



## GZ100GQST31L-10

# 100Gb/s 10Km QSFP28 LR4 Single Transmitter

### Features

- Up to 10km reach for G.652 SMF
- Cooled 4x25Gb/s LAN WDM DML TOSA with optical MUX(**without receiver**)
- 4x25G Electrical Interface
- Single +3.3V power supply
- DDM function implemented
- 2 Wire Serial Interface for module management
- Maximum power dissipation<3.5W
- Operating temperature range: 0°C ~ 70°C
- Compliant with RoHS6

### Applications

- Compliant with QSFP28 MSA(SFF-8665 v1.9)
- Compliant with IEEE 802.3ba
- 100GBASE-LR4 Ethernet

### Product Description

QSFP28 transceiver modules are designed for use in 100 Gigabit Ethernet links over single mode fiber.

They are compliant with SFF-8665, INF-8438i and IEEE 802.3ba 100GBASE-LR4. Digital diagnostics functions are available via an I2C interface, as specified by the QSFP28 MSA.

### Shenzhen Guangzhi Communication Technology Co., LTD.

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

Website: [www.optst.com](http://www.optst.com)

Document Number: OPTST-OP-086 A/0



## Pin function definitions

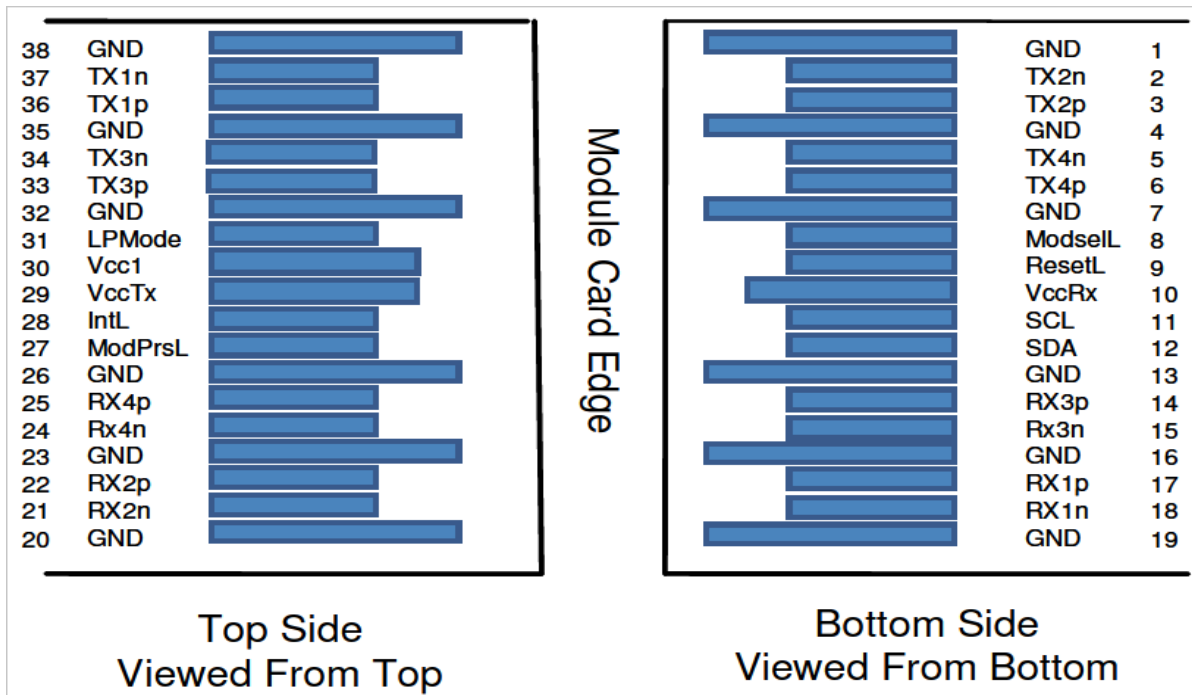


Figure 1. Pin function definitions

Table 1: Transceiver pin descriptions

Pin	Name	Description	Plug Sequence	Notes
1	GND	Ground	1	
2	Tx2n	Transmitter Inverted Data Input	3	
3	Tx2p	Transmitter Non-Inverted Data Input	3	
4	GND	Ground	1	
5	Tx4n	Transmitter Inverted Data Input	3	
6	Tx4p	Transmitter Non-Inverted Data Input	3	
7	GND	Ground	1	
8	ModSelL	Module Select	3	
9	ResetL	Module Reset	3	
10	VCC Rx	+3.3 V Power supply receiver	2	
11	SCL	2-wire serial interface clock	3	
12	SDA	2-wire serial interface data	3	

### Shenzhen Guangzhi Communication Technology Co., LTD.

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

Website: [www.optst.com](http://www.optst.com)

Document Number: OPTST-OP-086 A/0



13	GND	Ground	1	
14	Rx3p	Receiver Non-Inverted Data Output	3	
15	Rx3n	Receiver Inverted Data Output	3	
16	GND	Ground	1	
17	Rx1p	Receiver Non-Inverted Data Output	3	
18	Rx1n	Receiver Inverted Data Output	3	
