

## **QFP-MM85DG-S1DC**

200Gbps QSFP56 Transceiver, Multi Mode, 100m Reach

### **Product Features**

- Hot Pluggable QSFP56 Transceiver
- Supports 212,5Gbps aggregate bit rate
- Up to 53.125Gbps data rate per channel
- SFF-8665 compliant QSFP56 port;SFF-8636 compliant I2C management
- Compliant with IEEE802.3cd 200GBASE-SR4
- MPO-12 connector receptacle with UPC end-face
- Maximum link length of 100m on OM4 MMF
- Single 3.3V Power Supply
- Low power dissipation(<4.5W)
- RoHS compliant
- Operating case temperature: 0 to +70°C

### **Applications**

- 200GBASE-SR4 Ethernet
- 200G InfiniBand HDR systems
- Other optical links

### **Description**

The 200GE QSFP56 SR4 transceivers are high performance, cost effective I/O solutions for LAN, HPC and SAN. The high speed transceivers meet and exceed 200G Ethernet, InfiniBand HDR and temperature requirements for performance and reliability. The transceivers are compliant with SFF-8636 specifications and provide connectivity between devices using QSFP56 ports.

## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage	V <sub>cc</sub>	-0.4	+3.6	V	
Storage Temperature	T <sub>s</sub>	-40	+85	°C	
Operating Case temperature	T <sub>OP</sub>	-5	75	°C	1
Operating Humidity	RH	0	+85	%	2

### Notes:

1. No damage, but performance is not guaranteed.
2. No condensation

## Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T <sub>c</sub>	0	25	70	°C
Power Supply Voltage	V <sub>cc</sub>	3.14	3.30	3.47	V
Power Supply Current	I <sub>cc</sub>			1364	mA

## Transmitter Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Bit Rate	BR		26.5625±100 ppm		GBd	PAM4
Center Wavelength Range	λ <sub>c</sub>	840	850	860	nm	1
RMS Spectral Width	Δλ			0.6	nm	1
Average Launch power Tx_off	P <sub>off</sub>			-30	dBm	1
Average Optical Power, each lane	P <sub>0</sub>	-6.5		4	dBm	1
Outer Optical Modulation Amplitude (OMA <sub>outer</sub> ), each lane	OMA (outer)	-4.5		3	dBm	1
Launch power in OMA <sub>outer</sub> minus TDECQ	OMA-TDECQ	-5.9			dBm	1

Transmitter and dispersion eye closure (TDECQ), each lane	TDECQ			4.5	dB	1
Extinction Ratio, each lane	ER	3.0			dB	1
Optical return loss tolerance	ORL			12	dB	

**Notes:**

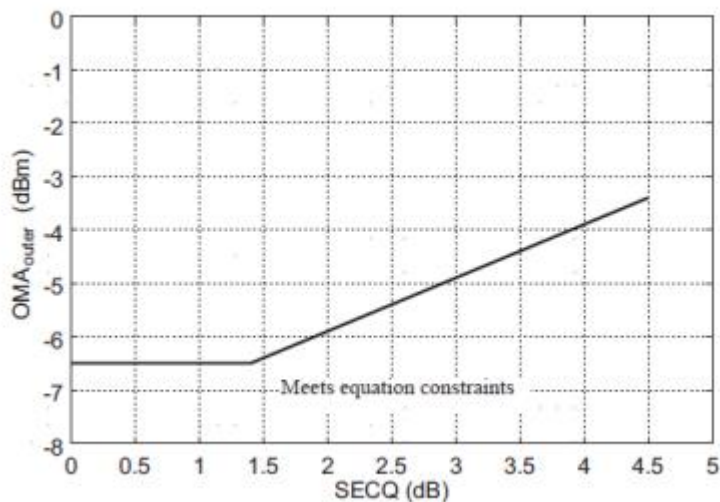
- 1.SSPRQ@26.5625Gbd PAM4

### Receiver Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Bit Rate	BR		26.5625± 100 ppm		GBd	PAM4
Center Wavelength Range	$\lambda_c$	840	850	860	nm	
Damage threshold	DT	5			dBm	
Average receive power, each lane	PIN	-8.4		4	dBm	
Receive power, each lane (OMAouter)	PIN <sub>OMA</sub>			3	dBm	
Receive Sensitivity (OMAouter) , each lane	Sen	max (-6.5, SECQ-7.9)			dBm	1,2
Stressed receiver sensitivity (OMAouter), each lane	Sen <sub>STR</sub>			-3.4	dBm	1
Receiver reflectance	RF			-12	dB	

**Notes:**

1. BER=2.4E-4, PRBS31Q@26.5625Gbd PAM4
2. Receiver sensitivity is informative and is defined for a transmitter with a value of SECQ.



