



SPH-QSFP28-AOCXX

100GBASE-SR4 QSFP28 Active Optical Cable



Applications

- IEEE 802.3bm 100GBASE SR4 and 40GBASE SR4128G Fiber Channel
- Infiniband FDR/EDR

Features

- Four-channel full-duplex active optical cable
- Multirate capability: 10 Gb/s and 25 Gb/s per channel
- QSFP28 high-density form factor
- Reliable VCSEL array technology using multimode fiber
- Hot Pluggable
- power dissipation: <3.5W per cable end
- Commercial operating case temperature range: 0°C to 70°C
- UL certification optional cables

Pin Descriptions

38 GND
37 TX1n
36 TX1p
35 GND
34 TX3n
33 TX3p
32 GND
31 LPMode
30 Vcc1
29 VccTx
28 IntL
27 ModPrsL
26 GND
25 RX4p
24 RX4n
23 GND
22 RX2p
21 RX2n
20 GND

Card Edge

GND 1
TX2n 2
TX2p 3
GND 4
TX4n 5
TX4p 6
GND 7
ModSelL 8
ResetL 9
VccRx 10
SCL 11
SDA 12
GND 13
RX3p 14
RX3n 15
GND 16
RX1p 17
RX1n 18
GND 19

Top Side
Viewed from Top

Bottom Side
Viewed from Bottom

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

21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMODE	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Absolute Maximum Ratings

Form Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc1, VccTx, VccRx	-0.5		3.6	V	
Storage Temperature	T _s	-20		85	°C	1
Case Operating Temperature	T _{OP}	0		70	°C	
Relative Humidity	RH	0		85	%	2

Notes:

1. Assumes no mechanical load force on the unit. Ensuring no mechanical load force requires a cable bend radius of >105 mm within 100 mm of either cable end module and >60 mm on the rest of the cable.
2. Non-condensing.

Recommended Operating Conditions

Form Parameter	Symbol	Min	Typ	Max	Unit	Ref.
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Supply Voltage	Vcc	3.13	3.3	3.47	V	
Operating Case temperature	Tca	0		70	°C	
Data Rate Per Lane	fd		25.78125		Gbps	
Humidity	Rh	5		85	%	
Fiber Bend Radius	Rb	3			cm	

Electrical Characteristics(EOL, TOP = 0 to 70°C, VCC = 3.135 to 3.465 Volts)

NOTE: The EDR module requires an electrical connector compliant with SFF-8662 or SFF-8672 be used on the host board to guarantee its electrical interface specification. Please check with your connector supplier.

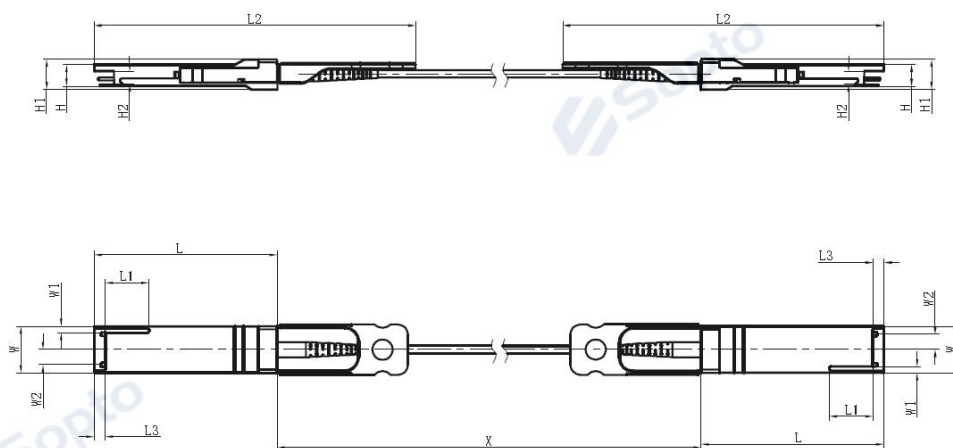
Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc1, VccTx, VccRx	3.15		3.45	V	
Supply Current	Icc			1010	mA	
Module total power	P			3.5	W	1,2
Input electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Differential Termination Resistance Mismatch				10	%	
Transition Time, 20 to 80%	Tr, Tf	10			ps	
Output electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Differential Termination Resistance Mismatch				10	%	
Transition Time, 20 to 80%	Tr, Tf	9.5			ps	
Bit Error Rate	BER			E-12		3

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Settable in various discrete steps via the I2C interface.
3. BER=10⁻¹²; PRBS [2³¹-1@25.78125Gbps](#)

Mechanical Design Diagram (mm)

The EDR module mechanical specifications are compliant with the QSFP28 transceiver module specifications (as defined in SFF-8661), substituting the MPO12 receptacle with a fiber optics cable connecting both ends.



Unit: mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
MAX	72.2	—	122	4.35	18.45	—	6.2	8.6	12.0	5.35
Typical	72.0	—	—	4.20	18.35	—	—	8.5	11.8	5.2
MIN	68.8	16.5	118	4.05	18.25	2.2	5.8	8.4	11.6	5.05

Cable Length (Unit: m)	Tolerant (Unit: cm)
<1.0	+5/-0
1.0~4.5	+15/-0
5.0~14.5	+30/-0
≥15.0	+2%/-0

Ordering information

Part Number	Product Description
SPH-QSFP28-AOCXX	High-speed Cable Active Optical Cable 100G QSFP28 to QSFP28 XXM OM3 3.0mm PVC Commercial Temperature

QSFP28 Active Optical Cable Transceiver

X: 1~100, 1~100 Length in meters;

X example:

1: 1-meter cable

3: 3-meter cable

5: 5-meter cable

10: 10-meter cable

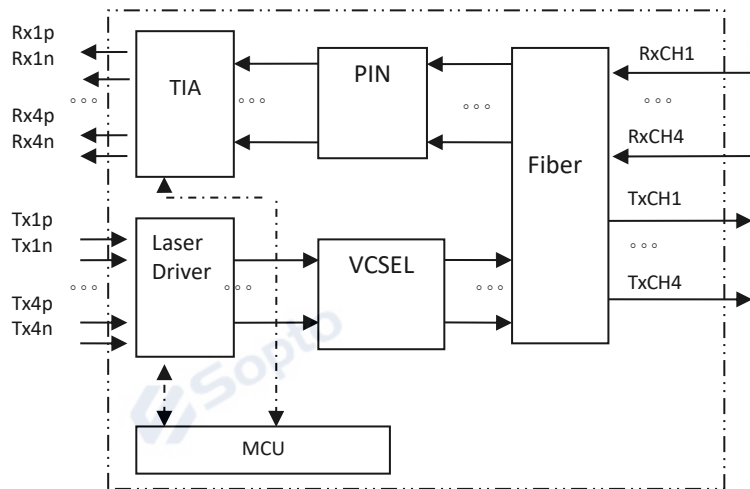
15: 15-meter cable

20: 20-meter cable

30: 30-meter cable

50: 50-meter cable

100: 100-meter cable



If you need more customized services, please contact us.

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