

## 100G QSFP28 break to 4x25G SFP28 DAC

### Product Features

- QSFP28 Module fully compliant to the latest SFF8665 QSFP28 MSA
- SFP28 Module fully compliant to the latest SFF8402 SFP28 MSA
- Optimized PCB with auto soldering process
- EEPROM in cable assembly
- Enables 100Gb/s to 4X25G transmission
- 30AWG,28AWG and 26AWG cable sizes
- RoHS2 compliant

### Application

- Data Centre, High Performance Computing(HPC),
- Router, Server, Storage, Switch

### Absolute Maximum Ratings

Parameter	Unit	Min.	Typical	Max.	Notes
Storage Temperature	°C	-40		85	
Operating Case Temperature	°C	0		70	
Operating Relative Humidity	%			85	
Power Supply Working Voltage	V	3.135	3.3	3.465	
Bit Rate	Gbps		100		

### Characteristics

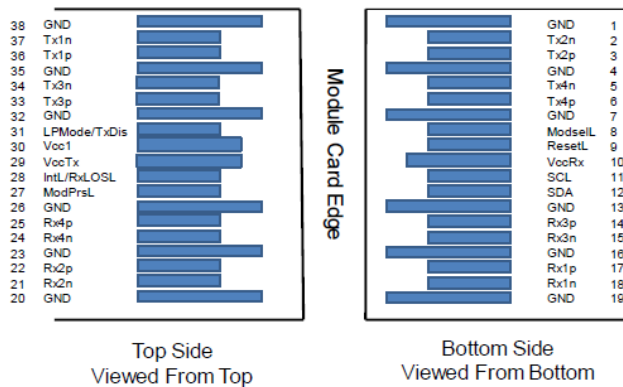
All performance is specified at whole working temperature and conditions

Item		Parameter
Physical	Length	1 to 5m
	Cable Colour	Black
Electrical	Resistance	2 ohm Max
	Insulation Resistance	10M ohm Min
SI Performance	SDD21	-22.48dB Min. @12.89GHz no suck-out < 30GHz
	SDD11/SDD22	-16.5+2*sqrt(f)dB Max @0.05GHz-4.1GHz -10.66+14*log(f/5.5) dB Max@4.1GHz-19GHz
	SCD22	-22+(20/25.78)*f dB Max@0.01GHz~12.89GHz -15+(6/25.78)*f dB Max@12.89GHz~19GHz
	SCC11	-2dB Max
	SCD21-SDD21	-10dB Max @0.01GHz~12.89GHz -27+(29/22)*f dB Max @12.89GHz~15.7GHz -6.3dB Max @15.7GHz~19GHz
	NEXT	-40 dB Max
	COM	3 dB Min

### QSFP28 PIN Function Definitions

Pad	Logic	Symbol	Description	Plug Sequence
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		VccRx	+3.3V Power Supply Receiver	2
11	LVCNOS-I/O	SCL	Two-wire interface clock	3
12	LVCNOS-I/O	SDA	Two-wire 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/RxLOS L	Interrupt. Optionally configurable as RxLOS via the management interface (SFF-8636).	3
29		VccTx	+3.3V Power supply transmitter	2
30		VccI	+3.3V Power supply	2
31	LVTTL-I	LPMode/TxD is	Low Power Mode. Optionally configurable as TxDis via the management interface (SFF-8636).	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	Transmitter Inverted Data Input	3
38		GND	Ground	1

## QSFP28 Transceiver Electrical Pad Layout



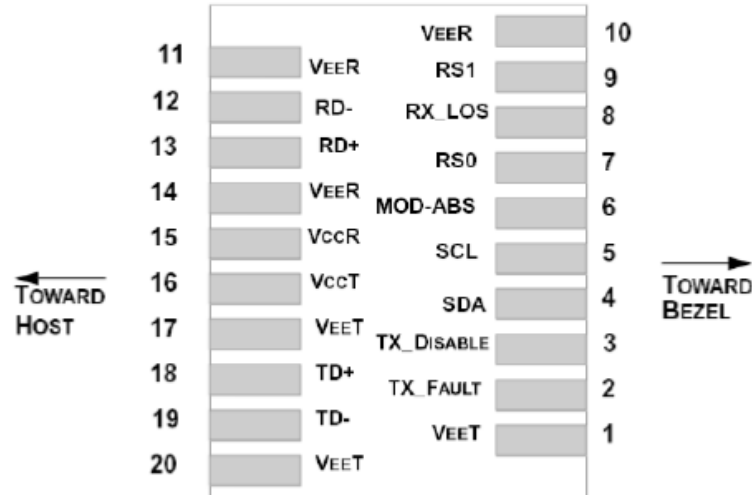
## Mechanical Specifications

For detail mechanical information, please refer to the related document of SFF-8679.

