

Ordering Information

Form Factor	Data Rate	Media	Distance	Wavelength (nm)	TX Power (each lane) (dBm)	Voltage (V)	Coupling	DDM (Y/N)	Temperature (°C)
QSFP28 PSM4	100G	SMF	10Km	1310 nm	-9.4 ~ 2	3.3	AC/AC	Y	-5 ~ +70

Pin Descriptions



Pin Definition

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power Supply Receiver	2
11	LVCMOS I / O	SCL	2-wire serial interface clock	
12	LVCMOS I / O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply transmitter	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

Notes1:

GND is the symbol for signal and supply (power) common for the module. All are common within the module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Notes2:

Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrenly.

Absolute Maximum Ratings

Module performance is not guaranteed beyond the operating range.

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Conditions	Min	Max	Unit
Storage Temperature	T_S	--	-40	+85	℃
Storage Relative Humidity	RH	Non condensing	0	85	%
Supply Voltage # 3.3	V_{CC}	--	0	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating Temperature (Case)	T_C	--	-5	--	70	℃
Supply Voltage	V_{CC}	--	3.13	3.3	3.47	V
Supply Current	I_{CC}	--	--	--	1000	mA
Data Rate	DR	--	--	100	--	Gbps
Distance			2	--	500	m

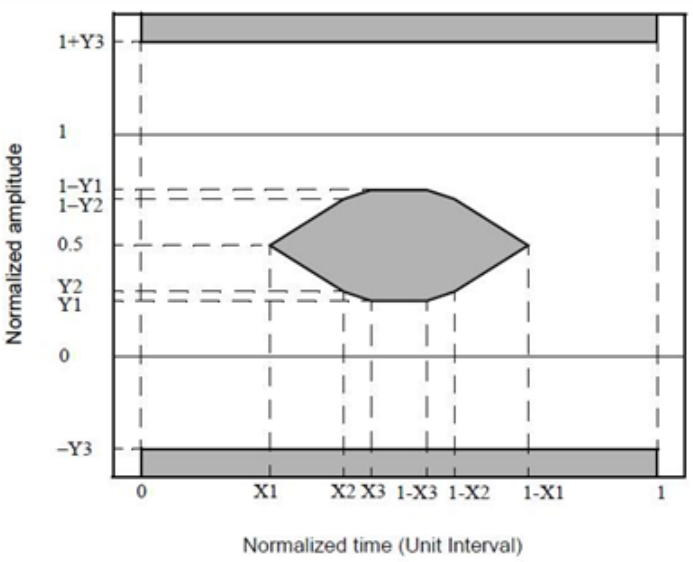
Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Transmitter						
Differential Input Impedance	R_{DI}	--	--	100	--	Ohm
High speed Differential Input Voltage (CML)	V_{CML_DI}	AC-Coupled, peak to peak	0.2	--	1.0	V
Low speed Input Voltage – Low (LVCOMS)	V_{LVCMOS_IL}	--	-0.3	--	Vcc*0.3	V
Low speed Input Voltage – High (LVCOMS)	V_{LVCMOS_IH}	--	Vcc*0.7	--	Vcc+0.5	V
Low speed Input Voltage – Low (LVTTL)	V_{LVTTL_IL}	--	-0.3	--	0.8	V
Low speed Input Voltage – High (LVTTL)	V_{LVTTL_IH}	--	2	--	Vcc+0.3	V
Receiver						
Differential Input Impedance	R_{DO}	--	--	100	--	Ohm
High speed Differential Output Voltage (CML)	V_{CML_DO}	AC-Coupled, peak to peak	0.3	--	0.8	V
Low speed Output Voltage – Low (LVCOMS)	V_{LVCMOS_OL}	--	0	--	0.4	V
Low speed Output Voltage – High (LVCOMS)	V_{LVCMOS_OH}	--	Vcc-0.5	--	Vcc+0.3	V
Low speed Input Voltage – Low (LVTTL)	V_{LVTTL_OL}	--	0	--	0.4	V
Low speed Input Voltage – High (LVTTL)	V_{LVTTL_OH}	--	Vcc-0.5	--	Vcc+0.3	V

Optical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Transmitter						
Lane wavelengths (Range)	λc	--	1295	1310	1325	nm
Side Mode Suppression Ratio	SMSR	--	30	--	--	dB
Output power (OMA), each lane	OMA	CW,ER>3.5dB	-9.4	--	2	dBm
TDP, each lane	TDP	--	--	--	3.8	dB
Average launch power of OFF transmitter, each lane	P_{off}	--	--	--	-30	dBm
Extinction ratio	ER	--	3.5	--	--	dB
Eye mask definition	--	--	Compliance IEEE802.3bm			
Receiver						
Center Wavelength - lane 0-3	λ_{C0}	--	1295	1310	1325	nm
Damage threshold	--	--	3.0	--	--	dBm
Receiver Power (OMA), each Lane	--	--	--	--	2.2	dBm
Receiver Reflectance	--	--	--	--	-12	dB
Average receive power, each lane	--	--	-12.66	--	2.0	dBm
Receiver sensitivity (OMA), each lane	Rsens	assured with PRBS 231 –5 at 10-5 BER, NRZ	-11.35			dBm
Stressed receiver sensitivity (OMA), each lane		--	100G-PSM4 as being defined by 100G PSM4 Specification			dBm

Eye Mask Definition



X1	0.31	Y1	0.34
X2	0.40	Y2	0.38
X3	0.45	Y3	0.4

Mechanical Design Diagram (mm)