Specification

Quad Small Form-factor Pluggable 28

(QSFP28) Product

TQS–QG4H8–X83xx

Model Name	Voltage	Category	Device type	Interface	Temperature	Distance	Latch Color
TQS-QG4H8-X8301	3.3V	With DDMI	VCSEL/PIN	CML/CML	-20°C~+85°C	NA	Beige
TQS-QG4H8-X8303							
TQS-QG4H8-X8305							
TQS-QG4H8-X8307							
TQS-QG4H8-X8310							
TQS-QG4H8-X8315							
TQS-QG4H8-X8320							

Features

- Compliant with 100GBASE-SR4 and CAUI-4 specification per IEEE 802.3bm.
- Compliant to SFF-8665 (QSFP28 Solution) Revision 1.8
- Supports 103.1Gb/s aggregate bit rate
- Low power consumption of max 1.9W (Typ. 1.7W)
- Hot pluggable electrical interface
- -20 to 85°C case temperature operating range
- RoHS Compliant

Applications

- Ethernet for 100GBASE-SR4
- Infiniband EDR

Absolute Maximum Rating

Not necessarily applied together. Exceeding these values may cause permanent damage. Functional operation under these conditions is not implied.

Parameter	Min	Max	Unit	Note
Storage Temperature	-40	85	℃	
3.3V Power Supply Voltage	-0.5	3.6	V	
Relative Humidity	0	85	%	

Recommended Operating Conditions

Parameter	Min	Typical	Max	Unit	Note
Case Operating Temperature	-20		85	℃	
Power Supply Voltage	3.135	3.3	3.465	V	
Date Rate per Channel			25.78125	Gbps	
Control Input Voltage High	2		Vcc	V	
Control Input Voltage Low	0		0.8	V	

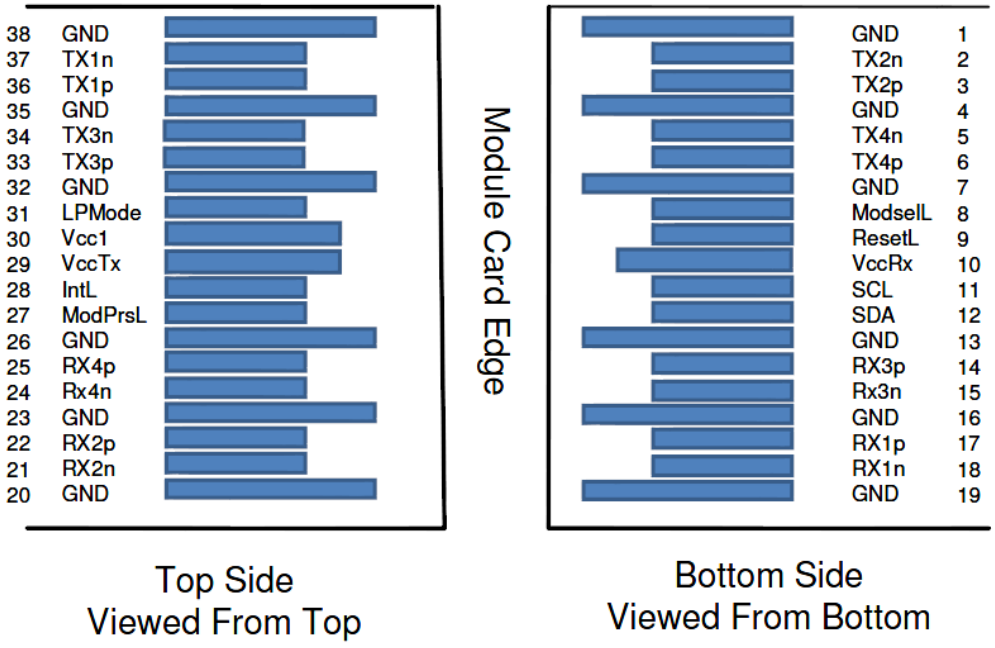
Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transceiver Electrical Characteristics						
TRx Power Consumption			1.7.	1.9.	W	1
Supply Current				600	mA	1
Receiver						
Differential Voltage, pk-pk	TP4			900	mV	
Differential Termination Resistance Mismatch	TP4			10	%	
Differential Return Loss (SDD22)	TP4			See CEI-28G-VSR Equation 13-19	dB	
Common Mode to Differential conversion and Differential to Common Mode conversion (SDC22, SCD22)	TP4			See CEI-28G-VSR Equation 13-21	dB	
Common Mode Return Loss (SCC22)	TP4			-2	dB	2
Transition Time, 20 to 80%	TP4	9.5			Ps	
Eye Width at 10^{-15} probability	TP4	0.57			UI	
Eye Height at 10^{-15} probability	TP4	228			mV	

