QSFP+/4-SFP+ Active Optical Cables
(40G-4*10G)

Features

- Support 40-4*10GBASE-SR application
- Electrical interface compliant to QSFP+ connector (SFF-8436) and SFP+ connector (SFF-8431)
- 850nm VCSEL transmitter, PIN photo-detector receiver
- Multi rate of up to 10.3125Gbps per lane
- Operating case temperature: 0 to 70℃
- +3.3V power supply voltage
- Low power consumption
- RoHS compliant
- UL certification cables (optional)

Applications

- 40-4*10 Gbe-SR
- Fibre Channel Applications
- InfiniBand QDR, SDR, DDR
- Servers, switches, storage and host card adapters，etc.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_s	-10	-	+85	°C
Operating Humidity	RH	+5	-	+85	%
Supply Voltage	Vcc	-0.5	+3.3	+3.6	V

Note: 1 No condensation

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T_C	0	-	+70	°C
Supply Voltage	V_{CC}	+3.14	+3.3	+3.47	V
Supply current (QSFP+)	I_{CC}	-	-	450	mA
Supply current (SFP+)(per terminal)		-	-	150	mA
Channel Data Rate	Dr		10.3125	-	Gbps
Fiber bend radius	-	3	-	-	CM

Electrical and Optical characteristics

Measured condition：Channel Data Rate 10.3125Gbps, VRCCR=3.3V, PRBS31, Case Operating Temperature 0~70℃

Transmitter

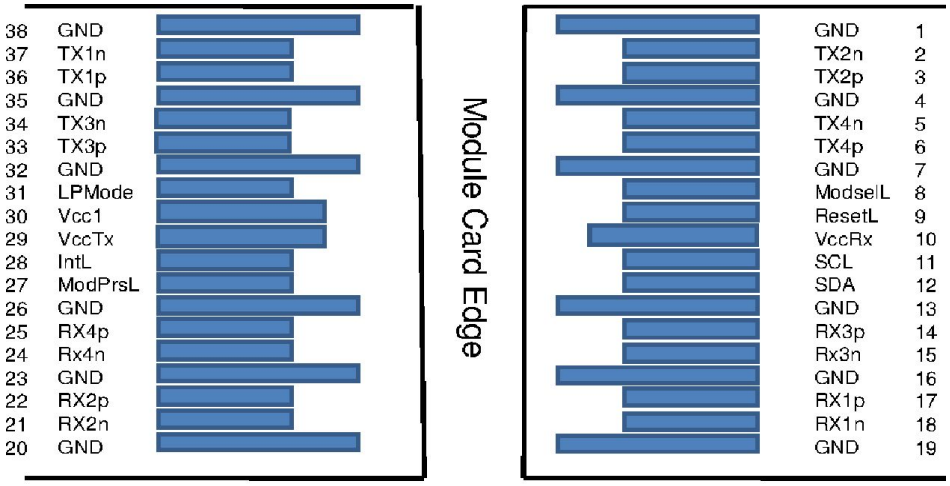
Parameter	Symbol	Min.	Typical	Max.	Unit
Centre Wavelength	λ_c	830	850	870	nm
RMS spectral width	P_m	-	-	0.45	nm
Average launch power, each lane	P_{AVG}	-6.0	-	+2.4	dBm
Extinction Ratio	ER	3.0	-	-	dB
Input differential swing	V_{in} PP	200	-	1600	mV
Input differential impedance	Z_{in}	90	100	110	Ω

Receiver

Parameter	Symbol	Min.	Typical	Max.	Unit
Centre Wavelength	λ_c	830	850	870	nm

Bit Error Rate	BER	-	-	E-12	
Differential Data Output Swing	V_{out} PP	400	-	1000	mV
Output Differential Impedance	Z_{out}	90	100	110	Ω

