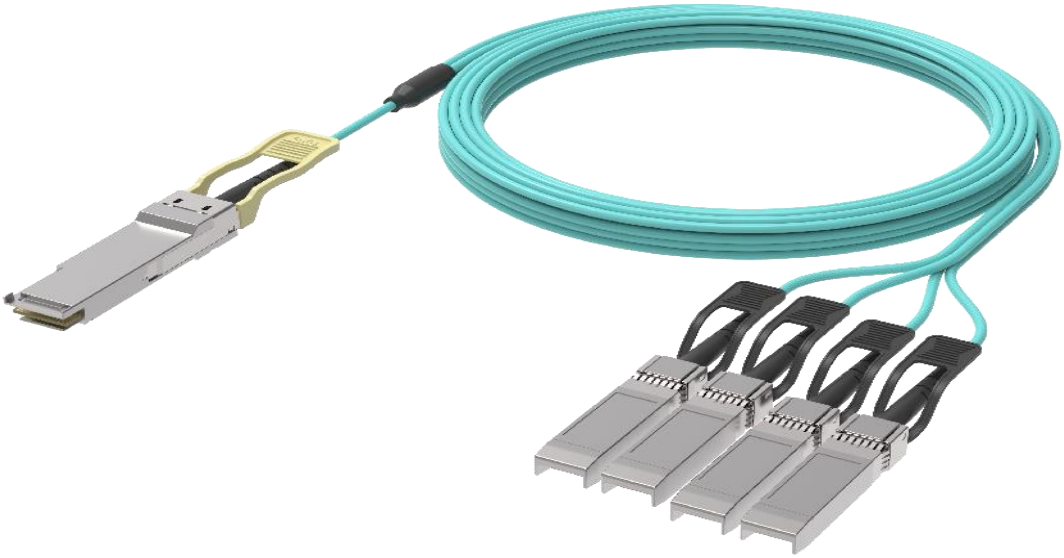
Product Datasheet

100Gb/s QSFP28 to 4xSFP28 Active Optical Cable



Application

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers
- Telecom Central Offices (CO)
- Test and Measurement Equipment

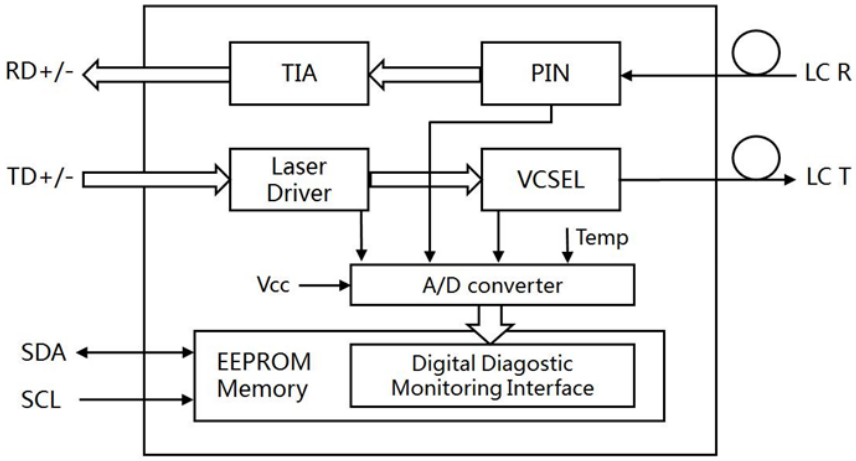
Features

- Supports 100G to 25G Ethernet interoperability
- Aggregate 4 discrete SFP28 25G channels into single parallel QSFP28 100G interface
- Maximum link length of 70m links on OM3 multimode fiber or 100m links on OM4 multimode Fiber
- Electrically hot-pluggable
- Electrical interface compliant to QSFP28 connector and SFP28 connectors
- Case operating temperature range: 0°C to 70°C
- Compliant to RoHS-10

