

## 40G DSFP+ Active Optical Cable

### Features

- Support 40GBASE-SR4/QDR application
- Compliant to QSFP+ Electrical MSA SFF-8436
- Multi rate of up to 10.3125Gbps
- +3.3V single power supply
- Transmission distance up to 300m
- Low power consumption
- Operating case temp  
Commercial: 0°C to +70 °C
- UL certification cables (optional)
- RoHS compliant



### Applications

- 40GBASE-SR4 at 10.3125Gbps per lane
- InfiniBand QDR
- Other optical links

### Absolute Maximum Ratings

Table1- Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc <sub>3</sub>	-0.5	-	+3.6	V	
Storage Temperature	T <sub>s</sub>	-10	-	+70	°C	
Operating Humidity	RH	+5	-	+85	%	1

Note: 1 No condensation

### Recommended Operating Conditions

Table 2- Recommended operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T <sub>c</sub>	0	-	+70	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.47	V	
Power dissipation	Pd	-	-	1.5	w	1
Bit rate	BR	1.25	10.3125	-	Gbps	

Note: 1 Per terminal

## Electrical Characteristics

**Table 3- Electrical Characteristics**

Parameter		Symbol	Min.	Typ.	Max.	Units	Notes
ModSelL	Module Select	V <sub>OL</sub>	0	-	0.8	V	
	Module Unselect	V <sub>OH</sub>	2.5	-	V <sub>CC</sub>	V	
LPMode	Low Power Mode	V <sub>IL</sub>	0	-	0.8	V	
	Normal Operation	V <sub>IH</sub>	2.5	-	V <sub>CC</sub> +0.3	V	
ResetL	Reset	V <sub>IL</sub>	0	-	0.8	V	
	Normal Operation	V <sub>IH</sub>	2.5	-	V <sub>CC</sub> +0.3	V	
ModPrsL	Normal Operation	V <sub>OL</sub>	0	-	0.4	V	
IntL	Interrupt	V <sub>OL</sub>	0	-	0.4	V	
	Normal Operation	V <sub>OH</sub>	2.4	-	V <sub>CC</sub>	V	
<b>Electrical transmitter Characteristics</b>							
Differential Data Input Swing		V <sub>out</sub>	200	-	1600	mV	
Output Differential Impedance		Z <sub>D</sub>	90	100	110	Ω	
<b>Electrical Receiver Characteristics</b>							
Differential Data Output Swing		V <sub>IN,P-P</sub>	350	-	800	mV <sub>PP</sub>	
Bit Error Rate		BER			E-12		1
Input Differential Impedance		Z <sub>IN</sub>	90	100	110	Ω	