QSFP + Pin Descriptions



Top Side
Viewed From Top

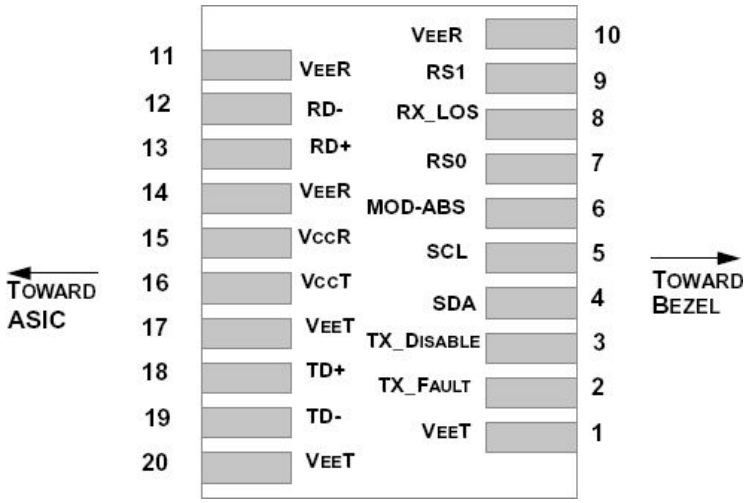
Bottom Side
Viewed From Bottom

PIN	Name	Function/Description
1	GND	Module Ground
2	Tx2n	Transmitter inverted data input
3	Tx2p	Transmitter non-inverted data input
4	GND	Module Ground
5	Tx4n	Transmitter inverted data input
6	Tx4p	Transmitter non-inverted data input
7	GND	Module Ground
8	MODSEIL	Module Select

9	ResetL	Module Reset
10	VCCRx	+3.3v Receiver Power Supply
11	SCL	2-wire Serial interface clock
12	SDA	2-wire Serial interface data
13	GND	Module Ground
14	RX3p	Receiver non-inverted data output
15	RX3n	Receiver inverted data output
16	GND	Transmitter Power Supply
17	RX1p	Receiver non-inverted data output
18	RX1n	Receiver inverted data output
19	GND	Module Ground
20	GND	Module Ground
21	RX2n	Receiver inverted data output
22	RX2p	Receiver non-inverted data output
23	GND	Module Ground
24	RX4n	Receiver inverted data output
25	RX4p	Receiver non-inverted data output
26	GND	Module Ground
27	ModPrsL	Module Present, internal pulled down to GND
28	IntL	Interrupt output, should be pulled up on host board
29	VCCTx	+3.3v Transmitter Power Supply
30	VCC1	+3.3v Power Supply
31	LPMode	Low Power Mode
32	GND	Module Ground
33	Tx3p	Transmitter non-inverted data input

34	Tx3n	Transmitter inverted data input
35	GND	Module Ground
36	Tx1p	Transmitter non-inverted data input
37	Tx1n	Transmitter inverted data input
38	GND	Module Ground

SFP + Pin Descriptions



Pin	Symbol	Name/Description	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	SDA	2-Wire Serial Interface Data Line (MOD-DEF2)	
5	SCL	2-Wire Serial Interface Clock (MOD-DEF1)	
6	MOD_ABS	Module Absent, connected to VEET or VEER in the module	2
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	

8	RX_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	
10	VEER	Module Receiver Ground	1
11	VEER	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	VEER	Module Receiver Ground	1
15	VCCR	Module Receiver 3.3 V Supply	
16	VCCT	Module Transmitter 3.3 V Supply	
17	VEET	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	VEET	Module Transmitter Ground	1

Mechanical Design Diagram

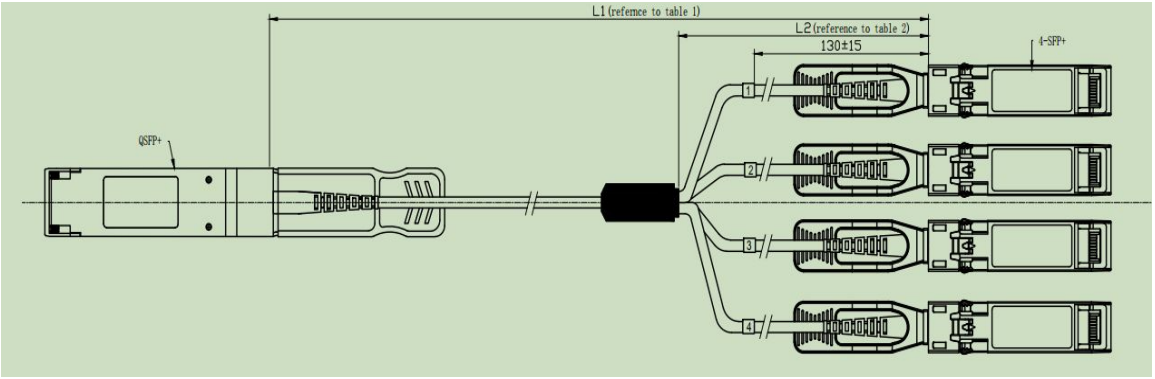


Table1

Cable Length L1 (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

Table2

Length L1 (Unit: m)	Length L2 (Unit: m)
1.0	0.7
2	1.4
3	2
≥5.0	3

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD).

A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.