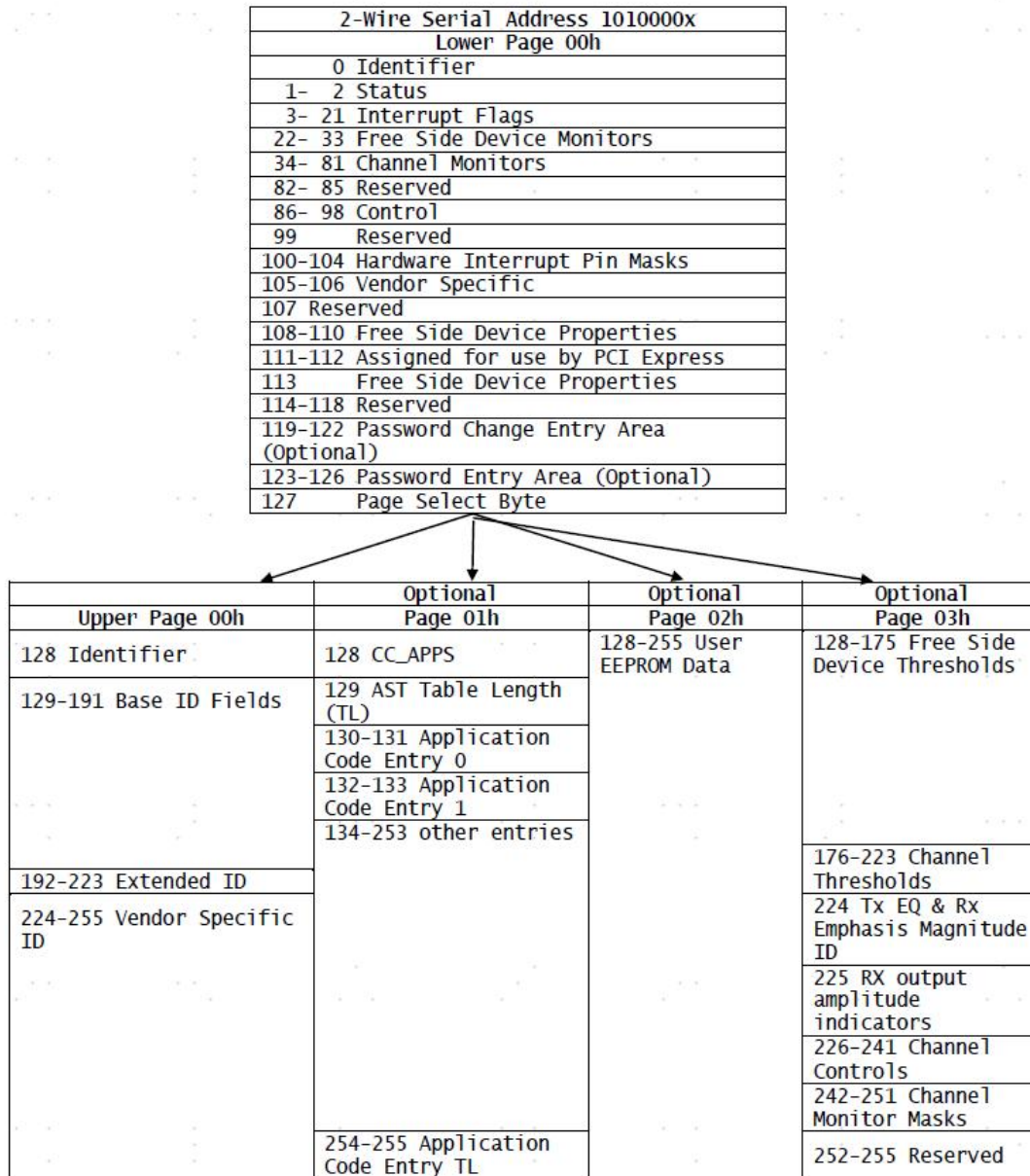
## Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Module Supply Current	I <sub>cc</sub>			1364	mA	
Power Dissipation	P <sub>D</sub>			4.5	W	
<b>Transmitter</b>						
Signaling data (each lane)			26.5625± 100 ppm		GBd	PAM4
Input Differential Impedance	Z <sub>in</sub>	90	100	110	Ω	
Differential Data Input Swing	V <sub>IN,P-P</sub>	300		900	mVpp	
Differential termination mismatch				10	%	
Single-ended voltage tolerance range		-0.4		3.3	V	
DC common mode voltage		-350		2850	mV	
<b>Receiver</b>						
Signaling rate (each lane)			26.5625 ± 100 ppm		mVpp	PAM4
Output Differential Impedance	Z <sub>out</sub>	90	100	110	Ω	
Differential Data Output Swing	V <sub>OUT,P-P</sub>	300		900	mVpp	
Differential termination mismatch				10	%	
Data Output Rise Time, Fall Time	Tr/Tf	9.5			ps	
DC common mode voltage		-350		2850	mV	
Error Bit Rate	BER			2.4E-4		1

