

QSFP28-4WDM-BXU/BXD-70

**100GBASE, QSFP28-BiDi, 4WDM, SMF TRANSCEIVER, 70km,
SIMPLEX LC CONNECTOR**

Product Features

- Hot pluggable QSFP28 MSA form factor
- Supports 103.1Gb/s aggregate bit rate
- Up to 70km reach for G.652 SMF [with RS(528,514) FEC]
- Single +3.3V power supply
- Cooled 4x25Gb/s LAN WDM TOSA, LAN WDM ROSA
- Max power consumption 5.0W
- Single LC receptacle Compatible with RoHS2.0 DDM Function
- Case operating temperature:
 - Commercial: 0 ~ 70°C
 - Extended: -20 ~ 85°C



Product Applications

- 100GBASE-ZR4 Lite BiDi
- Ethernet Links

Ordering Details	
Product Part Number	Product Description
QSFP28-4WDM-BXU-70	QSFP28, 100GBase 4WDM BiDi Simplex LC, 70km with FEC, DDM C-Temp 4x25Gbps: 1273.55nm, 1277.89nm, 1282.26nm, and 1286.66nm
QSFP28-4WDM-BXU-70-I	QSFP28, 100GBase 4WDM BiDi Simplex LC, 70km with FEC, DDM I-Temp 4x25Gbps: 1273.55nm, 1277.89nm, 1282.26nm, and 1286.66nm
QSFP28-4WDM-BXD-70	QSFP28, 100GBase 4WDM BiDi Simplex LC, 70km with FEC, DDM C-Temp 4x25Gbps: 1295.56nm, 1300.05nm, 1304.58nm, and 1309.14nm
QSFP28-4WDM-BXD-70-I	QSFP28, 100GBase 4WDM BiDi Simplex LC, 70km with FEC, DDM I-Temp 4x25Gbps: 1295.56nm, 1300.05nm, 1304.58nm, and 1309.14nm

Notes:

1. Please contact sales for specific OEM Platform part numbers to fit your network.

I. Operating Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Case Temperature Range	Tc	0		70	°C	Commercial
		-40		85		Industrial
Relative Humidity	RH	0		90	%	
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Total Power Consumption	Pw			5.0	W	
Data rate (each line)			25.78125		Gb/s	
Operating Link Distance	D			70	km	

II. Voltage Supply Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Steady State Supply Current	Icc			1443	mA	
Sustained Peak Current	ISP			1650	mA	
Instantaneous Peak Current	IIP			2000		
Power Dissipation	Pw			5.0	W	
Low Power Dissipation	PLOW			1.5	W	

III. 3.3V LVTTTL Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Input High Voltage	VIH	2.0		Vcc+0.3	V	
Input Low Voltage	VIL	-0.3		0.8	V	
Input Leakage Current	IIN	-10		+10	uA	
Output High Voltage (IOH=100uA)	VOH	Vcc-0.5		Vcc+0.3	V	
Output Low Voltage (IOL=100uA)	VOL	0		0.4	V	

IV. 3.3V LVCMOS Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Input High Voltage	VIH	Vcc*0.7		Vcc+0.5	V	
Input Low Voltage	VIL	-0.3		Vcc*0.3	V	
Output High Voltage (IOH=100uA)	VOH	Vcc-0.5		Vcc+0.3	V	
Output Low Voltage (IOL=100uA)	VOL	0		0.4	V	
I/O Pin Capacitance	Ci			14	pF	

V. Different Signal Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter Electrical Input from Host at TP1a (detailed specification in CEI-28G-VSR)						
Differential Voltage pk-pk				900	mV	
Common Mode Noise (rms)				17.5	mV	
Eye Height		95			mV	
Eye Width		0.46			Ui	
Differential Termination Mismatch				10	%	
Transition Time		10			ps	20/80%
Common Mode Voltage		-0.3		2.8	V	
Receiver Electrical Output from Host at TP4 (detailed specification in CEI-28G-VSR)						
Differential Voltage pk-pk				900	mV	
Common Mode Noise (rms)				17.5	mV	
Eye Height		228			mV	
Eye Width		0.57			Ui	
Differential Termination Mismatch				10	%	
Transition Time		9.5			ps	20/80%
Vertical Eye Closure	VEC			5.5	dB	

VI. Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Signaling Rate for Each Lane			25.78125		Gbps	
Signaling Speed Accuracy		-100		+100	ppm	
Output High Voltage (IOH=100uA)	VOH	Vcc-0.5		Vcc+0.3	V	
Output Low Voltage (IOL=100uA)	VOL	0		0.4	V	
Side Mode Suppression Ratio (min)	SMSR	30				
Total Average Launch Power	Pt			13	dBm	
Average Launch Power (each lane)	Pa	1.01		7.0	dBm	
Optical Modulation Amplitude (each lane)	OMA	32		8.8	dBm	
Difference in Launch Power between any two lanes (OMA) (max)				3.6	dB	
Average Launch Power Off Transmitter (each lane)	Poff			-30	dBm	
Extinction Ratio	ER	6			dB	

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Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter (continued)						
Optical Return Loss				20-123	dB	
Transmitter Reflectance					dB	
Eye Diagram		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}4				
Eye Mask Margin			≥10%			
Receiver						
Receive Rate for Each Lane			25.78125		Gbps	
Signaling Speed Accuracy		-100		+100	ppm	
Damage threshold	P _{max}	5.5			dBm	
Average Receive Power (each lane)	P _{in}	-266		-5		
Receive Power In OMA (each lane)	P _{inOMA}			-3.5	dBm	
Receiver reflectance				-26	dB	
Receiver Sensitivity (each lane) (100GbE) at BER= 5x10 ⁻⁵ BER7 CD=[-356/66] ps/nm	S			-24	dBm	
LOS Hysteresis		0.5		5	dB	

Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Even if the TDP<1dB, the OMA (min) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. Eye mask hit ratio is 5E-5.
5. The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level.
6. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
7. Receiver sensitivity (OMA), each lane (max) at 5 x 10⁻⁵ BER is a normative specification.

VII. Optical Wavelength Range

QSFP28-4WDM-BXU-70					
Parameter	Symbol	Min	Typical	Max	Unit
Transmitter					
Four Lane Wavelength Range	λ_1	1272.55	1273.55	1274.54	nm
	λ_2	1276.89	1277.89	1278.89	
	λ_3	1281.25	1282.26	1283.27	
	λ_4	1285.65	1286.66	1287.68	
Receiver					
Four Lane Wavelength Range	λ_5	1294.53	1295.56	1296.59	nm
	λ_6	1299.02	1300.05	1301.09	
	λ_7	1303.54	1304.58	1305.63	
	λ_8	1308.09	1309.14	1310.19	

QSFP28-4WDM-BXD-70					
Parameter	Symbol	Min	Typical	Max	Unit
Transmitter					
Four Lane Wavelength Range	λ1	1294.53	1295.56	1296.59	nm
	λ2	1299.02	1300.05	1301.09	
	λ3	1303.54	1304.58	1305.63	
	λ4	1308.09	1309.14	1310.19	
Receiver					
Four Lane Wavelength Range	λ5	1272.55	1273.55	1274.54	nm
	λ6	1276.89	1277.89	1278.89	
	λ7	1281.25	1282.26	1283.27	
	λ8	1285.65	1286.66	1287.68	

Warranty

<https://pivotaloptics.com/warranty/>

Disclaimer

External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.