EQP854X-01D(I)

40G QSFP+ SR4 850nm 150m Optical Transceiver

PRODUCT FEATURES

- High quality and reliability optical device and Sub-assemblies
- 4 VCSEL Lasers and 4 channels PIN photo detectors
- Maximum link length of 100m on OM3 MMF or 150m on OM4 MMF
- Compliant with SFF-8436 for electrical interface
- Compliant with SFF-8436 for mechanical interface
- QSFP+ Mechanical Interface for easy removal
- MPO Receptacle
- Compliant with SFF-8436 for 2-wire interface for management and DDM
- IEEE Std802.3ba
- SFF-8436
- Low power consumption：<1.5W
- Operating case temperature: Standard: 0°C to 70°C

  Industrial: -40°C to 85°C

APPLICATIONS

- 40G SR4 Ethernet links
- Data center
- Other high speed data connections

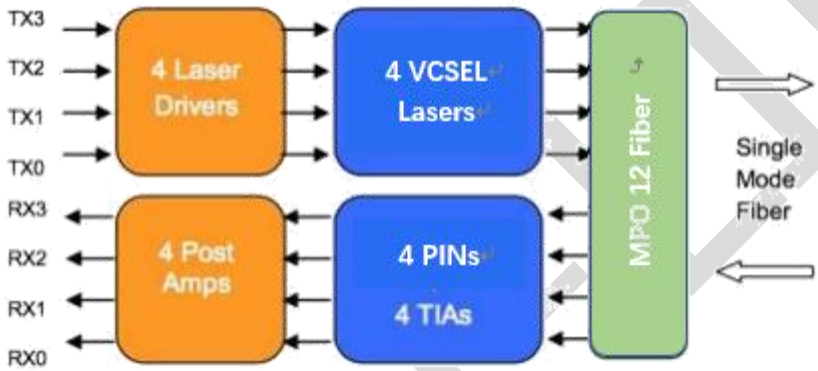
ETU-LINK

DESCRIPTIONS

It is a Four-Channel, Pluggable, Fiber-Optic QSFP+ SR4 for 40Gigabit Ethernet and Infiniband EDR applications. This transceiver is a high performance module for data communication and interconnect applications. It integrates four data lanes in each direction with 40Gbps bandwidth. The length of QSFP+ SR4 is up to 100 meters over OM3 MMF or 150 meters over OM4 MMF. This module is designed to operate over multimode fiber systems using a nominal wavelength of 850nm.

It contains a MPO connector for the optical interface and a 38-pin connector for the electrical interface.

Module Block Diagram



Ordering Information

Part No.	Data Rate(optical)	Laser	Fiber Type	Distance	Optical Interface	Temp	DDMI	Latch Color
EQP854X-01D	41.25Gbps	Vcsel	MMF	150m	MPO	0~70℃	Yes	Black
EQP854X-01DI	41.25Gbps	Vcsel	MMF	150m	MPO	-40~85℃	Yes	Black

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	-40	85	。C
Case Operating Temperature	Top	0	70	。C
Relative Humidity (non-condensation)	RH	5	95	%

Supply Voltage	Vcc	-0.5	3.6	V
Input Voltage	Vin	-0.5	VCC+0.5	V

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Operating Case Temperature	Top	0	70	。C
		-40	85	。C
Relative Humidity(non- condensation)	RH	5	85	%
Power Supply Voltage	Vcc	3.135	3.465	V
Total Power Consumption	Pc	-	1.5	W

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	NOTE
Transmitter						
Center Wavelength	λ0	840		860	nm	
Average Launch Power each lane		-7.6		2.4	dBm	
Spectral Width (RMS)	σ			0.65	nm	
Optical Extinction Ratio	ER	3			dB	
Average launch Power off each lane	Poff			-30	dBm	
Transmitter and Dispersion Penalty each lane	TDP			3.5	dB	
Optical Return Loss Tolerance	ORL			12	dB	
Output Eye Mask	Compliant with IEEE 802.3ba					
Receiver						
Receiver Wavelength	λin	840		860	nm	
Rx Sensitivity per lane	RSENS			-9.9	dBm	1
Input Saturation Power (Overload)	Psat	2.4			dBm	
Receiver Reflectance	Rr			-12	dB	
LOS De-Assert	LOSD			-12	dBm	

LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		0.5			dBm	

Notes:

Measured with a PRBS 2^{31}-1 test pattern, @10.325Gb/s, BER<10^{-12}

Electrical Characteristics

Parameter	Symbol	Min	Max	Unit
Host 2-wire Vcc voltage	Vcc_Host_2 w	3.13	3.6	V
SCL and SDA Voltage[1]	VOL	0.0	0.40	V
	VOH	Vcc_Host 2w - – 0.5	Vcc_Host_2w + 0.3	V
	VIL	-0.3	VccT*0.3	V
	VIH	VccT*0.7	VccT+0.5	V
Input current on the SCL and SDA contacts	II	-10	10	mA

