

Соединитель, QSFP28 - 4x SFP28, AOC, XXm**Особенности:**

- соответствие QSFP28 MSA спецификации
- соответствие 4x25GBASE-SR спецификации
- установленный оптический кабель длиной до 50м
- одно напряжение питания 3,3В
- рабочая температура 0°C~+70°C

**Области применения:**

- 100GBASE – 4x25GBASE-SR

Part No.	Bit Rate	Laser (nm)	Distance	Fiber Type	Connector	Temp
QSFP28-4xSFP28-AOC-XX	103.125	850	1~50m	MMF	N/A	0°C~+70°C

Note1: Length measured fiber. XX denotes the AOC length with unit meter

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

*Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter	Symbol		Min.	Typical	Max.	Unit
Operating Case Temperature	T _A	QSFP28-4xSFP28-AOC-XX	0		+70	°C
Power Supply Voltage	Vcc		3.15	3.3	3.45	V

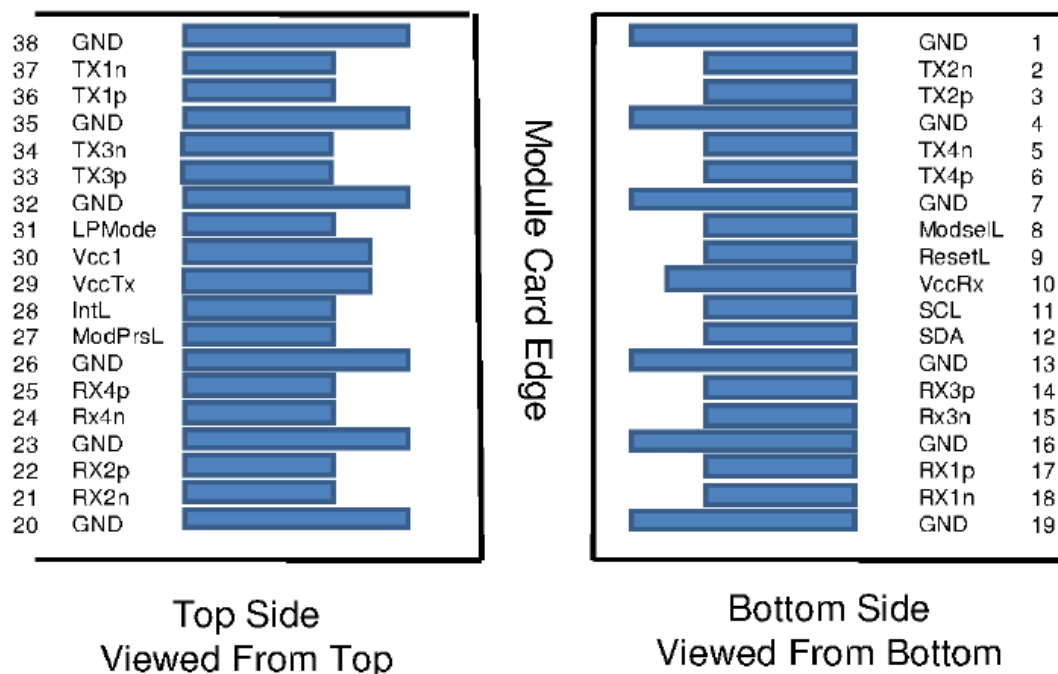
Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes
ModSelL	Module Select	VOL	0	-	0.8	V	
	Module Unselect	VOH	2.5	-	Vcc	V	
Low Power	Mode LPMode	VIL	0	-	0.8	V	
	Normal Operation	VIH	2.5	-	Vcc+0.3	V	
ResetL	Reset	VIL	0	-	0.8	V	
	Normal Operation	VIH	2.5	-	Vcc+0.3	V	
ModPrsL	Normal Operation	VOL	0	-	0.4	V	
IntL	Interrupt	VOL	0	-	0.4	V	
	Normal Operation	VOH	2.4	-	Vcc	V	
Electrical transmitter Characteristics							
Differential Data Input Swing		Vout	200	-	1600	mV	
Input Differential Impedance		ZD	90	100	110	Ω	
Electrical Receiver Characteristics							
Differential Date Output Swing		Vin,p-p	200	-	800	mVpp	
Output Differential Impedance		BER			E-12		1
Input Differential Impedance		ZIN	90	100	110	Ω	

Note: 1 PRBS2³¹-1@25.78125Gbps**Electrical Characteristics for SFP28**

Parameter		Symbol	Min	Typ	Max	Units	
Electrical Transmitter Characteristics							
Differential Data Input Swing		Vin,p-p	200	-	1600	mVpp	
Input Differential Impedance		ZIN	90	100	110	Ω	
Tx_Fault	Normal Operation	VOL	0	-	0.8	V	
	Transmitter Fault	VOH	2.0	-	Vcc	V	
Tx_Disable	Normal Operation	VIL	0	-	0.8	V	
	Laser Disable	VIH	2.0	-	Vcc+0.3	V	
Electrical Receiver Characteristics							
Differential Date Output Swing		Vout	400	-	800	mV	
Bit Error Rate		BER	-	-	E-12	-	
Output Differential Impedance		ZD	90	100	110	Ω	
Rx_LOS	Normal Operation	VOL	0	-	0.8	V	
	Transmitter Fault	VOH	2.0	-	Vcc	V	

QSFP28 Transceiver Electrical Pad Layout



Pin Arrangement and Definition

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

20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	+3.3V Power supply transmitter	2	2
30		Vcc1	+3.3V Power supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	1

1: GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

2: Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figures Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connector pins are each rated for a maximum current of 500mA.

