

# 100G QSFP28 BIDI Tx1291nm/ Rx1311 nm

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## Variants

10km 20Km LC 40km LC

## Details

### Product Overview

The 100G QSFP28 Bi-Directional (BIDI) transceiver is designed for high-speed optical communication over single-mode fiber (SMF). It operates using a single fiber strand with duplex wavelength transmission—Tx1291nm/Rx1311nm or the reverse pair. This module provides reliable 100Gbps data transmission up to 20 kilometers, making it ideal for data center interconnects and 100G Ethernet backbone applications.

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## Features

Supports 106.25Gbps PAM4 lane signaling rate

Up to 20km transmission over single-mode fiber (SMF)

EML laser and PIN photodiode receiver

4x25.78Gbps NRZ electrical interface (CAUI-4)

KP4 FEC supported inside the module

I<sup>2</sup>C interface with integrated digital diagnostics (DDM)

Simplex LC optical interface in QSFP28 MSA form factor

Single +3.3V power supply, power consumption 4W

Operating temperature range: 0°C to +70°C

Fully compliant with SFF-8636, SFF-8679, and 100G Lambda MSA LR1 standards

RoHS 2.0 and EU Directive 2015/863/EU compliant

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## Applications

100GBASE-LR BIDI Ethernet Links

Data Center Interconnections (DCI)

Enterprise and Campus Networks

High-Speed Switching and Routing Platforms

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## Ordering Information

Data Rate	Wavelength (Tx/Rx)	Fiber Type	Distance	Connector	Temp Range	DDM	Latch Color
106.25Gbps	1291nm / 1311nm	SMF	20km	Simplex LC	0~70°C	Yes	Purple
106.25Gbps	1311nm / 1291nm	SMF	20km	Simplex LC	0~70°C	Yes	Red

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## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	+4.0	V
Operating Relative Humidity	RH	—	+85	%

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## Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Case Temperature	TC	0	—	+70	°C
Power Supply Voltage	VCC	3.13	3.3	3.47	V
Transmission Distance	TD	—	—	20	km (over SMF)

## Optical Characteristics

### Transmitter

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	CW	1284.5	1291	1297.5	nm
Average Launch Power	PTX	-0.2	—	+6.6	dBm
Extinction Ratio	ER	3.5	—	—	dB
Optical Modulation Amplitude (OMA <sub>outer</sub> )	OMA <sub>outer</sub>	2.8	—	—	dBm
TDECQ (max)	TDECQ	—	—	3.6	dB
Side Mode Suppression Ratio	SMSR	30	—	—	dB
Power Off (Laser Off)	P <sub>off</sub>	—	—	-30	dBm

### Receiver

Parameter	Symbol	Min	Max	Unit
Center Wavelength	CW	1284.5 / 1311	1297.5 / 1317.5	nm
Receiver Sensitivity (OMA <sub>outer</sub> )	SEN_OMA	—	-7.6	dBm
Average Input Power	PR <sub>x</sub>	-10	+6.6	dBm
Damage Threshold	P <sub>damage</sub>	7.6	—	dBm
Reflectance	Ref	—	-26	dB
LOS Assert / De-Assert	LosA / LosDA	-26 / -10	—	dBm

## Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Differential Input Impedance	R <sub>in</sub>	—	100	—	?
Input Voltage Swing (Differential)	V <sub>IN,P-P</sub>	—	—	900	mV <sub>pp</sub>
Output Differential Impedance	R <sub>out</sub>	—	100	—	?
Output Voltage Swing	V <sub>OUT,P-P</sub>	—	—	900	mV <sub>pp</sub>
Common Mode Voltage	—	-0.3	—	2.8	V
Transition Time (20%~80%)	T <sub>r</sub> /T <sub>f</sub>	10	—	—	ps
Power Supply	VCC	3.13	3.3	3.47	V

## Digital Diagnostic Monitoring (DDM)

Parameter	Range	Accuracy	Unit
Temperature	0 to +70	±3	°C
Voltage	0 to V <sub>cc</sub>	±3%	V
Tx Bias Current	0 to 100	±10%	mA
Tx Output Power	-0.2 to +6.8	±3	dB
Rx Input Power	-10 to +6.6	±3	dB

## Communication Interface Timing

Parameter	Symbol	Max	Unit	Description
Initialization Time	t <sub>init</sub>	10	s	Time from power-on or hot-plug until module is fully operational