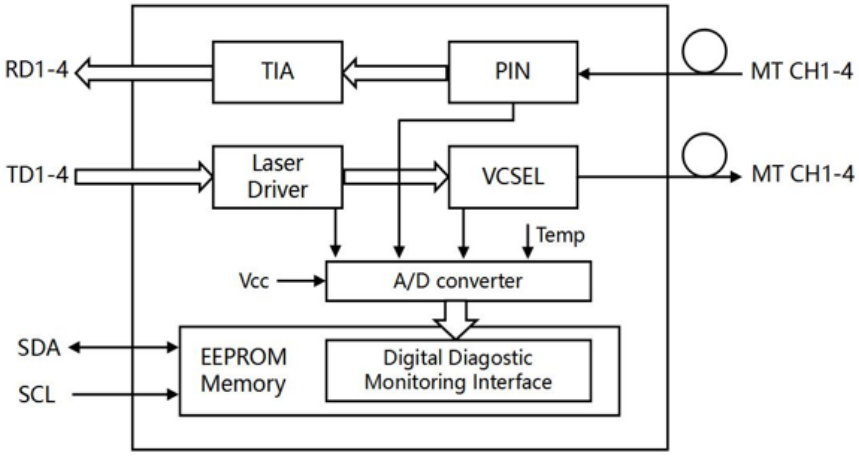
1.0 Product Specification

1.1 General Description

This product QSFP28 to 4xSFP28 active optic cables are a high performance, low power consumption, long reach interconnect solution supporting 100G to 25G Ethernet.



4x25G SFP28



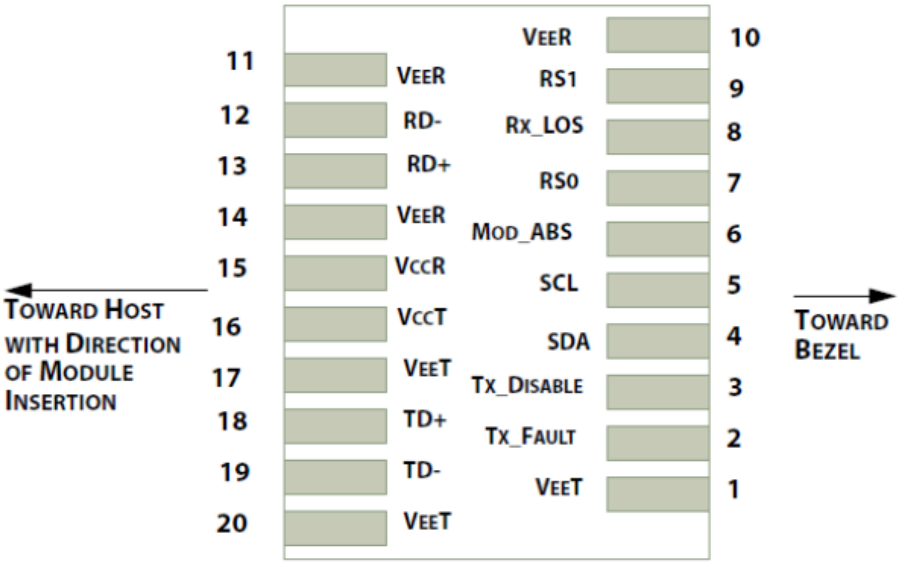
100G QSFP28

1.2 Pin Function Definition

➢ Pin Definition- SFP28

PIN	Logic	Symbol	Name/Description
1		VeeT	Transmitter Ground
2	LVTTL-O	TX Fault	Transmitter Fault Indication
3	LVTTL-I	TX Disable	Transmitter Disable
4	LVTTL-I/O	SDA	2-wire Serial Interface Data Line
5	LVTTL-I	SCL	2 Wire Serial Interface Clock
6		MOD-ABS	Module Absent, Connected to VeeT or VeeR in the module.

