QPS-2580WG **(RoHS Compliant)**

80km 100GBASE-ZR4 QSFP28 Optical Transceiver

FEATURES

- Up to 25.78 Gbps Bi-directional Data Links Per Lane
- Support 100GBASE-ZR4
- Hot Pluggable Electrical Interface
- Link Length up to 80km with SMF
- Cooled LWDM 4-Wavelength EML
- 2-Wire Interface for Integrated Digital Diagnostic Monitoring
- Power Consumption < 6W
- Single +3.3V Power Supply
- RoHS Compliant
- 0 to 70°C Case Operating
- Duplex LC Connector

APPLICATIONS

- 100GBASE-ZR4 / 100G Ethernet
- Telecom networking

DESCRIPTION

QPS-2580WG series single mode QSFP28 transceiver is designed for single-mode fiber optical data communications such as IEEE 802.3 100GBASE-ZR4.

The transceiver consists of two sections: The transmitter section consists of four directly modulated Cooled LWDM EMLs. The receiver section consists of SOA + four PIN PDs, and 4-channel TIA array are used.

The module is with the QSFP28 38-pin connector to allow hot plug capability. The internally ac coupled high speed serial I/O simplifies interfacing to external circuitry. Only single 3.3V power supply is needed.

A serial EEPROM in the transceiver allows the user to access transceiver digital diagnostic monitoring and configuration data via the 2-wire QSFP28 Management Interface. This interface uses a single address, A0h, with a memory map divided into a lower and upper area. Basic digital diagnostic data is held in the lower area while specific data is held in a series of tables in the high memory area.

LASER SAFETY

This single mode transceiver is a Class 1 laser product. It complies with IEC-60825-1 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module shall be terminated with an optical connector or with a dust plug.

ORDER INFORMATION

P/No.	Bit Rate (Gb/s)	Wavelength (nm)	Package	Connector	Temp (°C)	RoHS Compliant
QPS-2580WG	103.1	LWDM 4-λ	QSFP28 with DMI	LC	0 to 70	Yes

Absolute Maximum Ratings					
Parameter	**Symbol**	**Min**	**Max**	**Units**	**Notes**
Storage Temperature	Tstg	-40	85	°C	
Operating Case Temperature	Topr	0	70	°C	
Relative Humidity	RH	0	85	%	Non condensing

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Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units / Notes**
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Power Dissipation	P_D			6	W
Operating Case Temperature	Topr	0		70	°C
Singling Data Rate, each Channel			25.78125		Gb/s

Transmitter Optical Specifications (Vcc3 = 3.3V ±5%)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes**
Average Launch Power, each lane	$Po_{, Avg}$	2		6.5	dBm	
Total average launch power	$Po_{, Total}$			12.5	dBm	
Difference in launch power between any two lanes (OMA)				3	dB	
Center Wavelength – lane 0	λ_{C0}	1294.53		1296.59	nm	
Center Wavelength – lane 1	λ_{C1}	1299.02		1301.09	nm	
Center Wavelength – lane 2	λ_{C2}	1303.54		1305.63	nm	
Center Wavelength – lane 3	λ_{C3}	1308.09		1310.19	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	6			dB	
Relative Intensity Noise	RIN			-130	dB/Hz	
Optical Return Loss Tolerance				20	dB	
Transmitter Reflectance				-12	dB	
Optical Eye Mask {X1, X2, X3, Y1, Y2, Y3}	{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}					
Average Launch Power of OFF Transmitter				-30	dBm	

Receiver Optical Specifications (Vcc3 = 3.3V ±5%)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes**
Average receive power, each lane		-28		-7	dBm	
Receiver power, each lane (OMA)				-7	dBm	
Receiver sensitivity Average, each lane	SEN	-28			dBm	25.78 Gb/s, PRBS-31 NRZ, BER<5E-5
Wavelength of Operation – lane 0	λ_{C0}	1294.53		1296.59	nm	
Wavelength of Operation – lane 1	λ_{C1}	1299.02		1301.09	nm	
Wavelength of Operation – lane 2	λ_{C2}	1303.54		1305.63	nm	
Wavelength of Operation – lane 3	λ_{C3}	1308.09		1310.19	nm	
LOS -- Deasserted	LOS_D	---	---	-28	dBm	Transition: high to low
LOS -- Asserted	LOS_A	-40	---	---	dBm	Transition: low to high
LOS -- Hysteresis		0.5	---		dB	
Receiver reflectance (max)				-26	dB	

