

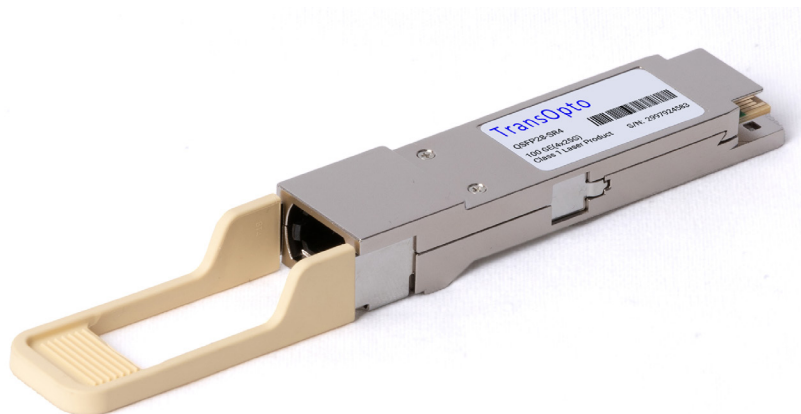
QSFP28-SR4-100G

TransOpto

**QSFP28, 100GbE-SR4, 4x25.8 Gbps, 100m
850nm, 2dB, MM, MPO-8/12**

DESCRIPTIONS

QSFP28-SR4-100G is a 4x25Gbps multi mode fiber, hot pluggable optical transceiver. The module integrates four parallel lanes with data rate at 25.78Gbps each lane. It can transmit up to 70 m on fiber OM3 fiber or 100 m on OM4 fiber with FEC.



FEATURES

- Compliant with IEEE Std 802.3bm
- Compliant with SFF-8665
- Transmission data rate up to 25.78
- 125 Gbps Datarate per channel
- High Reliability 850nm VCSEL technology
- Electrically hot-pluggable
- Single +3.3V power supply
- Case temperature range: 0 ~ +70
- Maximum power consumption 2.5W

- Single MPO12 connector
- RoHS complaint

APPLICATIONS

- R100GBASE-SR4 Ethernet links
- Data centers

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Units	Notes
Storage Temperature Range	TSTG	-40	+85	°C	
Supply Voltage	VCC	0	4	V	
Relative Humidity	RH	5% to 85% non-condensing			

RECOMMENDED OPERATING ENVIRONMENT

Parameter	Symbol	Min.	Typical	Max
Case Temperature- Operating	TCASE	0	70	°C
Supply Voltage	VCC	3.14	3.46	V
Power Consumption	PDISS		2.5	W
Link Distance over OM4 Fiber			100	M
Link Distance over OM3 Fiber			70	M

TRANSMITTER OPTICAL SPECIFICATIONS

Transmitter Parameter	Min	Typical	Max	Units	Note
Signaling Rate, each lane	25.78125±100 ppm			Gbps	
Center Wavelength Range	840	850	860	nm	
Modulation Format	NRZ				
Average launch Power per lane	-8.4		2.4	dBm	
RMS spectral width			0.6	nm	
Optical Modulation Amplitude , each lane	-6.4		3.0	dBm	
Average Launch Power per Lane @ TX Off State			-30.0	dBm	
Launch Power in OMA minus TDEC, each Lane	-7.3			dBm	
Transmitter and Dispersion Eye Closure, each Lane			4.3	dB	
Extinction Ratio	2.0			dB	
Optical Return Loss Tolerance			12	db	
Transmitter Eye mask definition {X1, X2, X3, Y1,Y2,Y3}	{0.3,0.38,0.45,0.35,0.41,0.5}				

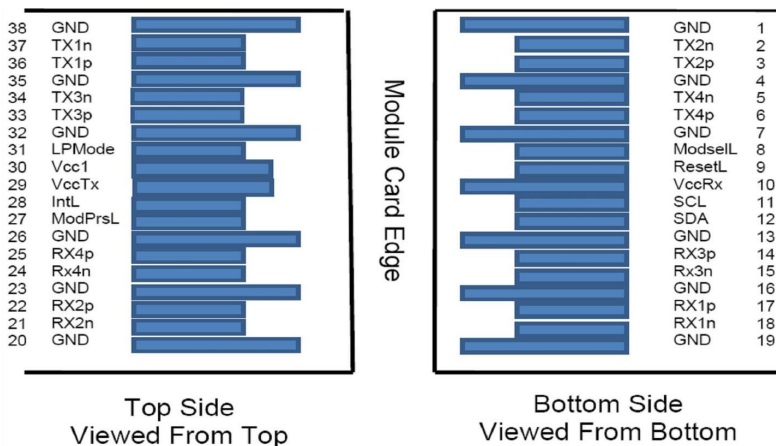
RECEIVER OPTICAL SPECIFICATIONS

Parameter	Min.	Typical	Max.	Units
Signaling Rate, each lane	25.78125±100 ppm			Gbps
Lane Wavelength Range	840	850	860	nm
Modulation Format	NRZ			
Damage Threshold	3.4			dBm
Average Receive Power, each lane	-10.3		2.4	dBm
Receiver Power. each lane (OMA)			3.0	dBm
Receiver Reflectance			-12.0	dB
Stressed Receiver Sensitivity (OMA), each lane			-5.2	dBm
Stressed Conditions for Stress Receiver Sensitivity				
Stressed Eye Closure		4.3		dB
Stressed Eye J2 Jitter		0.39		UI
Stressed Eye J4 Jitter		0.53		UI
OMA of each aggressor lane		3		dBm
Stressed Receiver Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}	{0.28,0.5,0.5,0.33,0.33,0.4}			
RX_LOS_Assert Min/Max	-30.0			dBm
RX_LOS_De-Assert Min/Max			-12.0	dBm
RX_LOS_Hysteresis	0.5			dB

QSFP28 CONNECTOR AND PINOUT DESCRIPTION

The electrical interface to the transceiver is a 38 pins edge connector. The 38 pins provide high speed data, low speed monitoring and control signals, I2C communication, power and ground connectivity.