19	GND	Ground	1	
20	GND	Ground	1	
21	Rx2n	Receiver Inverted Data Output	3	
22	Rx2p	Receiver Non-Inverted Data Output	3	
23	GND	Ground	1	
24	Rx4n	Receiver Inverted Data Output	3	
25	Rx4p	Receiver Non-Inverted Data Output	3	
26	GND	Ground	1	
27	ModPrsL	Module Present	3	
28	IntL	Interrupt	3	
29	Vcc Tx	+3.3 V Power supply transmitter	2	
30	Vcc1	+3.3 V Power Supply	2	
31	LPMODE	Low Power Mode	3	
32	GND	Ground	1	
33	Tx3p	Transmitter Non-Inverted Data Input	3	
34	Tx3n	Transmitter Inverted Data Input	3	
35	GND	Ground	1	
36	Tx1p	Transmitter Non-Inverted Data Input	3	
37	Tx1n	Transmitter Inverted Data Input	3	
38	GND	Ground	1	

## Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	°C	-40	85
Relative Humidity	RH	%	0	95
Maximum Supply Voltage	Vcc3	V	-0.5	4.0

### Shenzhen Guangzhi Communication Technology Co., LTD.

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

Website: [www.optst.com](http://www.optst.com)

Document Number: OPTST-OP-086 A/0



## Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Case Temperature Range	T <sub>c</sub>	°C	0		70
Power Supply Voltage	V <sub>cc</sub>	V	3.14	3.3	3.46
Bit Rate	BR	Gb/s			103.1
Bit Error Ratio	BER				10 <sup>-12</sup>
Max Supported Link Length	L	Km			10

## Electric Ports Definition

Parameter	Symbol	Unit	Min	Typ	Max	Note
Supply Voltage	V <sub>cc</sub>	V	3.14	3.3	3.46	
Module Power		mW			3500	
<b>Transmitter</b>						
Input Differential Impedance	R <sub>IN</sub>	Ω	80	100	120	
Differential Data Input	V <sub>IN</sub>	mVp-p	150		1200	
J2 Jitter Tolerance	Jt2	UI	0.17			
J9 Jitter Tolerance	Jt9	UI	0.29			
Data Dependent Pulse Width Shrinkage	DDPWS	UI	0.07			
Eye mask coordinates{X1,X2, Y1,Y2}		UI mV	0.11,0.31 95,350			

### Shenzhen Guangzhi Communication Technology Co., LTD.

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

Website: [www.optst.com](http://www.optst.com)

Document Number: OPTST-OP-086 A/0



**Optical Characteristics ( $T_c=0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  and  $V_{cc}=3.14$  to  $3.46$ )**

