

PRODUCT SPECIFICATION

Part No.:	AC-QP-3G100-01	
Description:	100G QSFP28 DR1 Transceiver, SMF 1310nm 500m	
Release Date	Rev.	Revision Change Description
2015/06/07	A0	New Release
2020/12/28	A1	Template Update

Features

- ✧ Compliance to IEEE 802.3bm electrical specifications Clause 83E (CAUI-4)
- ✧ Support both FEC (IEEE KR4 FEC 528, 514) and non-FEC mode on DR1 Host side.
- ✧ Compliance to IEEE 802.3cd for 100G optical interface (100GBASE-DR)
- ✧ Compliance to QSFP28 MSA (for Memory Map) and SFF-8636 (for Mechanical QSFP28 Housing)
- ✧ Supports 100 Gbps data rate with links up to 500m (DR1) via SMF.
- ✧ Typical Power Consumption: 3W
- ✧ Hot pluggable electrical interface
- ✧ Using standard duplex LC Connector
- ✧ 0 to 70°C case temperature operating range
- ✧ RoHS-6 Compliant (lead-free)

Application

- ✧ Ethernet for 100GBASE-DR1
- ✧ For 100 Gb/s Ethernet Application
- ✧ HPC Interconnects
- ✧ Proprietary Interconnections

Standard

- ✧ CEI-28G-VSR
- ✧ QSFP28 MSA
- ✧ SFF-8636

Specification

Absolute Maximum Ratings				
Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	-40	85	°C
3.3V Power Supply Voltage	Vcc	-0.5	3.6	V
Data Input Voltage- Single Ended		-0.5		Vcc+0.5
Control Input Voltage		-0.5	3.6	V
Relative Humidity	RH	5	85	%
Rx Optical Damage Threshold / Lane	P _{dag}	5		dBm

Notes:

1. Non-condensing.

Recommended Operating Conditions					
Parameter	Symbol	Min	Typical	Max	Unit
Case Operating Temperature	TC	0		70	°C
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Date Rate per Channel (4*25G NRZ)			25.78125		Gbps
Date Rate per Channel (2*50G PAM4)			53.125		Gbps
Bit Error Ratio (BER) with FEC on Bit			10 ⁻¹²		
Error Ratio (BER) without FEC				2.4x10 ⁻⁴	
Control Input Voltage High		2		Vcc+0.3	V
Control Input Voltage Low		-0.3		0.8	V
Two Wire Serial (TWS) Interface Clock Rate				1	MHz
Differential Data Input / Output Load			100		Ohms
SM Fiber Length (DR1):		2		500	m

Notes:

1. Bit-Error-Rate (BER) is tested with PRBS 31 pattern.
2. 100G QSFP28 DR1 requires an electrical connector compliant with QSFP28 MSA which is used on the host board in order to guarantee its electrical interface specification.
3. Only one of these 2 functions (4* 25G NRZ or 2 * 50G PAM4) on Host side are supported at the same time.

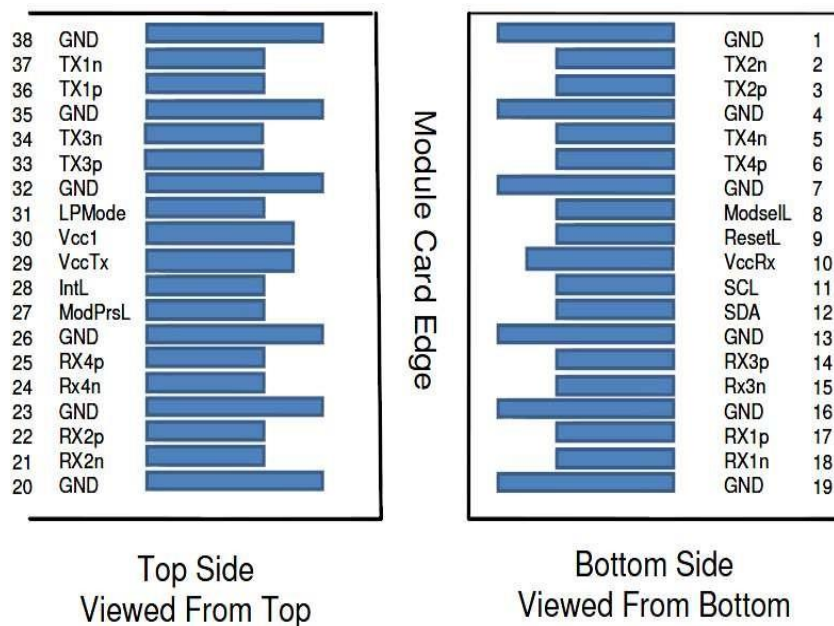
Optical transmitter Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Center Wavelength	λ	1304.5		1317.5	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average launch power, each lane	LOP	-2.9		4	dBm	
Output Optical Modulation Amplitude, per Lane	OMA	-0.8		4.2	dBm	
Transmitter and dispersion eye closure (TDECQ), each lane	TDECQ			3.4	dB	
Extinction ratio	ER	3.5			dB	