CONNECTION DIAGRAM

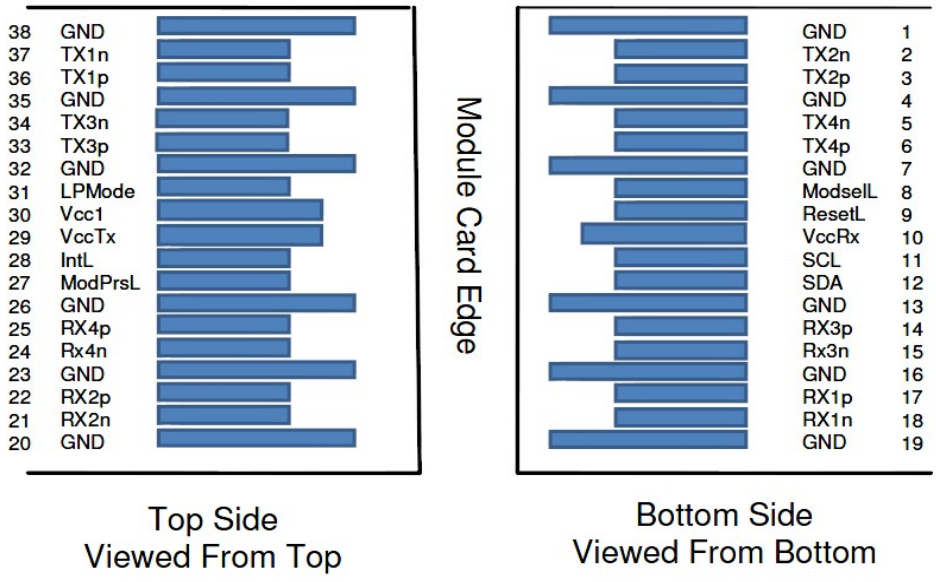


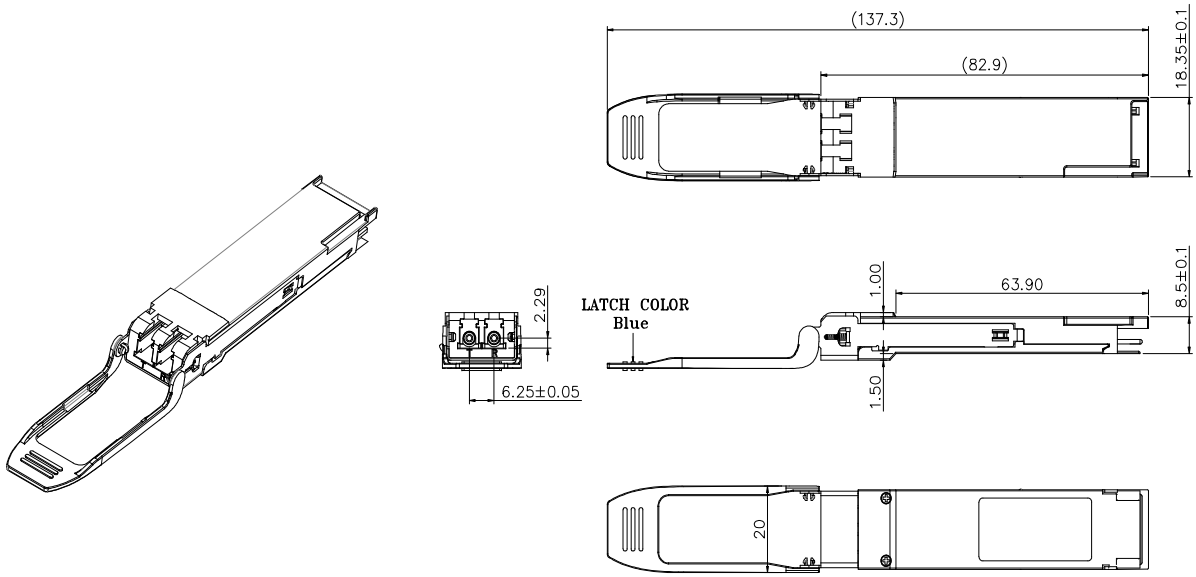
Table 3 PIN Description

PIN	Logic	Signal Name	Description	Note
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power Supply Receiver	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	
12	LVCMOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply transmitter	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMode	Low Power Mode	

32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

1. Module ground pins GND are isolated from the module case and chassis ground within the module.
2. Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 module in any combination.

MECHANICAL SPECIFICATION (UNITS IN MM)



Note: Specifications subject to change without notice.

REVISION HISTORY

Version	Subject	Release Date
1.0	Initial datasheet	2022/10/24