

Q28LR4100GP4BXU273310I-AT1-OPC

ADTRAN® Compatible TAA 100GBase-BX PAM4 QSFP28 Transceiver Single Lambda (SMF, 1271nmTx/1331nmRx, 10km w/FEC, LC, DOM, -40 to 85C)

Features

- Compliant with 100G Lambda MSA 100G-LR

Specifications

- Compliant with SFF-8636
- Single 3.3V Power Supply
- Single-mode Fiber
- Bidi LC Connectors
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 100GBase Ethernet
- Datacenter

Product Description

This ADTRAN® compatible QSFP28 transceiver provides 100GBase-BX throughput up to 10km w/host FEC over single-mode fiber (SMF) PAM4 using a wavelength of 1271nmTx/1331nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It is capable of withstanding rugged environments and 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 ADTRAN®. 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. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V _{cc}	0		3.6	V	
Data Input Voltage		-0.3		3.6	V	
Control Input Voltage		-0.3		4	V	
Storage Temperature	T _{stg}	-40		85	°C	
Operating Case Temperature	T _c	0		70	°C	
Relative Humidity	RH	5		85	%	
Data Rate	BR		53.125		GBd	
Bit Error Rate	BER			2.4x10 ⁻⁴		1
Supported Link Length on 9/125um SMF, 53.125 GBd	L		10		km	2

Notes:

1. Tested with a PRBS31Q test pattern for 53.125 GBd operation.
2. Distances are 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	V _{cc}	3.135	3.3	3.465	V	
Module Supply Current	I _{cc}			1212	mA	
Power Dissipation	P _{DISS}			4000	mW	
Transmitter						
Differential Data Input Swing	V _{IN} , p-p	90	100	110	mVp-p	
Differential Input Impedance	Z _{IN}	90	100	110	Ω	
Receiver						
Differential Data Output Swing	V _{OUT} , p-p	300		900	mVp-p	
Differential Output Impedance	Z _{OUT}	90	100	110	Ω	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λ_C	1264.5	1271	1277.5	nm	
Extinction Ratio	ER	3.5			dB	
Launch Optical Power (Average)	Po	-1.4		4.5	dBm	1
Launch Optical Power (OMA)	Poma	0.7		4.7	dBm	
Transmitter and dispersion penalty eye closure for PAM4	TDECQ			3.4	dB	
RIN17.1OMA (max)	RIN			-136	dB/Hz	
Optical Return Loss Tolerance	ORLT			15.6	dB	
Pout @TX-Disable Asserted	Poff			-30	dBm	
Receiver						
Center Wavelength	λ_C	1324.5	1331	1337.5	nm	
Receiver Sensitivity (OMA)	RxSENS			-6.1	dBm	2
Receiver Overload (Pavg)	POL	4.5			dBm	
Receiver reflectance				-26	dB	
LOS De-Assert	LOSD			-12	dBm	
LOS Assert	LOSA	-18			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. Measured with PRBS31Q test pattern, 53.125GBd, BER<2.4×10⁻⁴.

Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Notes
1		GND	Module Ground.	1
2	CML-I	Tx2-	Transmitter Inverted Data Input.	
3	CML-I	Tx2+	Transmitter Non-Inverted Data Output.	
4		GND	Module Ground.	1
5	CML-I	Tx4-	Transmitter Inverted Data Input.	
6	CML-I	Tx4+	Transmitter Non-Inverted Data Output.	
7		GND	Module Ground.	1
8	LVTLL-I	ModSelL	Module Select.	
9	LVTLL-I	ResetL	Module Reset.	
10		VccRx	+3.3V Receiver Power Supply.	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.	
13		GND	Module Ground.	
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 Inverted Data Output.	
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.	
23		GND	Module Ground.	1
24	CML-O	Rx4-	Receiver Inverted Data Output.	1
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.	
26		GND	Module Ground.	1
27	LVTTL-O	ModPrsL	Module Present.	
28	LVTTL-O	IntL	Interrupt.	
29		VccTx	+3.3V Transmitter Power Supply.	2
30		Vcc1	+3.3V Power Supply.	2
31	LVTTL-I	LPMode	Low-Power Mode.	
32		GND	Module Ground.	1
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.	
34	CML-I	Tx3-	Transmitter Inverted Data Output.	
35		GND	Module Ground.	1

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

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 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 the receiver and transmitter power supplies and shall be applied concurrently. Recommended host board power supply filtering is shown below. VccRx, Vcc1, and VccTx may be internally connected within the QSFP28 transceiver module in any combination. The connector pins are each rated for a maximum current of 1000mA.

Electrical Pin-Out Details



Block Diagram



Mechanical Specifications

