

QSFP-DD 400G DR4 500m

TD1344D-CP

Product Specification

FEATURES

- Compliant with IEEE802.3bs standard:400GAUI-8 electrical interface
- Compliant with IEEE 802.3bs standard:400GBASE-DR4 optical interface
- Compliant with QSFP-DD MSA HW Rev 5.1
- Type 2 housing with MPO-12 connector
- Compliant with QSFP-DD CMIS Rev 4.0
- Supports 3dB channel insertion loss
- Maximum power consumption 10W
- Case operating temperature 0°C to 70°C
- Two wire serial Interface with digital diagnostic monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser

ORDERING INFORMATION

Part Number	From Factor	Data Rate	Media	Distance (km)	Wavelength	Temperature (°C)
TD1344D-CP	QSFP-DD	400Gb/s	SMF	0.5	1310	0~70

1. ABSOLUTE MAXIMUM RATINGS

Exceeding the limits below may damage the transceiver permanently.

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Storage Temperature	TS	-40		85	°C	
Supply Voltage	VCC	-0.5		3.6	V	
Relative Humidity (non-condensing)	RH	5		95	%	
Control Input Voltage	VI	-0.3		VCC+0.5	V	

2. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Operating Case Temperature	TOPR	0	-	70	°C	
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP	-	-	4000	mA	
Sustained peak current at hot plug	ICC_SP	-	-	3300	mA	
Maximum Power Dissipation	PD	-	-	10	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	1.5	W	
Signalling Rate per Lane	SRL	-	53.125	-	GBd	
Two Wire Serial Interface Clock Rate	-	-	-	400	kHz	
Power Supply Noise Tolerance (10Hz - 10MHz)	-	-	-	66	mV	
Rx Differential Data Output Load	-	-	100	-	Ohm	
Operating Distance	-	2	-	500	m	

3. ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Transmitter(High Speed)						
Differential pk-pk input Voltage tolerance		900	-	-	mV	
Differential termination mismatch		-	-	10	%	
Single-ended voltage tolerance range		-0.4	-	3.3	V	
DC common mode Voltage		-350	-	2850	mV	
Receiver(High Speed)						
AC common-mode output Voltage (RMS)		-	-	17.5	mV	
Differential output Voltage		-	-	900	mV	
Near-end Eye height, differential		70	-	-	mV	
Far-end Eye height, differential		30	-	-	mV	
Far end pre-cursor ratio		-4.5	-	2.5	%	
Differential Termination Mismatch		-	-	10	%	
Transition Time (min, 20% to 80%)		9.5	-	-	ps	
DC common mode Voltage		-350	-	2850	mV	
Low Speed						
Module output SCL and SDA	VOL	0		0.4	V	
Module Input SCL and SDA	VIL	-0.3		VCC*0.3	V	
	VIH	VCC*0.7		VCC+0.5	V	
InitMode, ResetL and ModSelL	VIL	-0.3		0.8	V	
	VIH	2		VCC+0.3	V	
IntL	VOL	0		0.4	V	
	VOH	VCC-0.5		VCC+0.3	V	