The top and bottom views of the connector are provided below, as well as a table outlining the contact numbering, symbol and full description.



QSFP TRANSCEIVER PINOUT

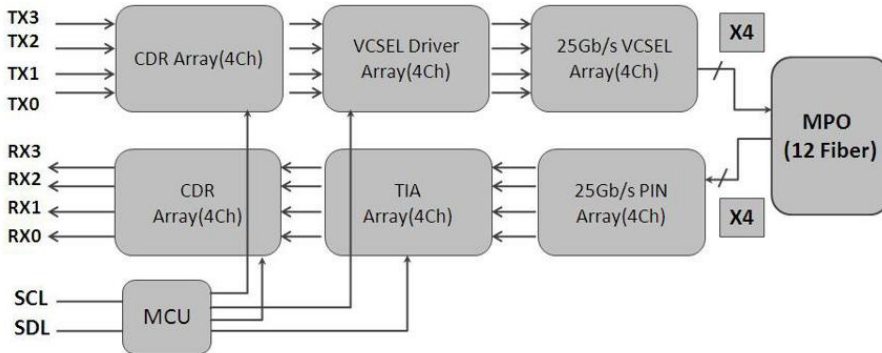
Pin	Logic	Symbol	Name/Description	Ref.
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3
3	CML-I	Tx2p	Transmitter Non-Inverted Data Output	3
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Output	3
6	CML-I	Tx4p	Transmitter Non-Inverted Data Output	3
7		GND	Ground	1
8	LVTTTL-I	ModSelL	Module Select	3
9	LVTTTL-I	ResetL	Module Reset	3
10		Vcc Rx	+3.3V VDC Receiver Power Supply	2
11	LVC MOS-I/O	SCL	Serial Clock for I2C Interface	3
12	LVC MOS-I/O	SDA	Serial Data for I2C Interface	3
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3
15	CML-O	Rx3n	Receiver Inverted Data Output	3
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3
18	CML-O	Rx1n	Receiver Inverted Data Output	3
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3
26		GND	Ground	1
27	LVTTTL-O	ModPrsL	Module Present	3
28	LVTTTL-O	IntL	Interrupt	3
29		Vcc Tx	+3.3V VDC Transmitter Power Supply	2

Pin	Logic	Symbol	Name/Description	Ref.
30		Vcc1	+3.3V VDC Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	3
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Output	3
34	CML-I	Tx3n	Transmitter Inverted Data Output	3
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Output	3
37	CML-I	Tx1n	Transmitter Inverted Data Output	3
38		GND	Ground	1

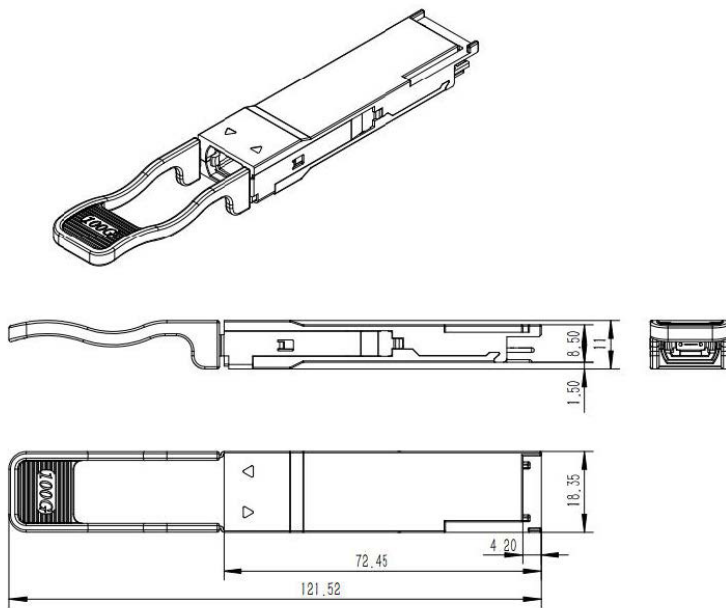
ELECTRICAL CHARACTERISTICS

Transmitter electrical input signal characteristics (TP1)	Min	Typical	Max	Unit
Signaling rate per lane (range)	25.78125±100 ppm			GBd
Differential input return loss	Equation (8 3E-5)			dB
Differential to common mode input return loss	Equation (8 3E-6)			dB
Differential termination mismatch			10	%
Module stressed input test	See 83E3.4.1			
Differential pk-pk input voltage tolerance	900			mV
DC common mode voltage	-350			2850 mV
Single ended voltage tolerance range	-0.4			3.3 V
Receiver electrical output signal characteristics (TP4)	Min	Typical	Max	Unit
Signaling rate per lane (range)	25.78125±100 ppm			GBd
AC common-mode output voltage (RMS)			17.5	mV
Differential output voltage			900	mV
Eye width	0.57			UI
Eye height, differential	228			mV
Vertical eye closure			5.5	dB
Differential output return loss	Equation (8 3E-2)			dB
Common to differential mode conversion return loss	Equation (8 3E-3)			dB
Differential termination mismatch			10	%
Transition time (20% to 80%)	12			ps
DC common mode voltage	-350			2850 mV

FUNCTIONAL BLOCK DIAGRAM



MECHANICAL SPECIFICATIONS



ORDERING INFORMATION

Part Number	Product Description
QSFP28-SR4-100G	QSFP28, 100GbE-SR4, 4x25.8 Gbps, 100m 850nm, 2dB, MM, MPO-8/12

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