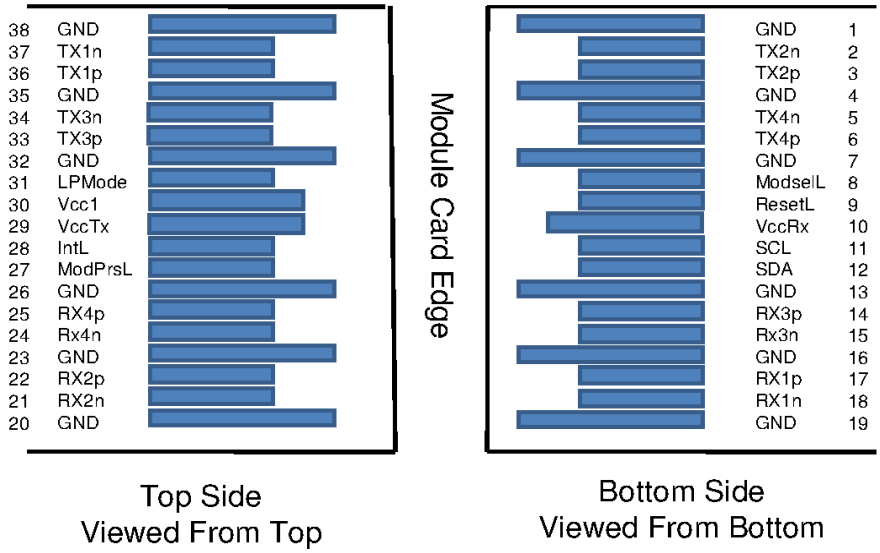
7	LVTTL-I	RS0	RX Rate Select, optional
8	LVTTL-O	LOS	Loss of Signal
9	LVTTL-I	RS1	TX Rate Select, optional
10		VeeR	Receiver Ground
11		VeeR	Receiver Ground
12	CML-O	RD-	Inv. Received Data Out
13	CML-O	RD+	Received Data Out
14		VeeR	Receiver Ground
15		VccR	Receiver Power
16		VccT	Transmitter Power
17		VeeT	Transmitter Ground
18	CML-I	TD+	Transmit Data In
19	CML-I	TD-	Inv. Transmit Data In
20		VeeT	Transmitter Ground



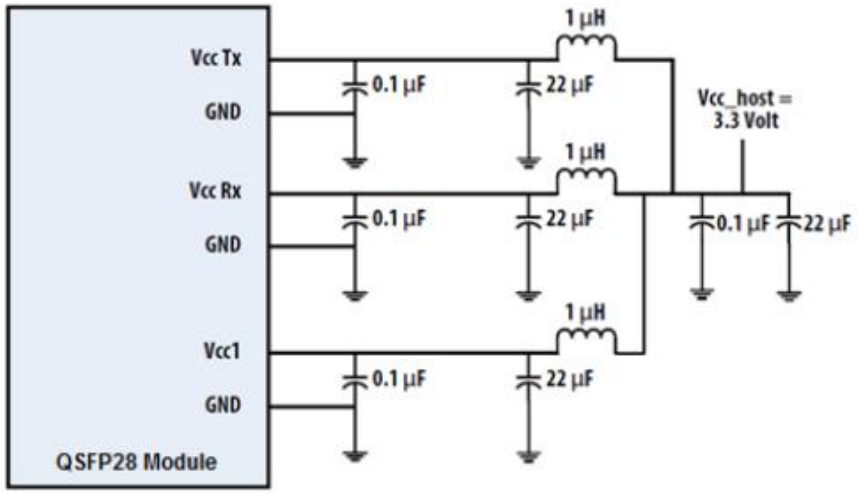
➢ Pin Definition- QSFP28

PIN	Logic	Symbol	Name/Description
1		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data output
4		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data output
7		GND	Ground

8	LVTLL-I	ModSelL	Module Select
9	LVTLL-I	ResetL	Module Reset
10		VccRx	+3.3V Power Supply Receiver
11	LVCMOSS-I/O	SCL	2-Wire Serial Interface Clock
12	LVCMOSS-I/O	SDA	2-Wire Serial Interface Data
13		GND	Ground
14	CML-O	Rx3p	Receiver Non-Inverted Data output
15	CML-O	Rx3n	Receiver Inverted Data Input
16		GND	Ground
17	CML-O	Rx1p	Receiver Non-Inverted Data output
18	CML-O	Rx1n	Receiver Inverted Data Input
19		GND	Ground
20		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Input
22	CML-O	Rx2p	Receiver Non-Inverted Data output
23		GND	Ground
24	CML-O	Rx4n	Receiver Inverted Data Input
25	CML-O	Rx4p	Receiver Non-Inverted Data output
26		GND	Ground
27	LVTLL-O	ModPrsL	Module Present
28	LVTLL-O	IntL	Interrupt
29		VccTx	+3.3V Power Supply transmitter
30		Vccl	+3.3V Power Supply
31	LVTLL-I	LPMode	Low Power Mode
32		GND	Ground
33	CML-I	Tx3p	Transmitter Non-Inverted Data output
34	CML-I	Tx3n	Transmitter Inverted Data Input
35		GND	Ground
36	CML-I	Tx1p	Transmitter Non-Inverted Data output
37	CML-I	Tx1n	Transmitter Inverted Data Input
38		GND	Ground