4. OPTICAL CHARACTERISTICS

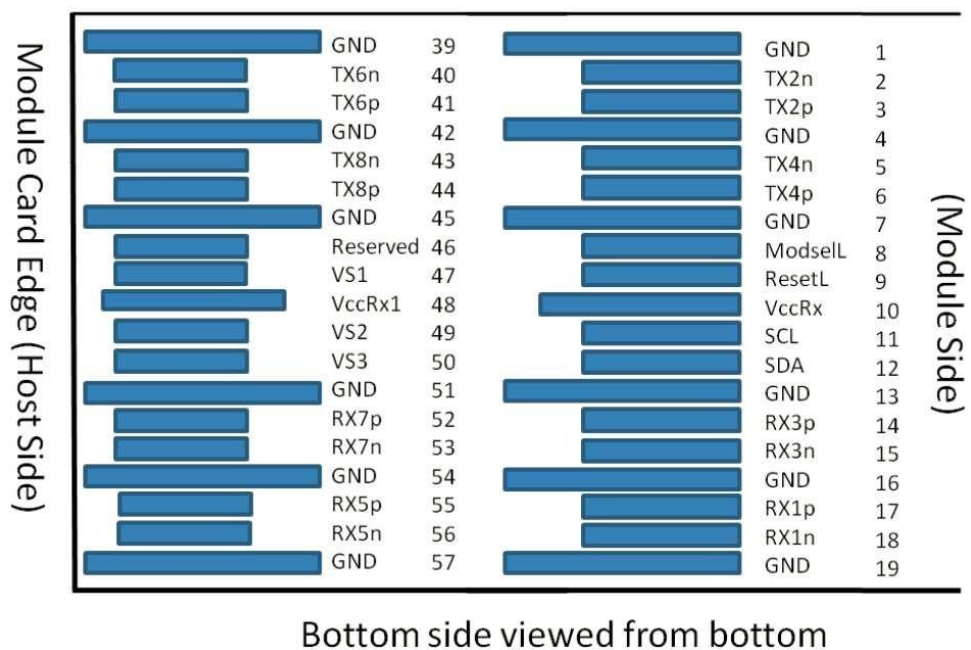
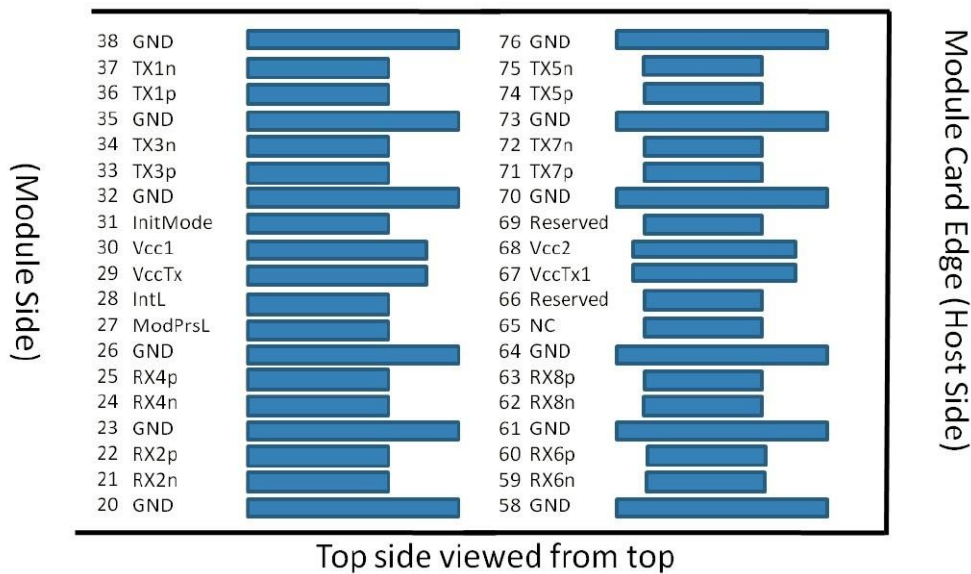
Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Transmitter						
Wavelength	λ_C	1304.5	1311	1317.5	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Launch Power, each lane	AOPL	-2.9	-	4.0	dBm	
Outer Optical Modulation Amplitude (OMA _{outer}), each lane	TOMA	-0.8	-	4.2	dBm	
Launch Power in OMA _{outer} minus TDECQ, each lane	TOMA	-2.2	-	-	dBm	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ	-	-	3.4	dB	
TDECQ – 10log ₁₀ (Ceq)	-	-	-	3.4	dB	
Average Launch Power of OFF Transmitter, each lane	TOFF	-	-	-15	dBm	
Extinction Ratio, each lane	ER	3.5	-	-	dB	
Transmitter transition time	-	-	-	17	ps	
RIN _{21.4OMA}	RIN	-	-	-136	dB/Hz	
Optical Return Loss Tolerance	ORL	-	-	21.4	dB	
Transmitter Reflectance	TR	-	-	-26	dB	
Receiver						
Wavelength	λ_C	1304.5	1311	1317.5	nm	
Damage Threshold, each lane	AOPD	5	-	-	dBm	
Average Receive Power, each lane	AOPR	-5.9	-	4.0	dBm	1
Receive Power (OMA _{outer}), each lane	OMAR	-	-	4.2	dBm	
Receiver Reflectance	RR	-	-	-26	dB	
Receiver Sensitivity (OMA _{outer}), each lane	SOMA	-	-	-4.4	dBm	2
Stressed Receiver Sensitivity (OMA _{outer}), each lane	SRS	-	-	-1.9	dBm	3
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4 (SECQ)			3.4		dB	

SECQ – 10log10(Ceq), lane under test	-	-	-	3.4	dB	
OMAouter of each aggressor lane			4.2		dBm	

Notes:

1. Average receive power, (min) is informative and not the principal indicator of signal strength.
2. Receiver sensitivity (OMAouter), each lane (max) is informative and is defined for a transmitter with a value of SECQ up to 3.4 dB.
3. Measured with conformance test signal at TP3 for the BER = 2.4x10-4.