Notes:

1. **Per terminal.**
2. **From 250MHz to 30GHz.**

QSFP+ Module Pad Assignments and Descriptions

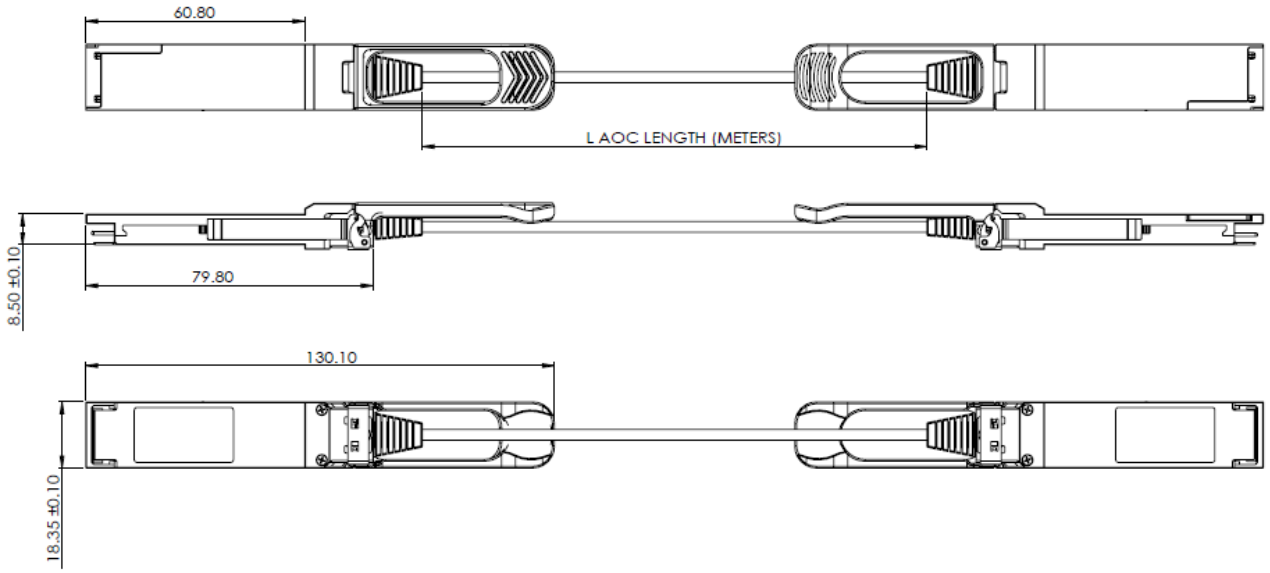


Pin	Logic	Symbol	Description	Plug Sequence	Notes
1		GND	Ground	1	
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		Vcc Rx	+3.3V Power Supply Receiver	2	
11	LVCMOS-I/O	SCL	2-wire serial interface clock	3	
12	LVCMOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	

16		GND	Ground	1	
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	
20		GND	Ground	1	
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	3	
23		GND	Ground	1	
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	3	
26		GND	Ground	1	
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		Vcc Tx	+3.3V Power supply transmitter	2	
30		Vcc1	+3.3V Power supply	2	
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	3	
37	CML-I	Tx1n	Teransmitter Inverted Data Input	3	
38		GND	Ground	1	

