

40G QSFP+ to 4×10G SFP+ Active Optical Cables

TSQSS-8540G-xxxC

Product Features

- Electrical interface compliant to SFF-8436 and SFF-8431
- 850nm VCSEL laser and PIN photo-detector
- Built-in digital diagnostic functions
- Operating case temperature 0°C to 70°C
- Hot Pluggable
- RoHS compliant



Applications

- 40GbE and 10GbE break-out applications for Datacom switch and router connections
- 40G to 4×10G density applications for Datacom and Proprietary protocol applications
- Data centers

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-20	85	°C
Relative Humidity	RH	0	85	%
Case Operating Temperature	TCase	0	70	°C
Supply Voltage	VCC	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Case Operating Temperature	TCase	0		70	°C
Supply Voltage	VCC	3.13	3.3	3.47	V
Supply Current (QSFP+)	ICC			300	mA
Supply Current(SFP+)	ICC			100	mA
Data Rate Per Lane	DR		10.3125		Gbit/s

Transmitter Specifications

Measurement condition: Channel data rate 10.3125Gbps, VCC=3.3V, PRBS31 pattern, Case operating temperature 0-70°C

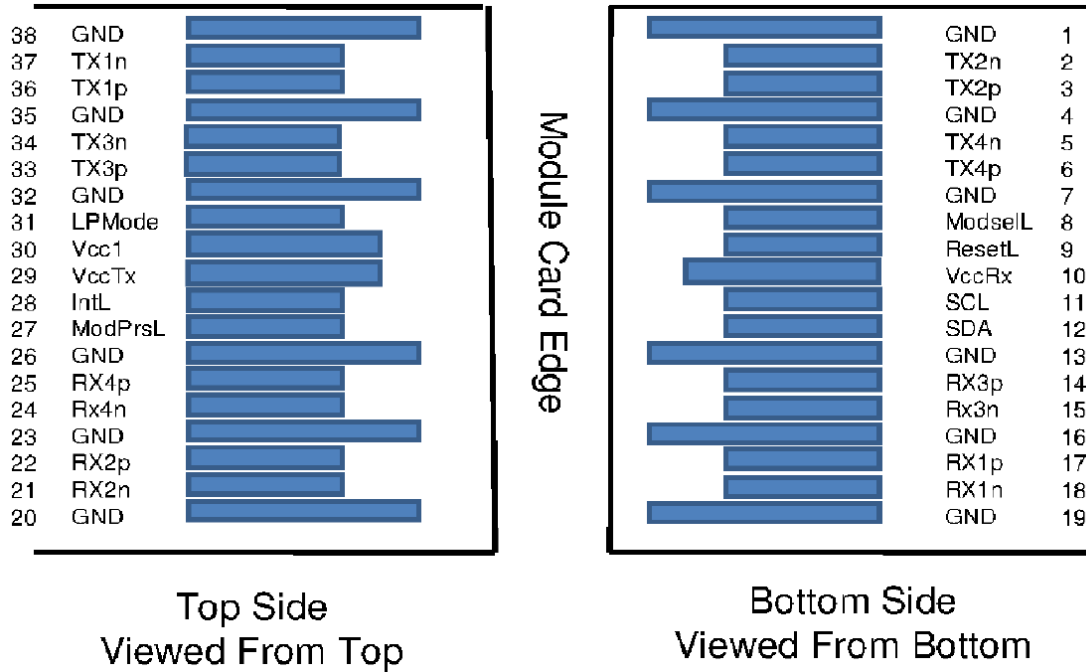
Parameter	Symbol	Min	Typical	Max	Unit
QSFP+					
Center wavelength	λ_c	840	850	860	nm
Differential Input Impedance	Z_{in}	80	100	120	Ohm
Differential Input Voltage	V_{in}	120		1600	mVp-p
Average Launch Power per Lane	P_{AVG}	-5	-1	+1	dBm
Extinct Ratio	ER	3.0			dB
SFP+					
Center wavelength	λ_c	840	850	860	nm
Differential Input Impedance	Z_{in}	90	100	110	Ohm
Differential Input Voltage	V_{in}	200		1600	mVp-p
Average Launch Power	P_{AVG}	-6.5	0		dBm
Extinct Ratio	ER	3.0			dB

Receiver Specifications

Measurement condition: Channel data rate 10.3215Gbps, VCC=3.3V, PRBS31 pattern, Case operating temperature 0-70°C