### SFP28 PIN Function Definitions

Pin No.	Symbol	Level / Logic	Description
1	VeeT		Module Transmitter Ground
2	Tx_Fault	LVTTL-O	Module Transmitter Fault Indication
3	Tx_DIS	LVTTL-I	Transmitter Disable; Active High Disable Transmitter Output
4	SDA	LVTTL-I	2-Wire Serial Interface Data Line
5	SCL	LVTTL-I/O	2-Wire Serial Interface Clock
6	MOD_ABS	LVTTL-O	Module Absent, connected to ground in the module
7	RS0		Rate Select 0, optionally controls SFP28 module receiver
8	RX_LOS	LVTTL-O	Loss of Receiver Signal Indication
9	RS1		Rate Select 1, optionally controls SFP28 module transmitter
10	VeeR		Module Receiver Ground
11	VeeR		Module Receiver Ground
12	RD-	CML-O	Receiver Inverted Data Output
13	RD+	CML-O	Receiver Non-Inverted Data Output
14	VeeR		Module Receiver Ground
15	VccR		Module Receiver 3.3V Supply
16	VccT		Module Transmitter 3.3V Supply
17	VeeT		Module Transmitter Ground
18	TD+	CML-I	Transmitter Non-Inverted Data Input
19	TD-	CML-I	Transmitter Inverted Data Input
20	VeeT		Module Transmitter Ground

**SFP28 Transceiver Electrical Pad Layout**



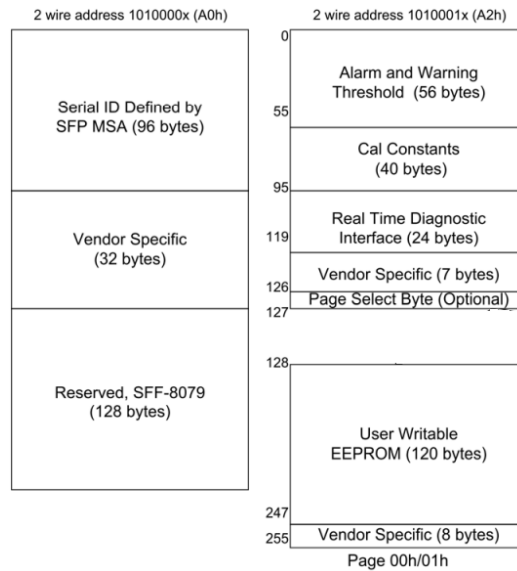
**QSFP28 EEPROM Information**

The digital diagnostic memory map specific data field define as following. For detail EEPROM information, please refer to the related document of SFF 8636 Rev 2.1.

From	To	Content	No. of bytes	Type
<b>2-Wire Serial Address 1010000x</b>				
<b>Lower Page 00h</b>				
0	2	ID and Status	3	Read-Only
3	21	Interrupt Flags (Clear on read)	19	Read-Only
22	33	Free Side Device Monitors	12	Read-Only
34	81	Channel Monitors	48	Read-Only
82	85	Reserved	4	Read-Only
86	99	Control	14	Read/Write
100	106	Free Side Interrupt Masks	7	Read/Write
107	110	Free Side Device Properties	4	Read-Only
111	112	Assigned to PCI Express	2	Read/Write
113	116	Free Side Device Properties	4	Read-Only
117	118	Reserved	2	Read/Write
119	122	Optional Password Change	4	Write-Only
123	126	Optional Password Entry	4	Write-Only
127	127	Page Select Byte	1	Read/Write
<b>Upper Page 00h</b>				
128	128	Identifier	1	Read-Only
129	191	Base ID Fields	63	Read-Only
192	223	Extended ID	32	Read-Only
224	255	Vendor Specific ID	32	Read-Only
<b>Page 01h (Optional)</b>				
128	255	Reserved (previously for SFF-8079 support)	128	Read-Only
<b>Page 02h (Optional)</b>				
128	255	User EEPROM Data	128	Read/Write
<b>Page 03h (Optional)</b>				
128	175	Free Side Device Thresholds	48	Read-Only
176	223	Channel Thresholds	48	Read-Only
224	229	Tx EQ, Rx Output and TC Support	6	Read-Only
230	241	Channel Controls	12	Read/Write
242	251	Channel Monitor Masks	10	Read/Write
252	255	Reserved	4	Read/Write
<b>Pages 04h-1Fh (Optional)</b>				
128	255	Vendor Specific	128	Read/Write
<b>Pages 20h-21h (Optional)</b>				
128	255	PAM-4 and WDM Features	128	Read/Write
<b>Pages 22h-7Fh (Optional)</b>				
128	255	Reserved	128	Read/Write
<b>Pages 80h-FFh (Optional)</b>				
128	255	Vendor Specific	128	Read/Write

### SFP28 EEPROM Information

The digital diagnostic memory map specific data field define as following. For detail EEPROM information, please refer to the related document of SFF 8472 Rev 12.0.



### ESD

The SFP+ module and host SFI contacts (High Speed Contacts) shall withstand 1kV electrostatic discharge based on Human Body Model and all host contacts with exception of the SFI contacts (High Speed Contacts) shall withstand 2kV electrostatic discharge based on Human Body Model. The SFP+ module shall meet ESD requirements given in EN61000-4-2, criterion B test specification such that units are subjected to 15kV air discharges during operation and 8kV direct contact discharges to the case per section 2.9 in SFF-8431 REV4.1. However, normal ESD precautions are still 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.

### Ordering Information

Ordering P/Ns	Description
DHZZhh-QCCB-XXX	1m~5m 100G QSFP28 break to 4x25G SFP28 DAC, QSFP28 and SFP28 form-factor, 0~70°C Industrial temperature

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