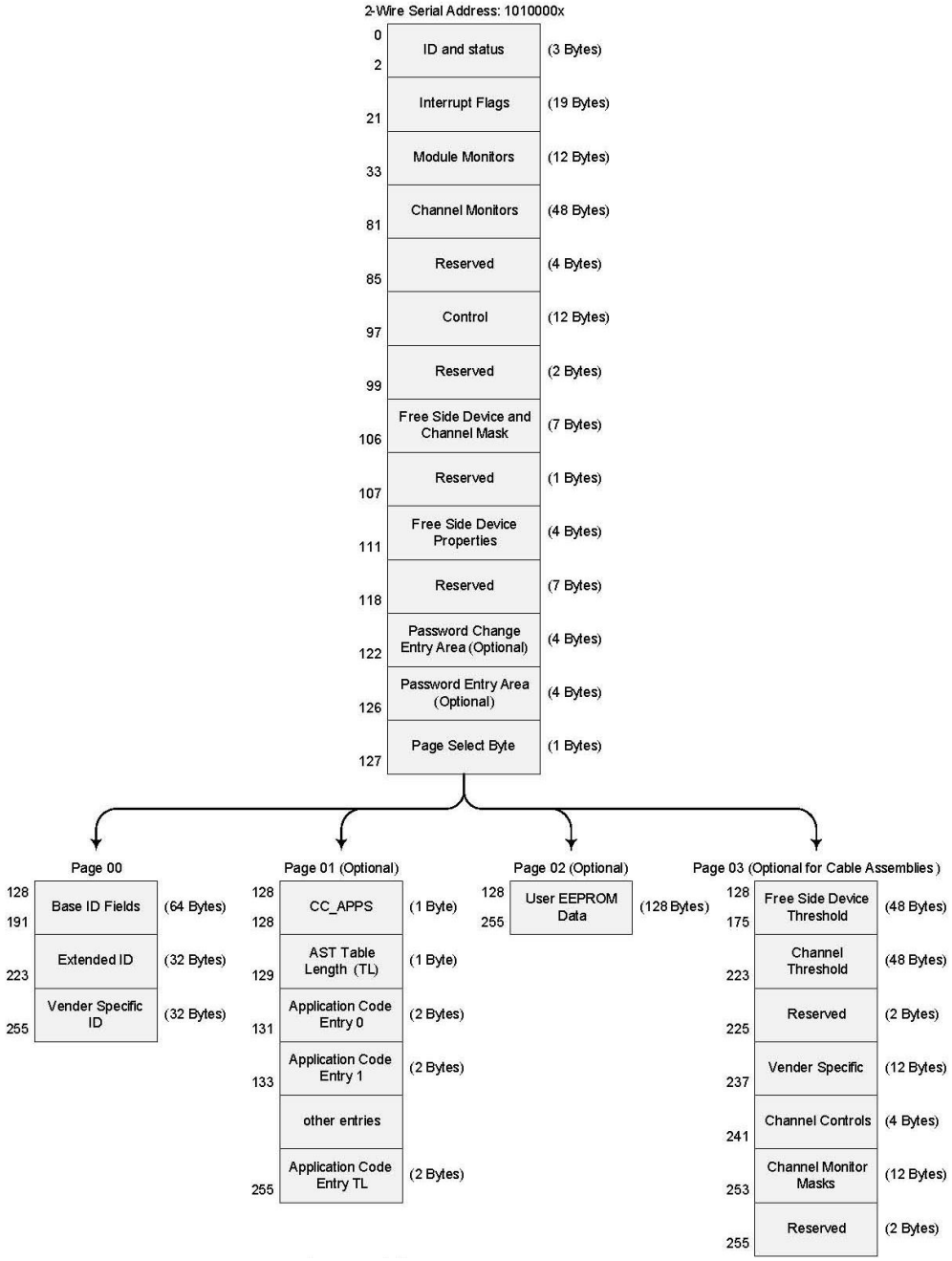
Module Outline

Unit: mm



Memory Map

The memory map is structured as a single address and multiple page approaches, according to the QSFP28 SFF-8636 MSA specification as shown in the below. For more detailed description of this memory map or lower pages, please see our Memory Map document with flexible customization settings.



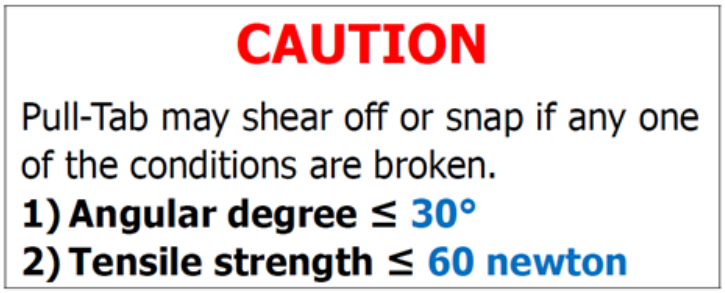
Laser Safety

This is a laser class 1M product according to IEC / EN 60825-1: 2014 (Third Edition). This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

ESD

Normal ESD precautions are required during the handling of this module. This transceiver is shipped in ESD protective packaging. It should be removed from the packaging and handled only in an ESD protected environment.

User Manual



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Revision History

Date	Version	Description
02/27/2019	1.0	Initial release
09/05/2019	2.0	Update Module Outline on Page6.
10/09/2019	3.0	Update Cover Page.