

## AT A GLANCE

E.C.I. NETWORKS's 100G Optical transceiver series include a 100G QSFP28 PAM4 LR1 BIDI Optical Transceiver that integrates the transmit and receive path onto one module with a simplex LC connector.

## PRODUCT FEATURES

- QSFP28 MSA package with simplex LC connector
- Compliant to 100G Single Lambda MSA 100G-LR1 Optical Specifications
- Interoperable with IEEE 802.3cu
- Lane signaling rate 53.125GBd with PAM4
- High-speed I/O electrical interface
- Two-Wire Serial Interface with Digital Diagnostic Monitoring
- EN-QSFP28-BXU/BXD Operating case temperature range 0°C to +70°C
- EN-QSFP28-BXIU/BXID Operating case temperature range -40°C to +85°C
- Support KP4 FEC inside the module and KP4 FEC shutdown
- Reaches up to 10km on SMF
- EN-QSFP28-BXIU/BXID Maximum power consumption 4.5W
- EN-QSFP28-BXIU/BXID Maximum power consumption 5.0W
- 3.3V power supply voltage
- compliant to RoHS2.0
- Class 1 Laser



## Applications

- 100 Gigabit Ethernet
- Data Cent

**Ordering Information**

Part Number	Description	Data Rate	Wavelength	Distance	Connector
<b>QSFP28 BIDI LR1 (100G)</b>					
EN-QSFP28-BXU10-xx	100G QSFP28 single lambda BIDI LR1, TX 1271/ RX 1331nm, 10 km, Single mode, LC-Simplex (works in pair with EN-QSFP28-BXD10) <b>Commercial Temperature</b>	100G	TX1271/RX 1331	10km	LC
EN-QSFP28-BXD10-xx	100G QSFP28 single lambda BIDI LR1, Tx 1331nm/Rx 1271nm, 10 km, Single mode, LC-Simplex, (works in pair with EN-QSFP28-BXU10) <b>Commercial Temperature</b>	100G	TX1331nm/Rx 1271	10km	LC
EN-QSFP28-BXIU10-xx	100G QSFP28 single lambda BIDI LR1, TX 1271/ RX 1331nm, 10 km, Single mode, LC-Simplex (works in pair with EN-QSFP28-BXID10) <b>Industrial Temperature</b>	100G	TX1271/RX 1331	10km	LC
EN-QSFP28-BXID10-xx	100G QSFP28 single lambda BIDI LR1, Tx 1331nm/Rx 1271nm, 10 km, Single mode, LC-Simplex, (works in pair with EN-QSFP28-BXIU10) <b>Industrial Temperature</b>	100G	TX1331nm/Rx 1271	10km	LC

**Product Selection**

xx: Refers to vendor compatibility

I: I refers to Industrial Temperature where applicable

Per example:

EN-SFP10G-LR-EZ refers to Commercial Temperature, and compatible with Evertz, EN-SFP10GIDL-JREX refers to Industrial Temperature, and compatible with Juniper EX Series

**100G QSFP28 Optical Transceiver Series**  
**QSFP28 100G BIDI Transceiver**  
**EN-QSFP28-BXIU**  
**EN-QSFP28-BXID**

\*\* Please note pricing is same for most of the NEMs including Cisco, Juniper, F5, Fortinet, except HP, Evertz. There is an additional charge

**Compatibility; Tested and Proven**

- ◆ Proven Compatibility and Interoperability with; TBD

**Compliance**

All our products come with Built-in digital diagnostic functions DDM Compliant with SFF-8472 Rev12 and Compliant with the MSA SFF SPECIFICATIONS.

**ABSOLUTE MAXIMUM RATING**

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Conditions	Min.	Max.	Unit
Storage temperature case	Tstg	-	-40	+85	°C
Relative Humidity	RH	Non-condensing	5	85	%
Supply voltage	VCC		0	3.6	V
Low-speed signal voltage range			-0.3	4.0	V
Damage threshold	Pin	Average		5.5	dBm
ESD Sensitivity		—		±500V for RF ±2kV for others	V

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature (BXU/BXD)	Tcase	0	-	70	°C
Operating Case Temperature (BXIU/BXID)	Tcase	-40	-	85	°C
Supply Voltage	VCC	3.135	3.3	3.465	V
Relative Humidity	RH	5	-	85	%
Power Dissipation	PD	-	-	5	W
Data Rate (optical)	DRO	-	103.125	106.25	Gbps
Data Rate (Electrical)	DRE	-	26.5625	-	Gbps
Operating Link Distance	LD	-	-	10	Km

