Q28-100GP4-BXD94-40-I-CX-AO

Calix® Compatible TAA 100GBase-BX ER1 PAM4 QSFP28 Transceiver Single Lambda (SMF, 1309.14nmTx/1304.58nmRx, 40km, LC, DOM, -40 to 85C)

Features

- SFF-8636 Rev. 2.10a Compliant
- 100G Lambda MSA 100G-ER1 Specification Compliant
- QSFP28 MSA Compliant
- Bidi LC Receptacles
- Industrial Temperature -40 to 85 Celsius
- Supports 100Gbps with 4x25G Electrical Interface
- Power Dissipation:
- Single 3.3V Power Supply
- RoHS Compliant and Lead Free
- SMF with Inbuild KP4 FEC

Applications

- Datacenter
- 100GBase Ethernet

Product Description

This Calix® compatible QSFP28 transceiver provides 100GBase-BX ER1 throughput up to 40km over single-mode fiber (SMF) PAM4 using a wavelength of 1309.14nmTx/1304.58nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between -40 and 85C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Calix. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")

Rev. 011926

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	
Operating Case Temperature	Tc	-40		85	°C	
Relative Humidity	RH	15		85	%	
Supply Voltage	Vcc	-0.5		3.6	V	
Data Rate	DR		53.125 ± 100ppm			
Bit Error Rate	BER			$2.4E^{-4}$		1
Supported Link Length on 9/125µm SMF @53.125GBd	L			40	km	2

Notes:

1. Tested with a PRBS31Q test pattern for 53.125GBd operation.
2. Distance is based on FC-PI-6 Rev. 3.1 and IEEE 802.3 standards with FEC.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc			1435	mA	
Power Dissipation	P_{DISS}			4500	mW	
Transmitter						
Input Differential Impedance	ZIN	90	100	110	Ω	
Differential Data Input Swing	VIN,pp	180		900	mVp-p	
Receiver						
Output Differential Impedance	ZOUT	90	100	110	Ω	
Differential Data Input Swing	VOUT,pp	300		900	mVp-p	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength Range	λC	1308.09	1309.14	1310.19	nm	
Average Launch Optical Power	Po	1.7		7.1	dBm	1
Launch Optical Power (OMA)	POMA	4.7		7.9	dBm	2
		3.3+TDECQ				3
Extinction Ratio	ER	5			dB	
Transmitter and Dispersion Penalty Eye Closure for PAM4	TDECQ			3.9	dB	
$RIN_{15}OMA$ (Maximum)	RIN			-136	dB/Hz	
Optical Return Loss Tolerance	ORLT			15	dB	
POUT @Tx_Disable Asserted	Poff			-15	dBm	
Receiver						
Center Wavelength	λC	1303.54	1304.58	1305.63	nm	
Receiver Power (Pave)		-16		-3.4	dBm	
Receiver Sensitivity (OMA)	RxSENS_OMA			-13.8	dBm	
				-15.2+TECQ	dBm	2
Receiver Sensitivity (Pave)	RxSENS_Pave			-14	dBm	4
				-15.4+TECQ	dBm	
Receiver Reflectance				-26	dB	
LOS De-Assert	LOSD			-16	dBm	
LOS Assert	LOSA	-24			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. TDECQ < 1.4dB.
3. 1.4dB ≤ TDECQ ≤ TDECQ (maximum).
4. 1.4dB ≤ TDECQ ≤ 3.9dB.
5. Measured with PRBS31Q test pattern @53.125GBd with BER<$2.4E^{-4}$.