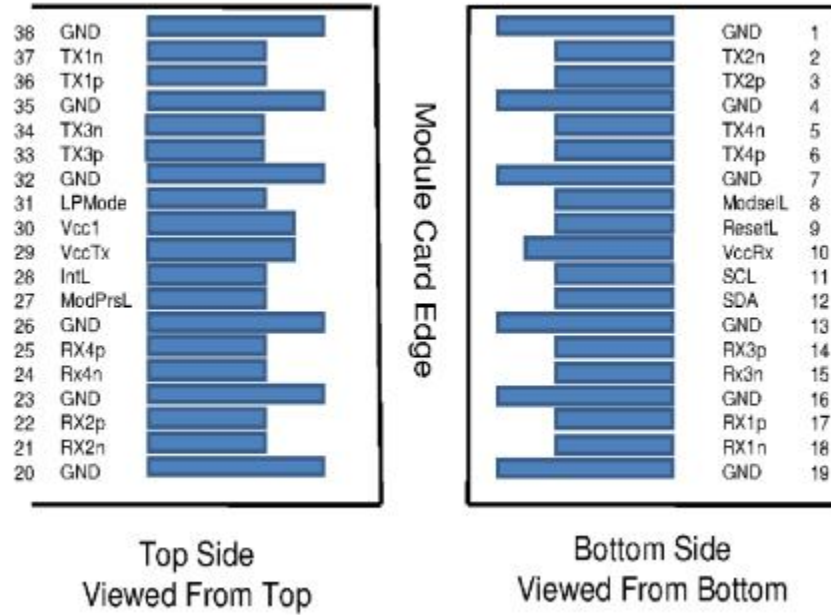
Notes:

1.PRBS31Q@26.5625Gbd PAM4

## Monitoring Specification



## Pin Descriptions



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

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

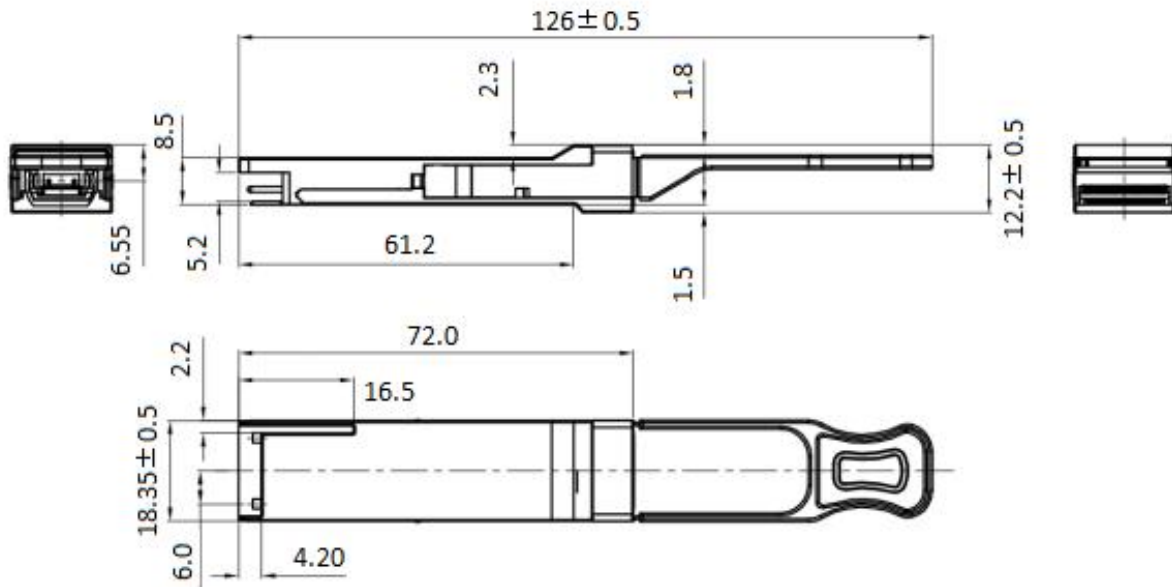
**Notes:**

- 1.Circuit ground is internally isolated from chassis ground





## Mechanical Dimensions



## Ordering information

Part Number	Product Description
QFP-MM85DG-S1DC	200Gbps QSFP56 SR4, 850nm, 100m, 0°C~+70°C, with DDM

## For More Information

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