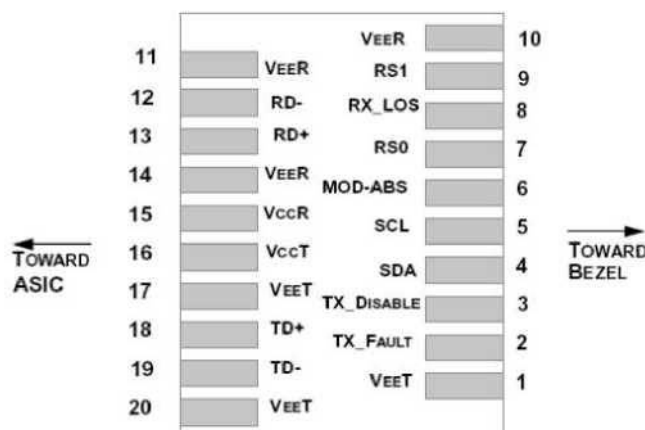


Figure 2, Pin View for SFP28

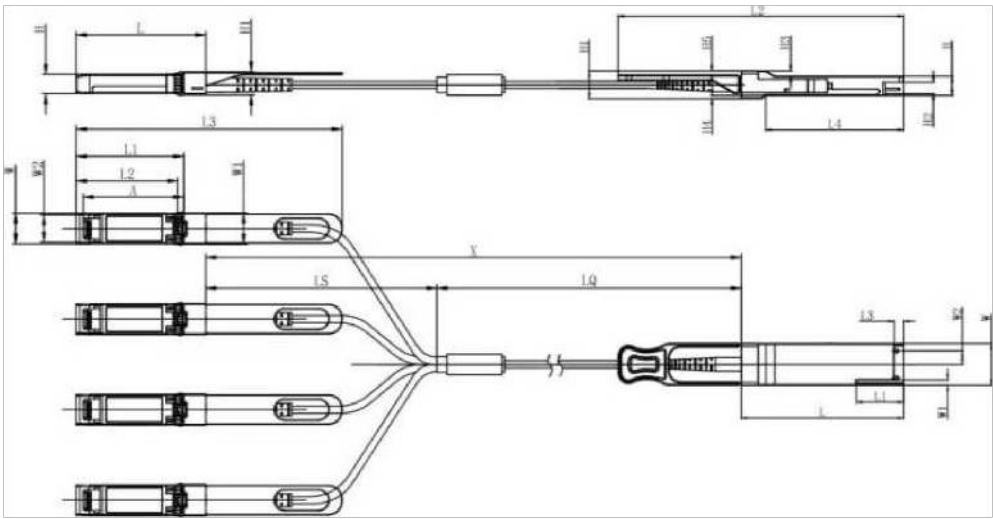
Pin Function Definitions

PIN	Name	Function	Notes
1	VeeT	Module transmitter ground	1
2	Tx Fault	Module transmitter fault	2
3	Tx Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2 wire serial interface data input/output (SDA)	
5	SCL	2 wire serial interface clock input (SCL)	
6	MOD-ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	4
8	LOS	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as NOT Signal Detect)	2
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	4
10	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter inverted data out put	
19	TD-	Transmitter non-inverted data out put	
20	VeeT	Module transmitter ground	1

Note:

- 1. The module ground pins are isolated from the module case.
- 2. The pins shall be pulled up with 4.7K-10Kohms to a voltage between 3.14V and 3.46V on host board.
- 3. The pin is pulled up to VCCT with a 4.7K-10KΩ resistor in the module.
- 4. See SFF-8472 Rev12.2 Table 10-2.

Mechanical Specifications



Unit mm

QSFP28	L	LI	L2	L3	L4	W	W1	W2	H	H1	H2	H3	H4	H5	H6
Max	72.2	-	128	4.35	61.4	18.45	-	6.2	8.6	12.4	5.35	2.5	1.6	2.0	-
Type	72.0	-	-	4.20	61.2	18.35	-	-	8.5	12.2	5.2	2.3	1.5	1.8	6.55
Min	68.8	16.5	124	4.05	61.0	18.25	2.2	5.8	8.4	12.0	5.05	2.1	1.3	1.6	-

SFP28	L	LI	L2	L3	W	W1	W2	H	H1	A
Max	57.6	47.7	44.55	119.9	13.8	14.0	12.3	8.7	10.3	45.25
Type	57.4	47.5	44.35	117.9	13.55	13.8	12.1	8.5	10.1	45
Min	57.2	47.3	44.15	115.9	13.3	13.6	11.9	8.4	9.9	44.65

Mechanical Diagram

Cable Length

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

Breakout Cable Nominal Length

Total LengthX (Unit: m)	Breakout Point Measured f rom QSFP LQ (Unit: m)	Breakout Point Measured from SFP LS(Unit: m)
1	0.3	0.7
2	0.6	1.4
3	1	2
5	2	3
7	4	3
10	7	3
15	12	3
20	17	3
25	22	3
30	27	3
40	37	3
50	47	3