

TSQ2Q-85J-XXXD/TSQ2Q-85J-XXXU Active Optical Cables

100GBASE-SR4 QSFP28 TO 2X50GBASE-SR2 QSFP28 Active Optical Cable, With Diagnostic Monitoring

Features

- Four-channel full-duplex active optical cable with QSFP28 plugs
- Compliant to the IEEE 802.3bm (100GBASE-SR4)
- Compliant to the SFF-8665 Specification
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Low Power Dissipation: <2.2W 100GBASE-SR4 QSFP28 end
<1.5W 50GBASE-SR2 QSFP28 end
- RoHS compliant

Applications

- IEEE 802.3bm 100GBASE SR4 Ethernet

Product Description

The TSQ2Q-85J-XXXD/TSQ2Q-85J-XXXU is a Four-Channel, Pluggable, Parallel, Fiber-Optic QSFP28 AOC for 100 Gigabit Ethernet, Infiniband FDR/EDR Applications. This transceiver is a high performance module for short-range multi-lane data communication and interconnect applications. It integrates four data lanes in each direction with 100Gbps bandwidth.

This module is designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 38 contact edge type connector.

Absolute Maximum Rating

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	0	85	%

Recommended Operating Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	VCC	3.15	3.30	3.45	V
Case Operating Temperature	Tca	0	-	70	°C
	Tca	-40	-	85	°C
Data Rate Per Lane	DR	-	25.78125	-	Gbps
Fiber Bend Radius	Rb	3	-	-	cm

Notes:

1. Supply current is shared between VCCTX and VCCR_X.
2. In-rush is defined as current level above steady state current requirements.

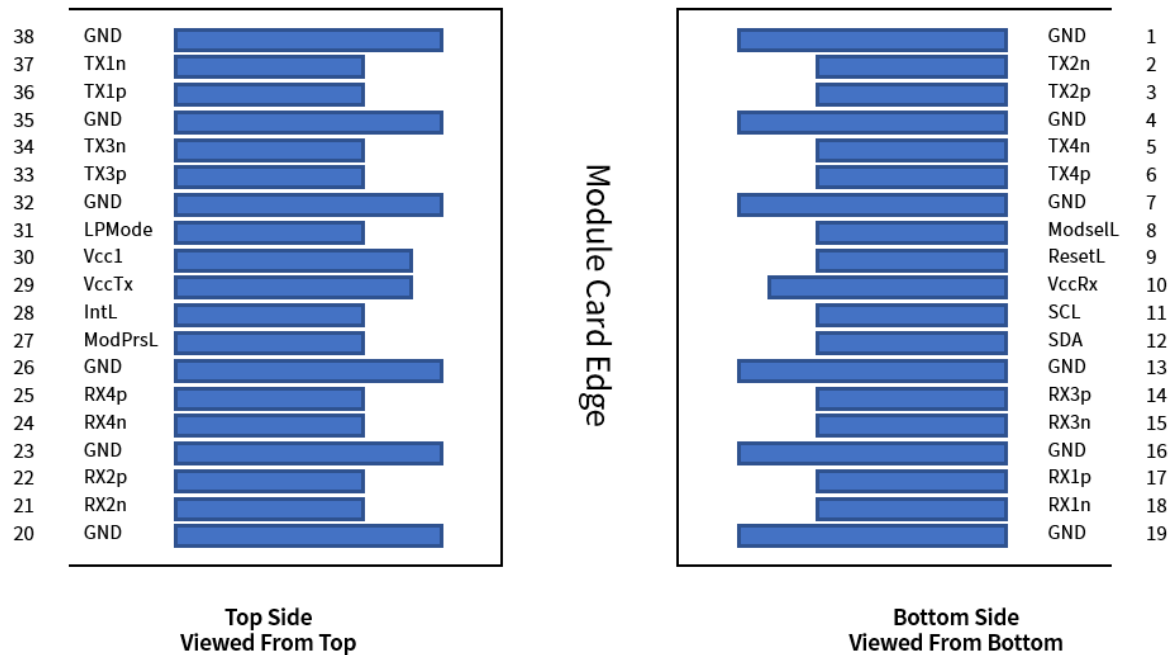
Transmitter Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Input differential impedance	Rin	90	100	110	Ω
Differential Input Voltage swing, per lane	Vin	300	-	1100	mV
Transmit Disable Voltage	VD	2.0	-	VCC+0.3	V
Transmit Enable Voltage	Ven	Vee	-	Vee+0.8	V

Receiver Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential Output Swing, per lane	Vout	500	-	800	mV
Bit Error Rate	BER	-	-	10 ⁻¹²	-
Output Differential Impedance	Rout	90	100	110	Ω
Loss of Signal –Asserted	-	2.0	-	VCC+0.3	V
Loss of Signal –Negated	-	Vee	-	Vee+0.8	V