5. PIN DIAGRAM



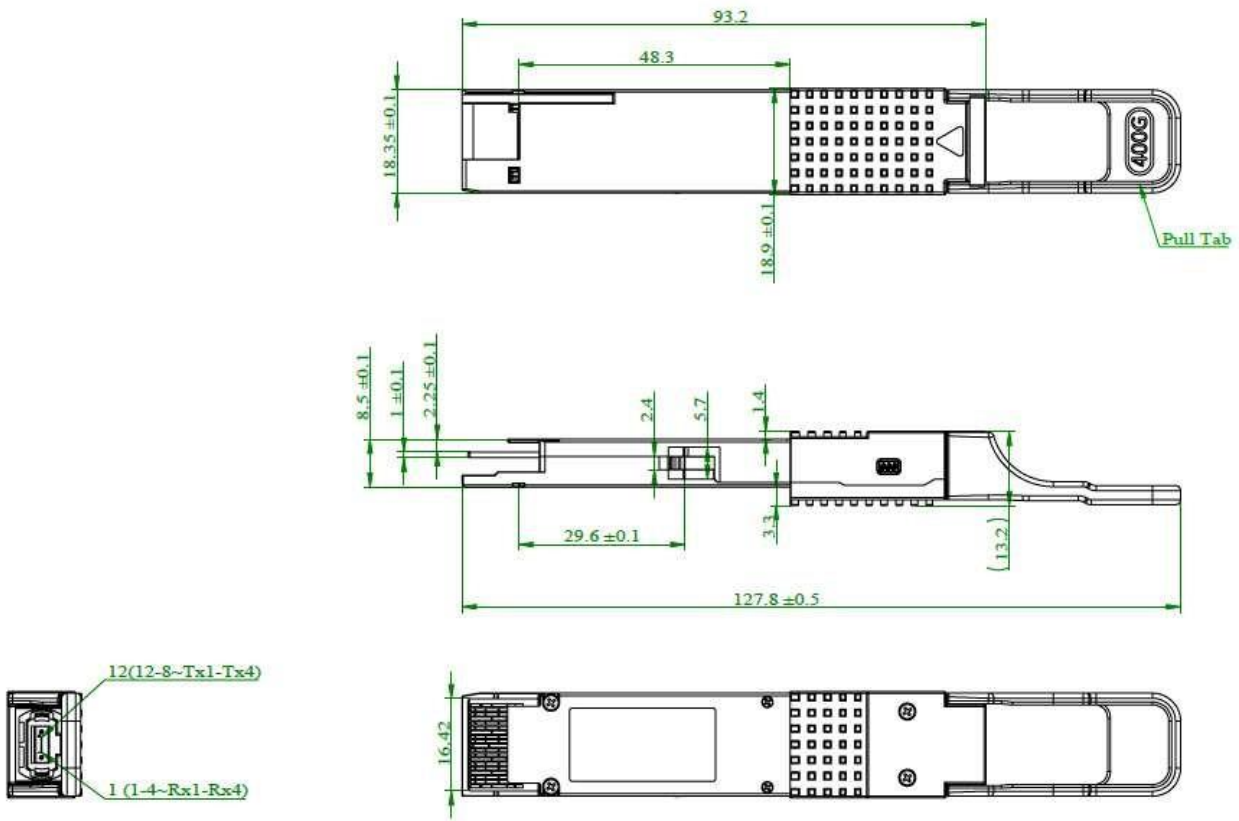
6. PIN DESCRIPTIONS

PIN	Symbol	Description	Note
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	VccRx	+3.3V 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	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power Supply Transmitter	
30	Vcc1	+3.3V Power Supply	
31	InitMode	Initialization 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	
39	GND	Ground	
40	Tx6n	Transmitter Inverted Data Input	
41	Tx6p	Transmitter Non-inverted Data Input	
42	GND	Ground	
43	Tx8n	Transmitter Inverted Data Input	
44	Tx8p	Transmitter Non-inverted Data Input	
45	GND	Ground	
46	Reserved		
47	VS1	Module Vendor Specific 1	
48	VccRx1	3.3V Power Supply	
49	VS2	Module Vendor Specific 2	
50	VS3	Module Vendor Specific 3	
51	GND	Ground	
52	Rx7p	Receiver Non-inverted Data Output	
53	Rx7n	Receiver Inverted Data Output	
54	GND	Ground	
55	Rx5p	Receiver Non-inverted Data Output	
56	Rx5n	Receiver Inverted Data Output	
57	GND	Ground	
58	GND	Ground	
59	Rx6n	Receiver Inverted Data Output	
60	Rx6p	Receiver Non-inverted Data Output	
61	GND	Ground	
62	Rx8n	Receiver Inverted Data Output	
63	Rx8p	Receiver Non-inverted Data Output	
64	GND	Ground	
65	NC	Not connected	
66	Reserved		
67	VccTx1	3.3V Power Supply	
68	Vcc2	3.3V Power Supply	
69	Reserved		
70	GND	Ground	
71	Tx7p	Transmitter Non-inverted Data Input	

72	Tx7n	Transmitter Inverted Data Input	
73	GND	Ground	
74	Tx5p	Transmitter Non-inverted Data Input	
75	Tx5n	Transmitter Inverted Data Input	
76	GND	Ground	

7. MECHANICAL SPECIFICATION



8. LABEL DIAGRAM



TD1344D-CP

QSFP-DD 400G DR4 500m

Class 1 Laser
MADE IN CHINA

S/N: ??????????



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