

QSFP28-SWDM4-100G

**100GBASE, QSFP28, SWDM4, MMF TRANSCEIVER 850nm,
100m REACH, LC DUPLEX CONNECTOR**

Product Features

- Hot-pluggable QSFP28 form factor
- Supports 103.1Gb/s aggregate bit rate
- Power dissipation < 3.5W
- RoHS-6 compliant
- Single 3.3V power supply
- Maximum link length of
75m/100m/150m on OM3/OM4/OM5
Duplex Multimode Fiber
- 4x25Gb/s 850nm VCSEL-based
transmitter
- 4x25G CAUI-4 electrical interface
- Duplex LC receptacles
- I2C management interface
- Case operating temperature:
 - Commercial: 0 ~ 70°C



Product Applications

- 100GBASE Ethernet Links
- Infiniband QDR and DDR interconnects
- Data Center

I. Maximum Ratings

Exceeding the limits below may damage the transceiver module permanently.

Parameter	Symbol	Min.	Typ.	Max.	Units
Storage Temperature	Ts	-40		+85	°C
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Relative Humidity (non-condensation)	RH	15		85	%
Damage Threshold (each lane)	THd	3.8			dBm

II. Operating Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Case Operating Temperature	TC	0		70	°C	Commercial
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Data Rate, each Lane			25.78125		Gb/s	
Link Distance (OM3 MMF)	D			75	M	OM3
Link Distance (OM4 MMF)				100	M	OM4
Link Distance (OM5 MMF)				150	M	OM5

III. Optical Characteristics

Parameter	Symbol	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	Unit	Notes
Transmitter							
Signaling Speed per Lane		25.78125 $\pm$ 100ppm				Gb/s	1
Lane center wavelengths (range)	λ	850	880	910	940	nm	
RMS Spectral Width	SW	0.59	0.59	0.59	0.59	nm	
T _{XOMA} min at max TDEC		-3	-3	-3	-2.9	dBm	
TDEC (OM3)	TDEC	3.3	3.5	3.7	4.2	dB	
T _{XOMA} - TDEC	P-TDEC	-6.3	-6.5	-6.7	-7.1	dBm	
T _{XOMA} min	TxOMA	-5.5	-5.5	-5.5	-5.5	dBm	
Relative Intensity Noise	Rin	-130				dB/Hz	2
Optical Extinction Ratio	ER	2	2	2	2	dB	
Optical Return Loss Tolerance	ORL	12				dB	
Transmitter eye mask { X1, X2, X3, Y1, Y2, Y3 }		{ 0.3,0.38,0.45,0.35,0.41,0.5 }					3
Average Launch Power OFF Transmitter (each lane)	Poff	-30				dBm	

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Parameter	Symbol	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	Unit	Notes
Receiver							
Signaling Speed per Lane		25.78125 $\pm$ 100ppm				Gb/s	4
Lane center wavelengths (range)	λ	850	880	910	940	nm	
Damage Threshold	DT	3.8	3.8	3.8	3.8	dBm	
Average Receive Power per Lane (min)		-9.5	-9.4	-9.4	-9.4	dBm	
Average Receive Power per Lane (max)		3.4	3.4	3.4	3.4	dBm	
Receiver Reflectance (max)	Rfl	-12				dB	
Stressed Receiver Sensitivity (OMA) per Lane	SRS	-5.2	-5.2	-5.2	-5.2	dBm	5
Back to Back Receiver Sensitivity (OMA) per Lane	RXsen	-8.2	-8.4	-8.6	-8.8	dBm	6
Stressed Conditions:							
Stressed eye closure	SEC	3.3	3.5	3.7	4.2	dB	
Stressed eye J2 Jitter	J2	0.39				UI	
Stressed eye J4 Jitter	J4	0.53				UI	
Stressed Receiver eye mask { X1, X2, X3, Y1, Y2, Y3 }		{ 0.28,0.5,0.5,0.33,0.33,0.4 }					7
LOS Assert	LOSA	-11				dBm	8
LOS De-assert	LOSD	-30				dBm	8
LOS hysteresis	LOSH	0.5				dB	

Notes:

1. Transmitter consists of 4 lasers and a 4:1 optical multiplexer.
2. Informative, link controlled by TDEC
3. Hit Ratio 1.5 x 10⁻³ hits/sample.
4. Receiver consists of a 1:4 optical de-multiplexer and 4 photodetectors.
5. 5 x 10⁻⁵ BER (pre-FEC).
6. Unstressed receiver sensitivity is information and assumes 5 x 10⁻⁵ BER (pre-FEC).
7. Hit Ratio 5 x 10⁻⁵ hits/sample.
8. DC values.

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IV. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	Vcc	3.135		3.465	V	
Supply Current	Icc			1.5	A	
Modular Total Power	P			3.5	W	1
Transmitter						
Differential pk-pk input voltage tolerance	Vin,pp,diff			900	mV	
Single-ended voltage tolerance	Vin,pp	-0.35		+3.3	V	
Deterministic Jitter		Per Section 83E.3.4.1, IEEE 802.3bm				
Receiver						
Differential data output swing	Vout,pp	100		400	mVpp	2
		300		600		
		400		800		
		600		1200		
Eye Width		0.57			UI	
Eye Height, differential		228			mV	
Vertical eye closure	VEC	5.5			dB	
Transition Time (20% - 80%)	Tr,Tf	12			ps	

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Output voltage is settable in 4 discrete ranges via I2C. Default range is Range 2 (400 – 800 mV).

v. Ordering Information

Pivotal Part Number	Description
QSFP28-SWDM4-100G	QSFP28, 850nm, SWDM4 MMF 100m, 100G DDM, C-Temp

Notes:

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

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.