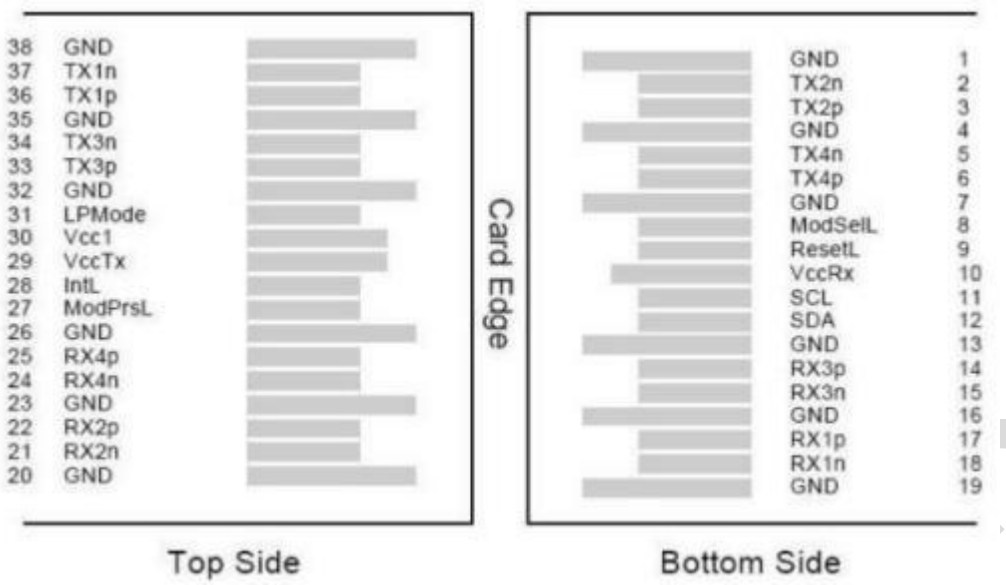
Digital Diagnostics

The following characteristics are defined over recommended operating conditions.

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	。C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

Pin Diagram

QSFP+ Transceiver Pad Layout, host PCB QSFP+ Pinout, and PIN Descriptions are as follows:



QSFP+ Transceiver Electrical Pad Pinout

Pin Definitions

Pin#	Name	Logic	Description	Power Seq.	Note
1	GND		Ground	1st	1
2	Tx2n	CML-I	Transmitter Inverted Data Input	3rd	
3	Tx2p	CML-I	Transmitter Non-Inverted Data output	3rd	
4	GND		Ground	1st	1
5	Tx4n	CML-I	Transmitter Inverted Data Input	3rd	
6	Tx4p	CML-I	Transmitter Non-Inverted Data output	3rd	
7	GND		Ground	1st	1
8	ModSelL	LVTLL-I	Module Select	3rd	
9	ResetL	LVTLL-I	Module Reset	3rd	
10	VccRx		+3.3V Power Supply Receiver	2nd	2
11	SCL	LVCMOS- I/O	2-Wire Serial Interface Clock	3rd	

12	SDA	LVCMOS- I/O	2-Wire Serial Interface Data	3rd	
13	GND		Ground	1st	1
14	Rx3p	CML-O	Receiver Non-Inverted Data Output	3rd	
15	Rx3n	CML-O	Receiver Inverted Data Output	3rd	
16	GND		Ground	1st	1
17	Rx1p	CML-O	Receiver Non-Inverted Data Output	3rd	
18	Rx1n	CML-O	Receiver Inverted Data Output	3rd	
19	GND		Ground	1st	1
20	GND		Ground	1st	1
21	Rx2n	CML-O	Receiver Inverted Data Output	3rd	
22	Rx2p	CML-O	Receiver Non-Inverted Data Output	3rd	
23	GND		Ground	1st	1
24	Rx4n	CML-O	Receiver Inverted Data Output	3rd	
25	Rx4p	CML-O	Receiver Non-Inverted Data Output	3rd	
26	GND		Ground	1st	1
27	ModPrsL	LVTTL-O	Module Present	3rd	
28	IntL	LVTTL-O	Interrupt	3rd	
29	VccTx		+3.3 V Power Supply transmitter	2nd	2
30	Vcc1		+3.3 V Power Supply	2nd	2
31	LPMode	LVTTL-I	Low Power Mode	3rd	
32	GND		Ground	1st	1
33	Tx3p	CML-I	Transmitter Non-Inverted Data Input	3rd	
34	Tx3n	CML-I	Transmitter Inverted Data Output	3rd	
35	GND		Ground	1st	1

36	Tx1p	CML-I	Transmitter Non-Inverted Data Input	3rd	
37	Tx1n	CML-I	Transmitter Inverted Data Output	3rd	
38	GND		Ground	1st	1

Notes:

1. GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ 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. Vcc Rx, Vcc1and Vcc Tx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500 mA.