Note: 1 PRBS2^31-1@10.3125Gbps

## Recommended Interface Circuit

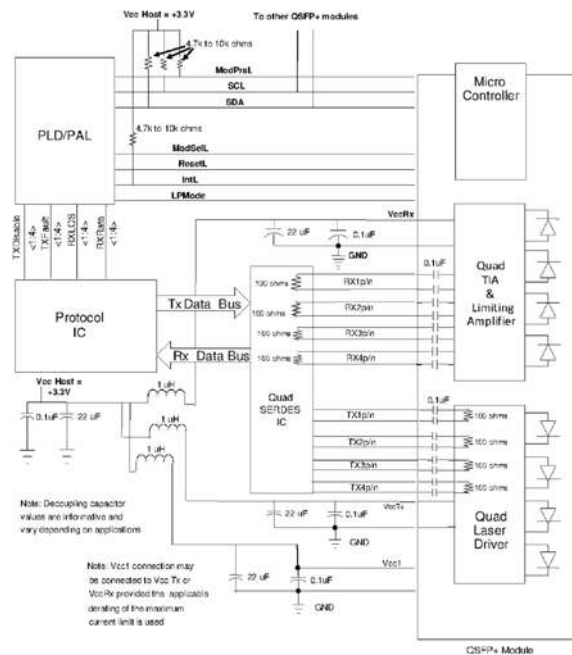


Figure 1, Recommended Interface Circuit

### Pin arrangement

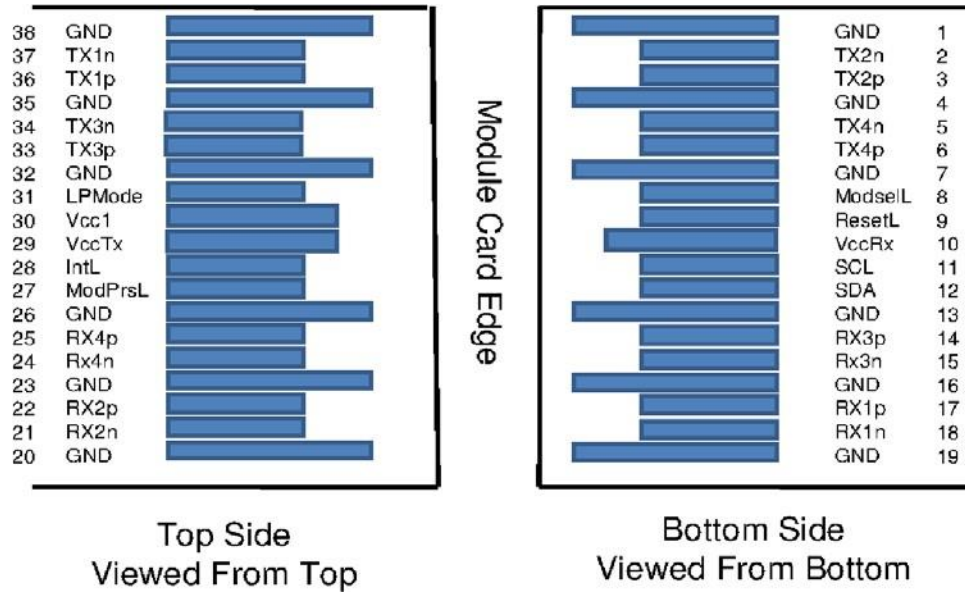


Figure 2, Pin View

Table 4-Pin Function Definitions

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

Note: 1. Circuit ground is internally isolated from chassis ground.