**Optical Transmit Characteristics (Top=0~70°C, Vcc=3.14~3.47V)**

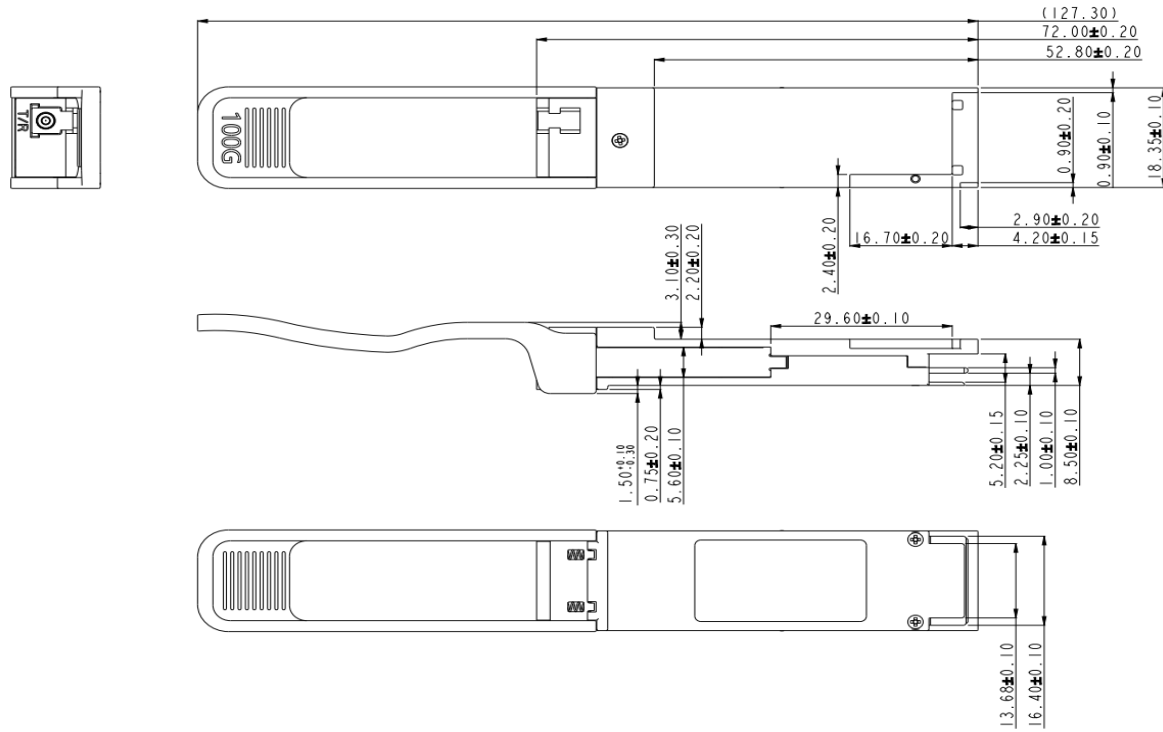
Parameter	Symbol	Min.	Typ.	Max.	Unit
<b>Transmitter</b>					
<b>Data Rate</b>			103.125	106.25	Gbps
<b>Data rate variation</b>		-100		+100	ppm
<b>Lane center wavelength</b>		1264.5	1271	1277.5	nm
		1324.5	1331	1377.5	nm
<b>Launch power Per lane</b>	Peach	-1.4		4.5	dBm
<b>Optical modulation amplitude per lane</b>	POMA	0.7		4.7	dBm
<b>Launch power in OMA minus TDECQ</b>	For ER≥4.5dB	-0.7			dBm
	For ER<4.5dB	-0.6			
<b>Transmitter and Dispersion eye closure</b>	TDECQ			3.4	dBm
<b>Optical Extinction Ratio</b>	ER	3.5			dB
<b>Side mode Suppression ratio</b>	SMSR	30			dB
<b>Launch power of OFF Transmitter per lane</b>				-30	dBm
<b>Relative Intensity Noise</b>	RIN			-136	dB/Hz
<b>Optical return loss tolerance</b>				15.6	dB
<b>Transmitter reflectance</b>				-26	dB
<b>Receiver</b>					
<b>Data Rate</b>			103.125	106.25	Gbps
<b>Data rate variation</b>		-100		+100	Ppm
<b>Lane center wavelength</b>		1324.5	1331	1377.5	nm
		1264.5	1271	1277.5	nm
<b>Damage threshold</b>	Rdam	5.5			dBm
<b>Average receiver power</b>	RxPow	-7.7		4.5	dBm

<b>Receiver power (OMA) per lane</b>	Rovl			4.7	dBm
<b>Receiver sensitivity (OMA), (max)</b>	SENeach			-6.1	dBm
<b>Stressed Sensitivity per lane</b>	SRS			-4.1	dBm
<b>Receiver reflectance</b>				-26	dB
<b>LOSS assert</b>	Optical power alarm	-26		-12	dBm
<b>LOSS de-assert</b>				-10	dBm
<b>Stressed eye closure for PAM4 (SECQ),</b>				3.4	dB
<b>SECQ-10*IgCeq</b>				3.4	dB

### Electrical Specifications

Transmitter (Module Input)					
Parameter	Symbol	Min.	Typical	Max.	Unit
Input Differential Impedance	Rin	-	100	-	Ohm
Differential termination mismatch (max)	D-mismatch	-	-	10	%
Differential Data Input Amplitude	VIN,P-P	-	-	900	mVpp
LPMode, Reset and ModSelL	VIL	-0.3	-	0.8	V
	VIH	2.0	-	VCC+0.3	V
Receiver (Module Output)					
Output Differential Impedance	Rout	-	100	-	Ohm
Differential termination mismatch (max)	D-mismatch	-	-	10	%
Differential Data Output Amplitude	VOUT,P-P	-	-	900	mVpp
ModPrsL and IntL	VOL	0	-	0.4	V
	VOH	VCC-0.5	-	VCC+0.3	V

**Mechanical specifications**



**Regulatory Compliance**

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

**Notice:**

ECI Networks reserves the right to make changes to or discontinue any optical link product or service identified in this publication, without notice, in order to improve design and/or performance. Applications that are described herein for any of the optical link products are for illustrative purposes only.

For further information



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