Recommended Interface Circuit

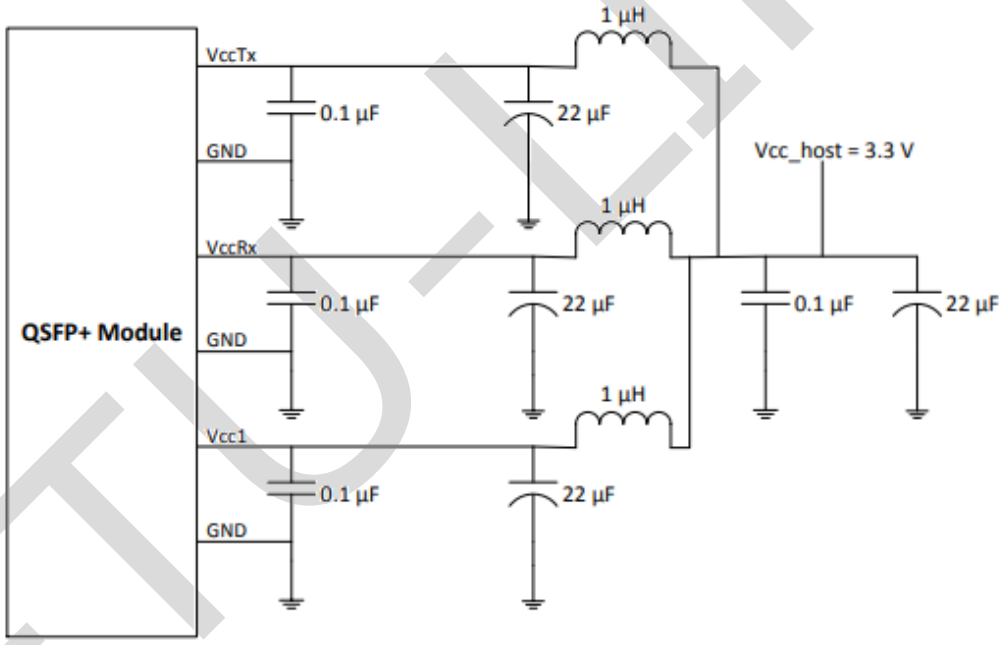
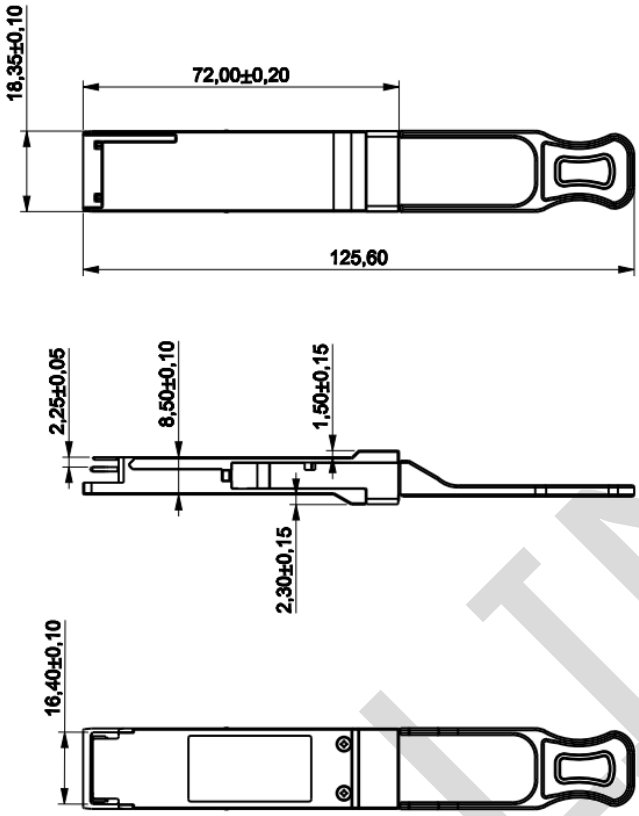


FIGURE 5-4 RECOMMENDED HOST BOARD POWER SUPPLY FILTERING

Mechanical Diagram

Figure shows the package dimensions of the module. The module is designed to becomplaint with QSFP+ MSA specification. Package dimensions are specified in SFF-8436.



Revision History

Version No.	Date	Description
1.0	February 8, 2018	Preliminary datasheet
2.0	October 11,2023	Product upgrades
2.1	July 15,2024	Format change

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