Optical receiver Characteristics						
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Center Wavelength	λ	1304.5		1317.5	nm	
Damage Threshold		5			dBm	
Average receive power		-5.9		4	dBm	
Receive power (OMA_{outer})				4.2	dBm	
Receiver Reflectance				-26	dB	
Receiver sensitivity (OMA_{outer})				Equation	dBm	1
Stressed receiver sensitivity (OMA_{outer})				-1.9	dBm	2
Conditions of stressed receiver						
sensitivity test:						
Stressed eye closure for PAM4 (SECQ), lane under test			3.4		dB	
OMA_{outer} of each aggressor lane			4.2			

Notes:

- 1、Equation: $RS = \max(-3.9, SECQ - 5.3)$ dBm, Where RS = Receiver Sensitivity
- 2、 Measured with conformance test signal at TP3 for the BER of 2.4×10^{-4}

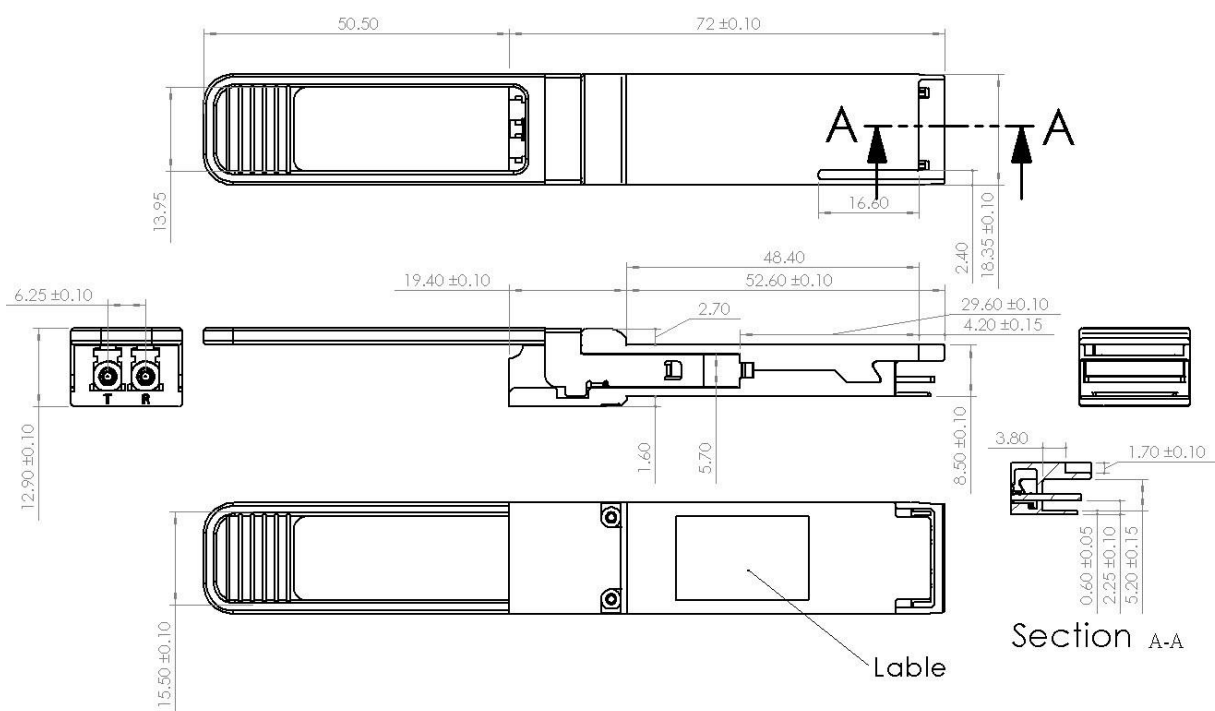
Pin Definition



Pin	Symbol	Name/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	ResetL	Module Reset	
10	VccRx	+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	VccTx	+3.3 V Power Supply transmitter	
30	Vcc1	+3.3 V 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	

Package Outline



Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000V for SFI pins, >2000Vfor other pins.)
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product

Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (°C)	Reach (M)	DDM
AC-QP-3G100-01	QSFP28	100	EML	-2.9~4	PIN	-3.9	0~70	500	Y