## Monitoring Specification

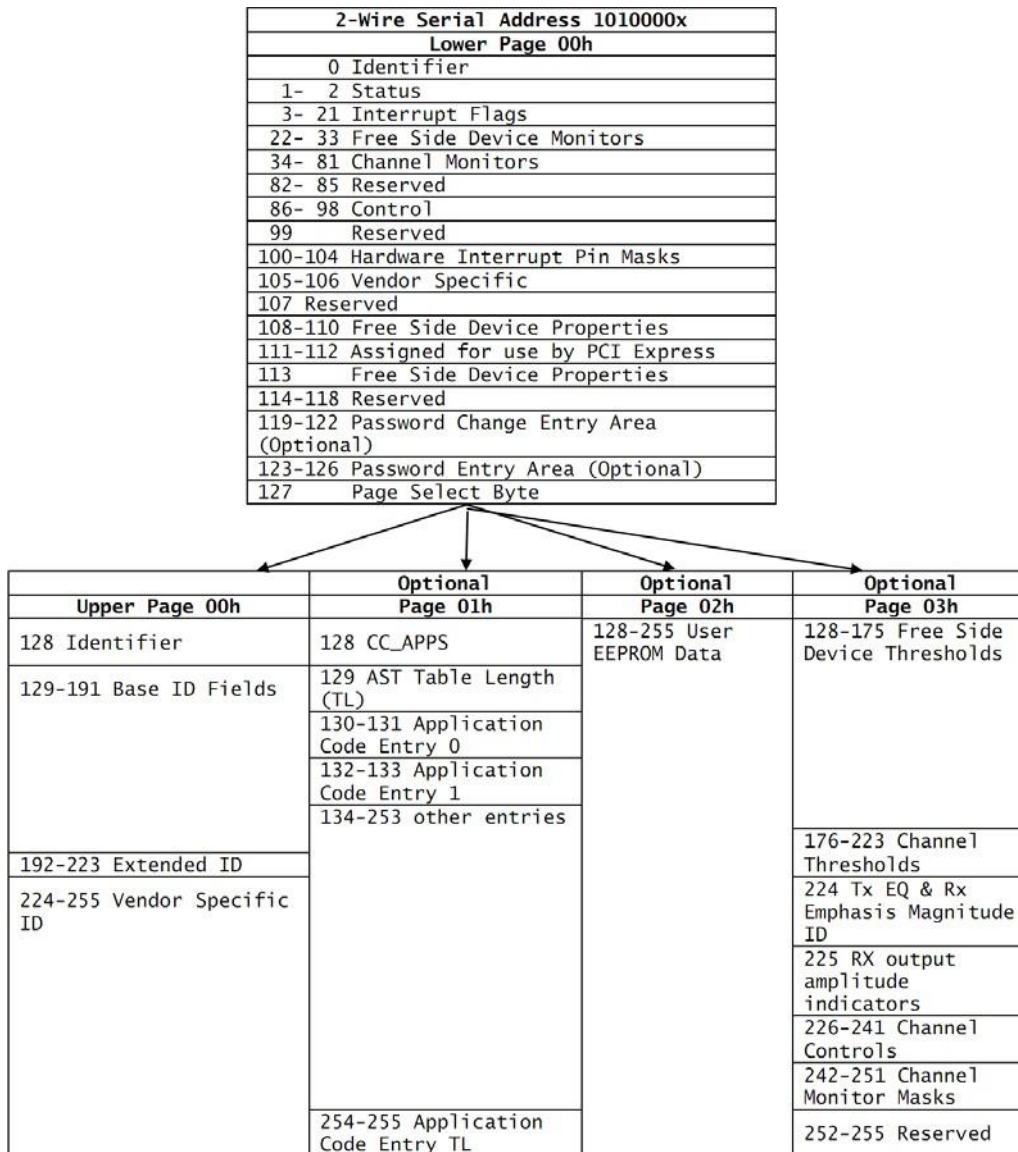


Figure 3, Memory Map

## Mechanical

Unit mm

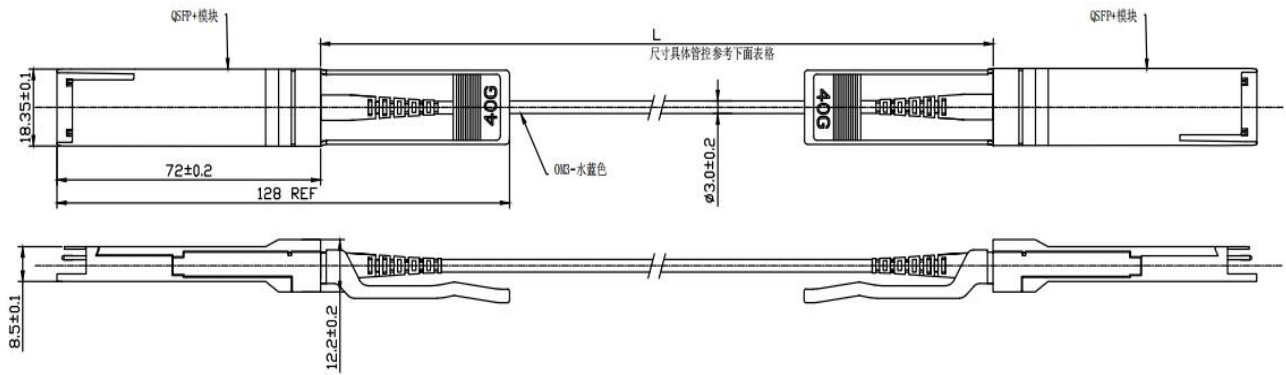


Figure 4, Mechanical Diagram

Table 5- Cable Length

Cable Length L (Unit: m)	Tolerant (Unit: cm)
$< 1.0$	$+10/-0$
$1.0 \leq L \leq 4.5$	$+15/-0$
$4.5 < L \leq 14.5$	$+30/-0$
$> 14.5$	$+2\%L/-0$

## 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.