Parameter	Symbol	Unit	Min	Typ	Max	Notes
<b>Transmitter(per Lane)</b>						
Signaling Speed per Lane		GBd	25.78125 ± 100 ppm			
Lane Wavelength (range):						
L0		nm	1294.53 – 1296.59			
L1			1299.02 – 1301.09			
L2			1303.54 – 1305.63			
L3			1308.09–1310.19			
Total Average Launch Power	Pout	dBm			10.5	
Transmit OMA per Lane	TxOMA	dBm	-5		5	
Average Launch Power per Lane	TXPx	dBm	-4.3		4.5	
Optical Extinction Ratio	ER	dB	3.5			
Side-Mode Suppression Ratio (SMSR)	SMSR	dB	30			
Average launch power of OFF transmitter, per lane		dBm			-30	
Relative Intensity Noise	RIN	dB/Hz			-128	
Optical Return Loss Tolerance		dB			20	
Transmitter Reflectance		dB			-12	
Transmitter Eye mask definition {X1,X2,X3, Y1,Y2,Y3}			{0.25,0.4,0.45,0.25,0.28,0.4}			

**Shenzhen Guangzhi Communication Technology Co., LTD.**

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

**Website: [www.optst.com](http://www.optst.com)**

Document Number: OPTST-OP-086 A/0



## Typical Application Circuit

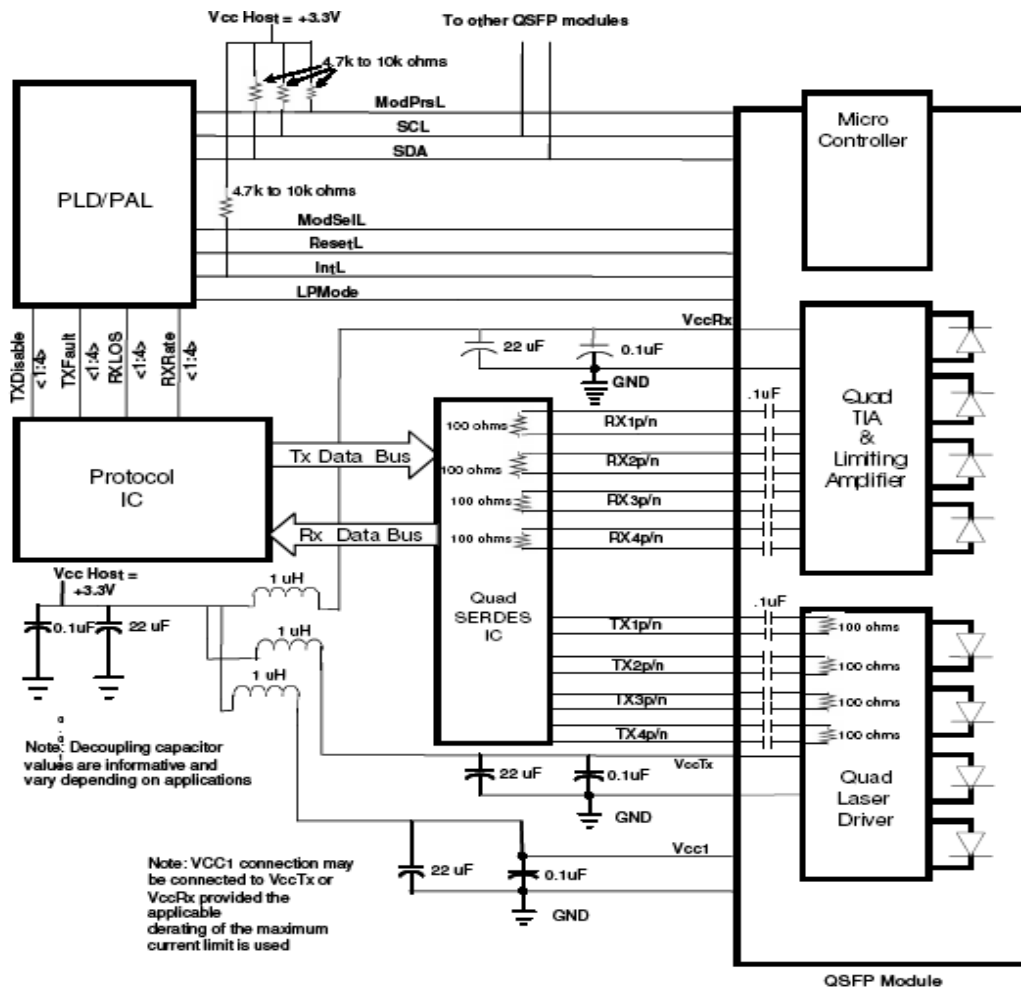


Figure 2. Typical application circuit

## Digital Diagnostics Functions

As defined by the SFF-8665–Specification for QSFP28 Copper and Optical Transceiver, Our QSFP28 transceivers provide digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

- Transceiver temperature
- Laser bias current
- Transmitted optical power
- Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range. The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the [Shenzhen Guangzhi Communication Technology Co., LTD.](http://www.optst.com)

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

Website: [www.optst.com](http://www.optst.com)

Document Number: OPTST-OP-086 A/0



transceiver, which is accessed through the 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host.

## Mechanical Dimensions

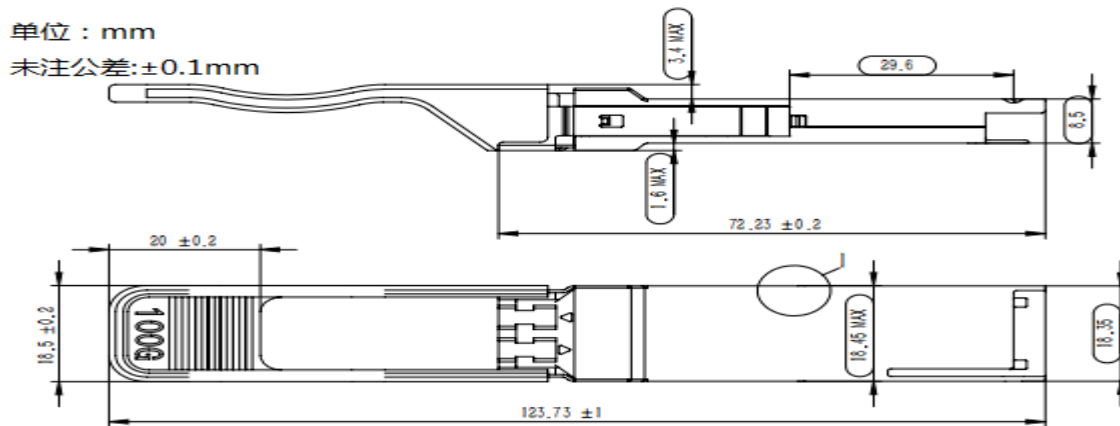


Figure 3. Module Mechanical Dimensions

## Ordering Information

Part. No	Specifications								
	Rate Gb/s	Tx	Tx WL nm	Po dBm	Rx	Sen. dBm	Temp °C	Reach km	Other
GZ100GQST31L-10	103.1	LAN-WDM	1294.53~1310.1	-4.3~+4.5	/	/	0~70	10	RoHS

## Warnings

### Handing Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Please follow guidelines according to proper ESD procedures.

### Laser Safety:

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

### Notice:

The information provided on this page contains the product target specifications which are subject to change without notice.

**Shenzhen Guangzhi Communication Technology Co., LTD.**

Production Address: 5th floor, Building 2, Peninsula Industrial Park, No. 3, Gangbian Tian Road, East Lake High-tech Zone, Wuhan Hubei Province, China.

Contact: Mr. Yang Tel.: +86-18607555895 E-mail: yanghan@optst.com

**Website: [www.optst.com](http://www.optst.com)**

Document Number: OPTST-OP-086 A/0