Parameter	Symbol	Min	Typical	Max	Unit
QSFP+					
Center wavelength	λ_c	840	850	860	nm
Differential Output Impedance	Z_{out}	80	100	120	Ohm
Differential Output Voltage	V_{out}	320	450		mVp-p
Receiver Sensitivity	SEN		-12	-10	dBm
Bit Error Rate	BER			10^{-12}	
SFP+					
Center wavelength	λ_c	840	850	860	nm
Differential Output Impedance	Z_{out}	90	100	110	Ohm
Differential Output Voltage	V_{out}	370		1600	mVp-p
Receiver Sensitivity	SEN			-10	dBm
Bit Error Rate	BER			10^{-12}	

QSFP+ Pin Descriptions



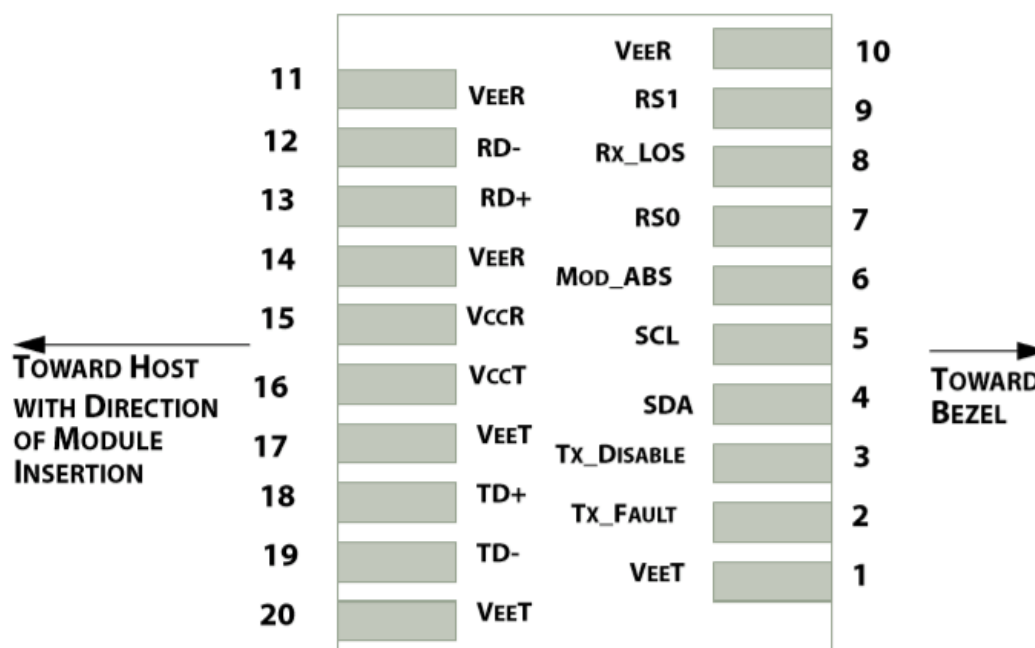
Pin	Symbol	Name/Description
1	GND	Ground
2	Tx2n	Transmitter Inverted Data Input
3	Tx2p	Transmitter Non-Inverted Data Input
4	GND	Ground
5	Tx4n	Transmitter Inverted Data Input
6	Tx4p	Transmitter Non-Inverted Data Input
7	GND	Ground
8	ModSelL	Module Select
9	ResetL	Module Reset
10	Vcc Rx	+3.3 V Power supply receiver
11	SCL	2-wire serial interface clock
12	SDA	2-wire serial interface data
13	GND	Ground
14	Rx3p	Receiver Non-Inverted Data Output
15	Rx3n	Receiver Inverted Data Output
16	GND	Ground
17	Rx1p	Receiver Non-Inverted Data Output
18	Rx1n	Receiver Inverted Data Output
19	GND	Ground
20	GND	Ground
21	Rx2n	Receiver Inverted Data Output
22	Rx2p	Receiver Non-Inverted Data Output
23	GND	Ground

Information and specifications are subject to change without notice.
Please visit www.china-tscom.com for more information.