Pin Descriptions

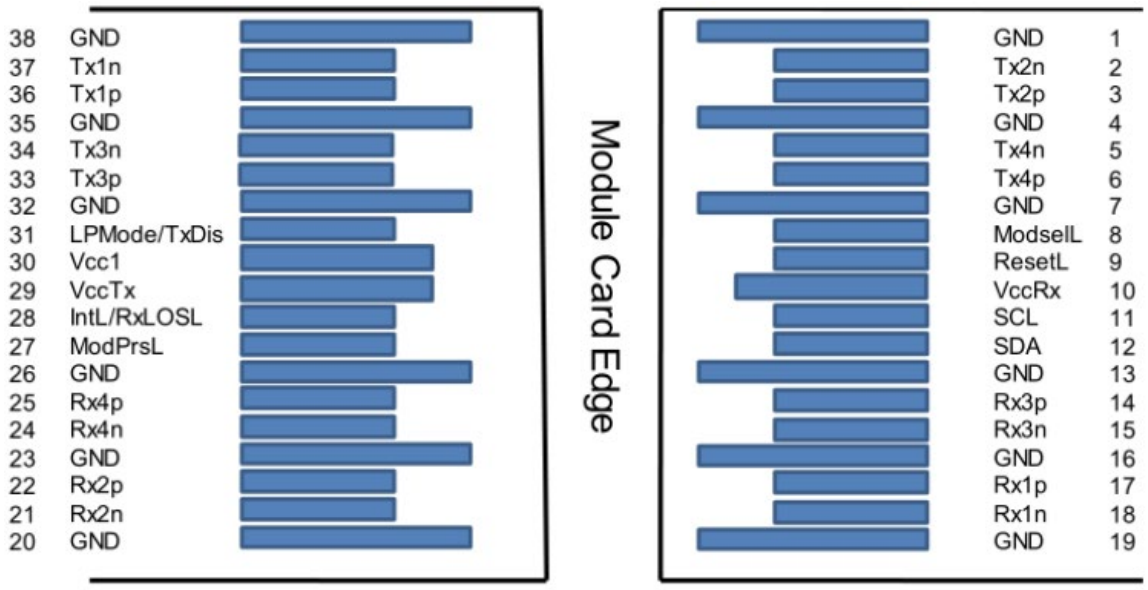
Pin	Logic	Symbol	Name/Description	Notes
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.	
7		GND	Module Ground.	1
8		ModSelL	Module Select.	2
9		ResetL	Module Reset.	2
10		VccRx	+3.3V Receiver Power Supply.	
11		SCL	2-Wire Serial Interface Clock.	2
12		SDA	2-Wire Serial Interface Data.	2
13		GND	Module Ground.	1
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.	
15	CML-O	Rx3-	Receiver Inverted Data Output.	
16		GND	Module Ground.	1
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.	
18	CML-O	Rx1-	Receiver Inverted Data Output.	
19		GND	Module Ground.	1
20		GND	Module Ground.	1
21	CML-O	Rx2-	Receiver Non-Inverted Data Output.	
22	CML-O	Rx2+	Receiver Inverted Data Output.	
23		GND	Module Ground.	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27		ModPrsL	Module Present.	
28		IntL/RxLOSL	Interrupt. Optionally configurable as RxLOSL via the management interface (SFF-8636).	2
29		VccTx	+3.3V Transmitter Power Supply.	
30		Vcc1	+3.3V Power Supply.	
31		LPMode/TxDis	Low Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636).	2
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	

34	CML-I	Tx3-	Transmitter Inverted Data Input.	
35		GND	Module Ground.	1
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.	
37	CML-I	Tx1-	Transmitter Inverted Data Input.	
38		GND	Module Ground.	1

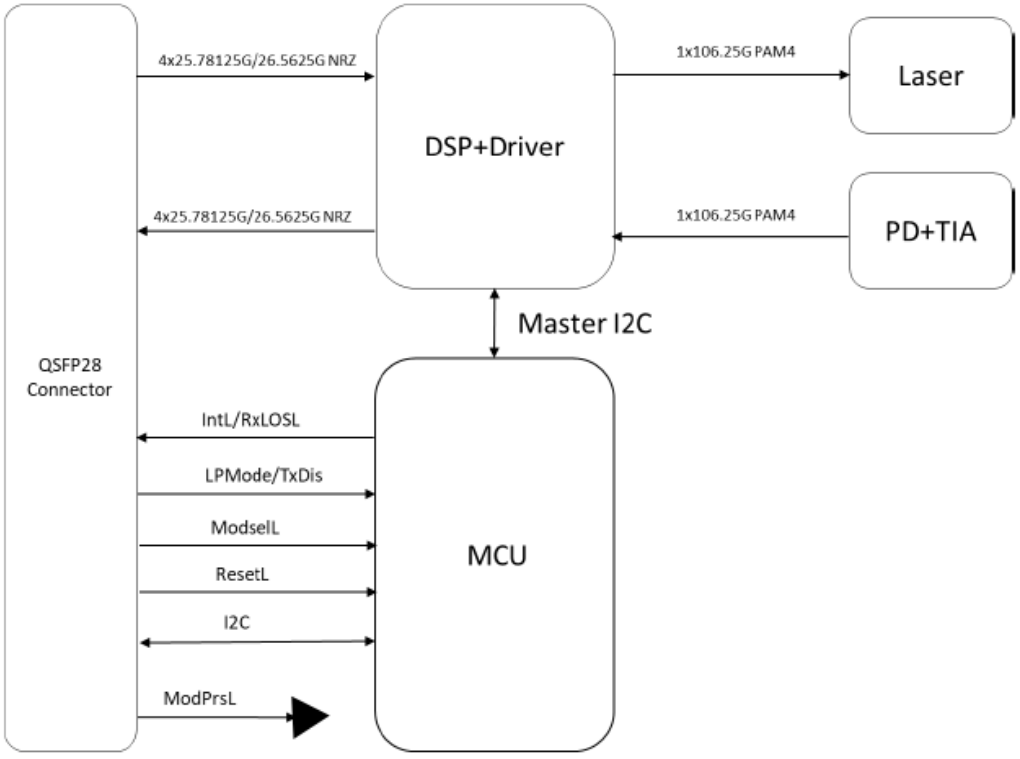
Notes:

