

TSQSQ-85L-XXXDB Active Optical Cable

200GBASE-SR4 HDR QSFP56 Active Optical Cable, With Diagnostic Monitoring

Features

- Hot-pluggable QSFP56 form factor
- 4 channels full-duplex transceiver modules
- Transmission data rate up to 53Gbps per channel
- 4 channels 850nm VCSEL array
- 4 channels PIN photo detector array
- Low power consumption < 5.5W per end
- Post FEC Bit Error Rate (BER) better than 1E-15
- Built-in digital diagnostic functions
- Operating case temperature: 0°C~+70°C
- RoHS6 compliant (lead free)

Applications

- InfiniBand HDR

Product Description

The TSQSQ-85L-XXXDB is a Four-Channels, Pluggable, Parallel, Fiber-Optic QSFP56 for InfiniBand HDR Applications. This transceiver is a high performance module for short-range multi-lane data communication and interconnection applications. It integrates four data lanes in each direction.

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 ¹	RH	15	85	%

Notes:

1. Non-condensing

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

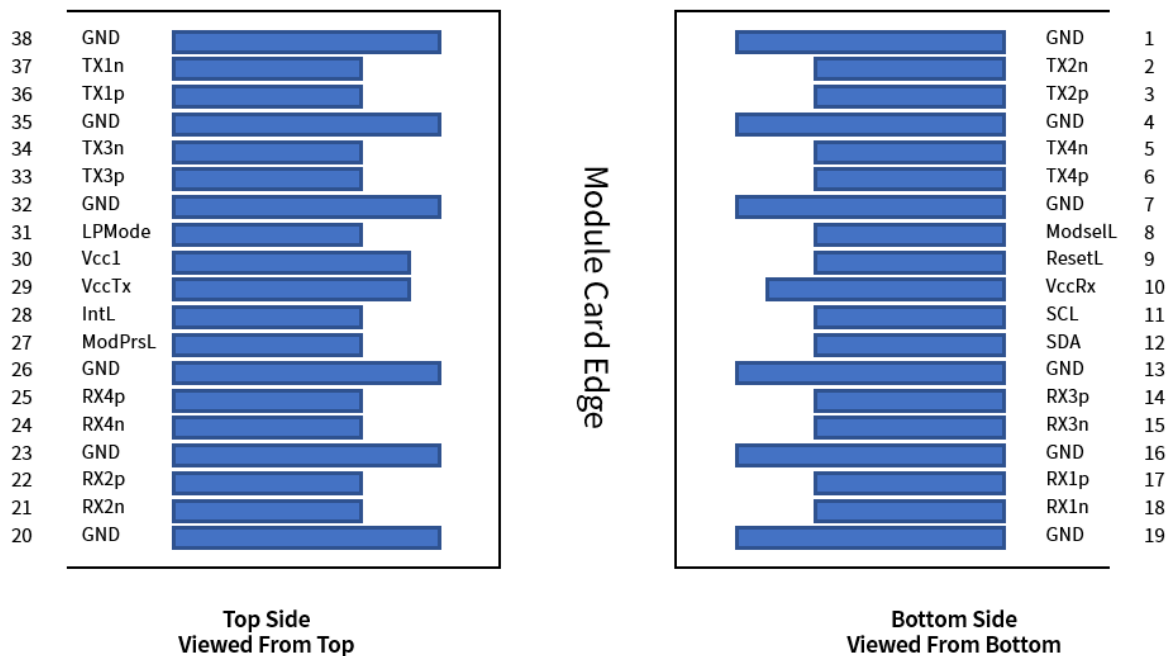
Electrical characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Signaling rate per lane	-	53.125			Gbps
Differential Input Voltage Amplitude ¹	Vin	300	-	1100	mV
Differential Output Voltage Amplitude ²	Vout	300	-	900	mV
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

Notes:

1. Differential input voltage amplitude is measured between TxnP and TxnN
2. Differential output voltage amplitude is measured between RxnP and RxnN