QSFP28 Transceiver Electrical Pad Layout

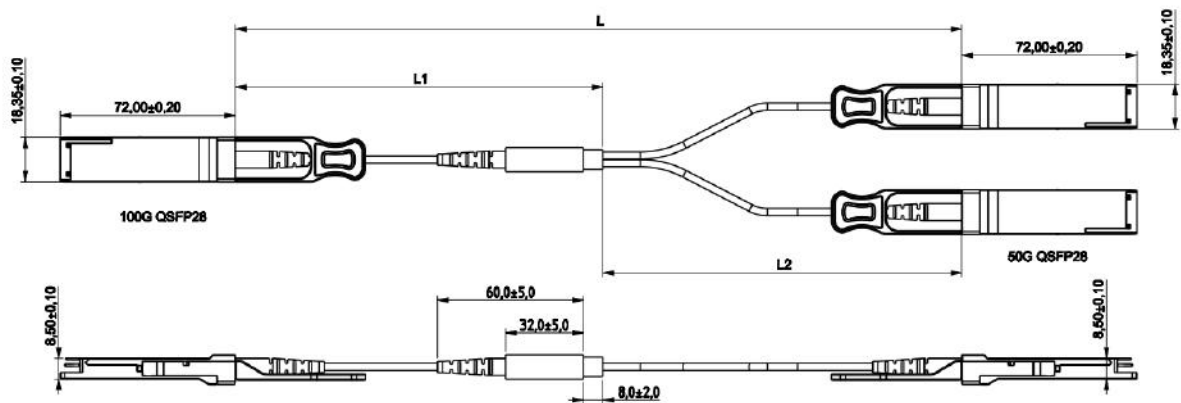


Pin Definition

Pin	Symbol	Name/Description
1	GND	Ground
2	Tx2n	Transmitter Inverted Data Input
3	Tx2p	Transmitter Non-Inverted Data Input
4	GND	Ground
5	Tx4n	Transmitter Inverted Data Input
6	Tx4p	Transmitter Non-Inverted Data Input
7	GND	Ground
8	ModSelL	Module Select
9	ResetL	Module Reset
10	Vcc Rx	+3.3 V Power supply receiver
11	SCL	2-wire serial interface clock
12	SDA	2-wire serial interface data
13	GND	Ground
14	Rx3p	Receiver Non-Inverted Data Output
15	Rx3n	Receiver Inverted Data Output
16	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output
18	Rx1n	Receiver Inverted Data Output
19	GND	Ground

20	GND	Ground
21	Rx2n	Receiver Inverted Data Output
22	Rx2p	Receiver Non-Inverted Data Output
23	GND	Ground
24	Rx4n	Receiver Inverted Data Output
25	Rx4p	Receiver Non-Inverted Data Output
26	GND	Ground
27	ModPrsL	Module Present
28	IntL	Interrupt
29	VCC Tx	+3.3 V Power supply transmitter
30	VCC1	+3.3 V Power Supply
31	LPMode	Low Power Mode
32	GND	Ground
33	Tx3p	Transmitter Non-Inverted Data Input
34	Tx3n	Transmitter Inverted Data Input
35	GND	Ground
36	Tx1p	Transmitter Non-Inverted Data Input
37	Tx1n	Transmitter Inverted Data Input
38	GND	Ground

Mechanical



AOC product bagging circle size:

L	Disc fiber diameter (mm)
$1\text{m} \leq L \leq 5\text{m}$	$110 \leq \text{inner diameter, outer diameter} \leq 160$
$5\text{m} < L \leq 7\text{m}$	$110 \leq \text{inner diameter, outer diameter} \leq 170$
$7\text{m} < L \leq 30\text{m}$	$110 \leq \text{inner diameter, outer diameter} \leq 180$
$30\text{m} < L \leq 50\text{m}$	$110 \leq \text{inner diameter, outer diameter} \leq 210$
$50\text{m} < L \leq 100\text{m}$	$110 \leq \text{inner diameter, outer diameter} \leq 250$

Length tolerance table:

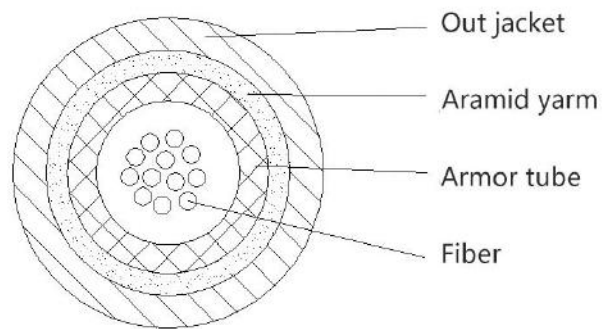
L	Tolerance (mm)
$L \leq 1\text{ M}$	+70/-0
$1\text{ M} < L < 7\text{ M}$	+100/-0
$L \geq 7\text{ M}$	+2%L/-0

Length comparison table

L	L1	L2	Notes
1m	30cm	70cm	The tolerance for branches is +7/-0cm; The length between different branches is +1/-0cm;
2m	60cm	1.4m	
3m	1m	2m	
≥5m	L-3m	3m	

Notes:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS.

Cable Structure**Cable Technical Parameters**

Parameter	Symbol	Typical
Model		GJFKV
Fiber	Count	2~12
	Color	Blue, orange, green, blown, gray, white, red, black, yellow, purple, pink, aqua
Cable	OD (mm)	3.0±0.1
	Material	PVC-OFNP
Armored tube	OD (mm)	1.8±0.1
	ID (mm)	1.2±0.1
Max.tensile Strength(N)	Short-term	150
	Long-term	80
Min.Bending Radius(mm)	Dynamic	20D
	Static	10D
Max.Crush Resistance(N/100mm)	Short-term	3000
	Long-term	1000
Strength Members		Aramid yarn
Temperature range	Storage or transportation	-20~70°C
	Operation	-20~60°C
	Installation	-20~60°C

Ordering Information

Part Number	Product Description
TSQ2Q-85J-XXXD	100G QSFP28 TO 2X50G QSFP28 Armored AOC 0°C ~ +70°C
TSQ2Q-85J-XXXU	100G QSFP28 TO 2X50G QSFP28 Armored AOC -40°C ~ +85°C
XXX :001~070,1~70 Length in meters on OM3 MMF	
XXX :001~100,1~100 Length in meters on OM4 MMF	

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