1.3 Recommended Power Supply Filter



1.4 Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Tstg	-40	+85	°C
Operating relative humidity (Non- condensing)	RH	0	85	%
Input Voltage		Vcc-0.3	Vcc+0.3	V
Supply Voltage	Vcc	-0.3	3.6	dBm

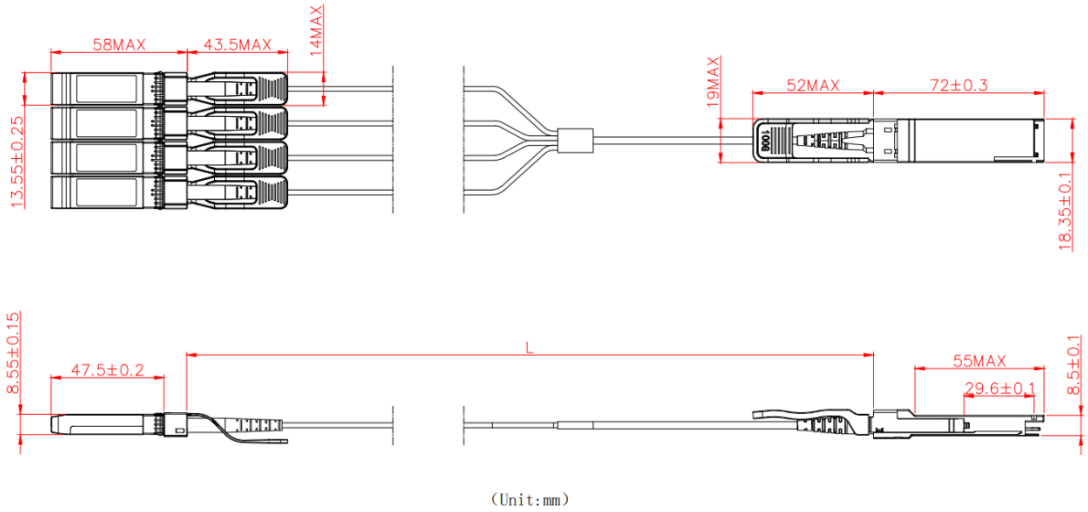
1.5 Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min.	Type	Max.	Unit	NOTE
Operating Case Temperature	T_c	0		70	℃	
Power Supply Voltage	V_{cc}	+3.135	3.3	+3.465	V	
Data Rate	BR		25.78			SFP28 Bit Rate
			103.12		Gb/s	QSFP28 Bit Rate
Power Consumption Max (per cable)	P			1	W	End-SFP28
				2.5	W	End-QSFP28
Supply Current (per cable)	ICC			0.3	A	End-SFP28
				0.76		End-QSFP28
Data Rate Accuracy	-	-100		100	ppm	
Control Input Voltage High	-	-		2	V	
Control Input Voltage Low	-	0.8		-	V	
Link Distance(OM4 MMF)	D	0		100	m	

1.6 Electrical Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit
Differential input impedance	Zin	90	100	110	ohm
Differential Output impedance	Zout	90	100	110	ohm
Differential input voltage amplitude	ΔVin	300		1100	mVp-p
Differential output voltage amplitude	ΔVout	500		800	mVp-p
Pre-FEC Bit Error Ratio	BR			5E-5	
Post-FEC Bit Error Ratio	BR			1E-12	
Input Logic Level High	VIH	2.0		VCC	V
Input Logic Level Low	VIL	0		0.8	V
Output Logic Level High	VOH	VCC-0.5		VCC	V
Output Logic Level Low	VOL	0		0.4	V

1.7 Mechanical Specifications



(Unit:mm)

1.8 Performance Specifications

The following characteristics are defined over recommended operating conditions

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

2.0 Product Information

Data Rate	Factor		Optical	Wavelength	Reach
100G	QSFP28 to 4xSFP+	AOC	N/A	850nm	1m~100m

ESD Safety Cautions

This transceiver is specified as ESD threshold 1KV for high speed data pins based on Human Body Model per ANSI/ESDA/JEDECJS-001. The units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case. However, normal ESD precautions are still required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

Important Notice

The performance figures, data, and any illustrative material presented in this datasheet are typical and must be explicitly confirmed in writing by ZHAOLONG before they are deemed applicable to

any specific order or contract.

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3.0 Revision Record

Rev.	Comments	Author	Date
A01	Initial Release	Koko Sun	10/01/2023