QSFP56 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

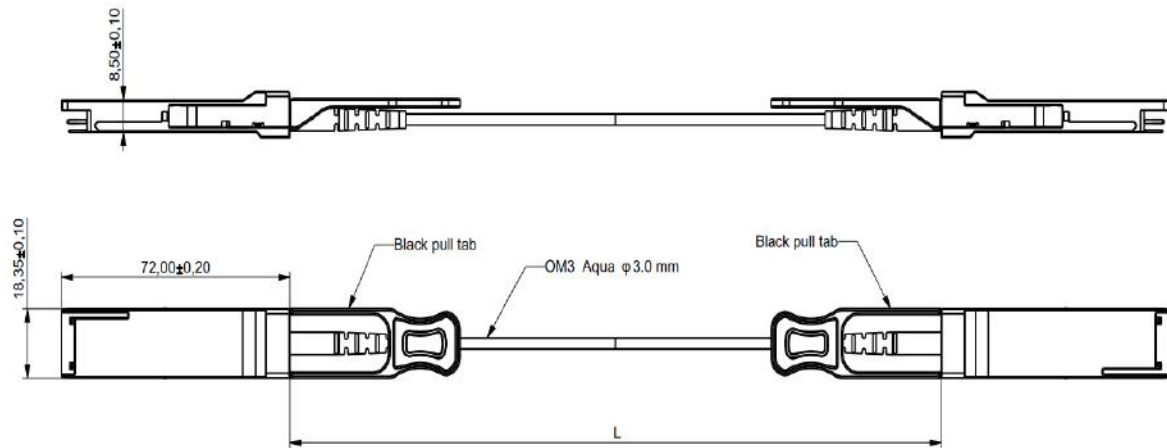
Information and specifications are subject to change without notice.
Please visit www.china-tscom.com for more information

8 Jinxiu Middle Road, Pingshan, Shenzhen, Guangdong, 518118, P. R. China
+86 755 32983688 | info@china-tscom.com | www.china-tscom.com



38	GND	Ground
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Mechanical



Unit: mm

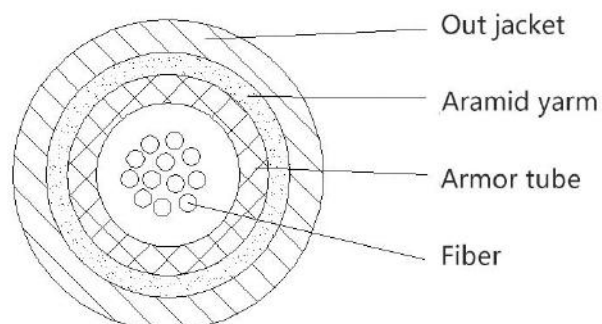
AOC product bagging circle size:

L	Disc fiber diameter (mm)	number of circle
0.5m	Based on actual circling	1.5
1m		3.5
1.5m	90≤Inner diameter, outer diameter≤110	4.5
2m	100≤Inner diameter, outer diameter≤120	5.5
2.5m	110≤Inner diameter, outer diameter≤130	6.5
3m	100≤Inner diameter, outer diameter≤120	8.5
3m<L≤5m	110≤Inner diameter, outer diameter≤160	Not required
5m<L≤7m	110≤Inner diameter, outer diameter≤170	
7m<L≤30m	110≤Inner diameter, outer diameter≤180	
30m<L≤50m	110≤Inner diameter, outer diameter≤210	
50m<L≤100m	110≤Inner diameter, outer diameter≤250	

Length tolerance table:

L	Tolerance (mm)
L≤1 M	+70/-0
1 M<L<7 M	+100/-0
L≥7 M	+2%L/-0

Cable Structure



Cable Technical Parameters

Parameter	Symbol	Typical
Model		GJFKV
Fiber	Count	2~12
	Color	Blue, orange, green, brown, 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
TSQSQ-85L-XXXDB-01	200G HDR QSFP56 SR4 CDR Armored AOC 0°C ~ +70°C
TSQSQ-85L-XXXDB-02	200G HDR QSFP56 SR4 DSP Armored AOC 0°C ~ +70°C

XXX :001~070,1~70 Length in meters on OM3 MMF

XXX :001~100,1~100 Length in meters on OM4 MMF

Important Notice

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