1. 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.
2. VccRx, Vcc1, and VccTx are applied concurrently and may be internally connected within the module in any combination. Vcc contacts in SFF-8662 and SFF-8672 each have a steady state current rating of 1A.

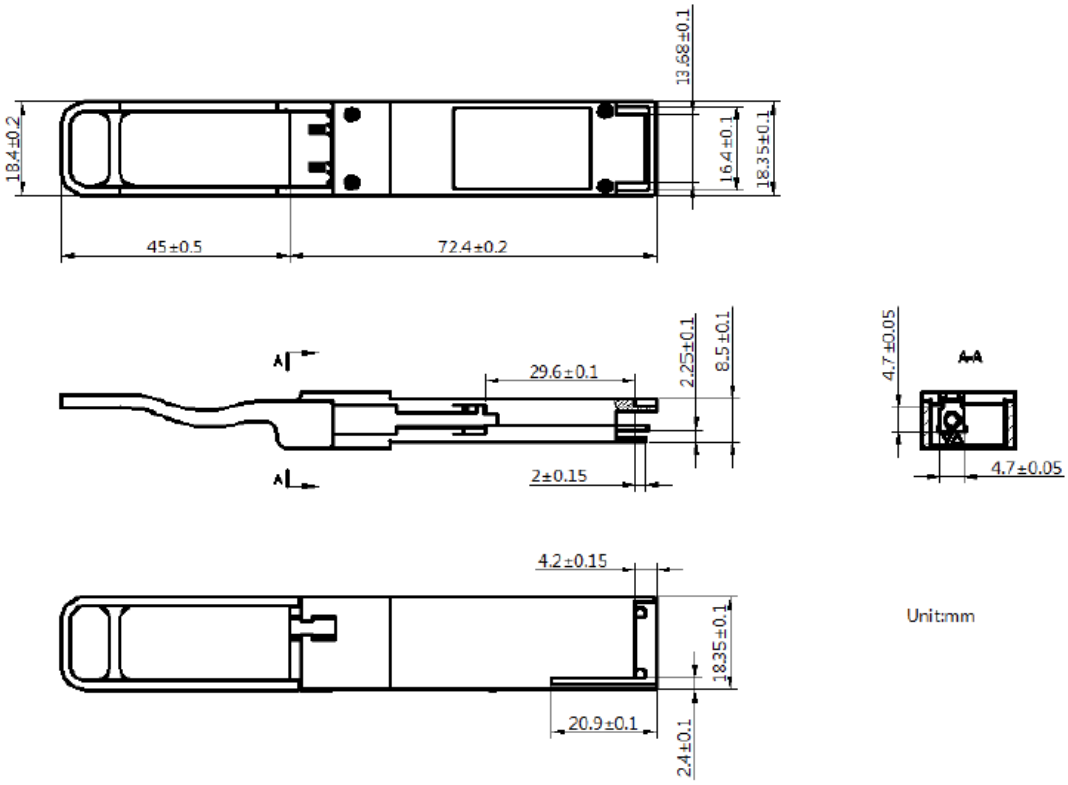
Module Pad Layout



Block Diagram of Transceiver



Mechanical Specifications



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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