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

SFP+ Pin Descriptions



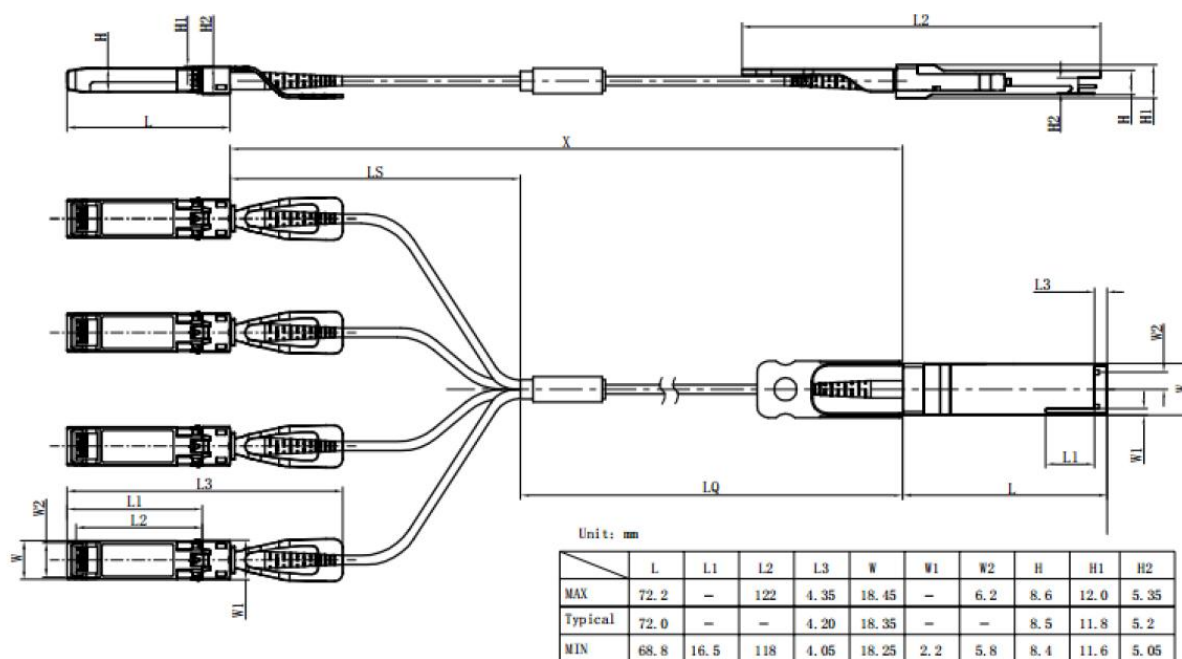
PIN	Symbol	Name/Description
1	VeeT	Transmitter Signal Ground
2	TX_FAULT	Transmitter Fault (LVTTTL-O) – Not used. Grounded inside the module
3	TX_DISABLE	Transmitter Disable (LVTTTL-I) – High or open disables the transmitter
4	SDA	Two Wire Serial Interface Data Line (LVCMOS – I/O) (same as MOD-DEF2 in INF-8074)
5	SCL	Two Wire Serial Interface Clock Line (LVCMOS – I/O)

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		(same as MOD-DEF1 in INF-8074)
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module
7	RS0	Rate Select 0 - Not used, Presents high input impedance.
8	RX_LOS	Receiver Loss of Signal (LVTTTL-O)
9	RS1	Rate Select 1 - Not used, Presents high input impedance.
10	VeeR	Receiver Signal Ground
11	VeeR	Receiver Signal Ground
12	RD-	Receiver Data Out Inverted (CML-O)
13	RD+	Receiver Data Out (CML-O)
14	VeeR	Receiver Signal Ground
15	VccR	Receiver Power + 3.3 V
16	VccT	Transmitter Power + 3.3 V
17	VeeT	Transmitter Signal Ground
18	TD+	Transmitter Data In (CML-I)
19	TD-	Transmitter Data In Inverted (CML-I)
20	VeeT	Transmitter Signal Ground

Mechanical Specifications



Unit: mm

	L	L1	L2	L3	W	W1	W2	H	H1	H2
MAX	57.75	48.0	44.65	102.5	13.75	14.0	12.25	8.65	0.55	10.4
Typical	57.55	47.8	44.45	101.5	13.65	13.9	12.15	8.55	0.5	10.2
MIN	57.35	47.6	44.25	100.5	13.55	13.8	12.05	8.45	0.45	10.0

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Order Information

Part Number

TSQSS-8540G-xxxC

xxx = denotes the AOC length with unit meter. For example, 001 denote 1m, 002 denote 2m ... 099 denote 99m.