



Q56DD-400G-SR4.2-ON-OPC

Dell® Q56DD-400G-SR4.2-ON Compatible TAA 400GBase-BX SR4.2 PAM4 QSFP-DD Transceiver (MMF, 850nm to 902nm, 100m, MPO-12, DOM, CMIS 4.0)

Features

- 8x50 Gbps MMF optical interface
- Supports 4x100G breakout function
- 850nm/908nm VCSEL 850nm/908nm PD Array

Technology

- MPO-12 connector
- Multi-mode fiber
- CMIS V4.0 compliance
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Excellent ESD Protection
- RoHS Compliant and lead-free



Applications:

- 400GBase Ethernet
- Access and Enterprise

Product Description

This Dell® compatible QSFP-DD transceiver provides 400GBase-BX SR4.2 throughput up to 100m over multi-mode fiber (MMF) PAM4 using a wavelength of 850nm to 902nm via an MPO-12 connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Dell®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	Vcc	-0.5		3.6	V	1
Storage Temperature	Tstg	-40		85	°C	1
Storage Relative Humidity	RH	0		95	%	1, 2
Operating Case Temperature	Tc	0	25	70	°C	
Operating Relative Humidity	RH	0		85	%	1, 2
Signaling Speed Per Channel	S		26.56		GB	

Notes:

1. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.
2. Non-condensing condition.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	Vcc	3.14	3.3	3.46	V	
Power Consumption	P		11		W	
Module Supply Current	I _N		3500		mA	
Transmitter						
Tx_Data Differential Input Voltage	V _{IN}			900	mV	
Tx_Data Differential Input Impedance	Z _{IN}		100		Ω	
Receiver						
Rx_Data Differential Output Voltage	V _{OUT}			900	mV	
Rx_Data Differential Output Impedance	Z _{OUT}		100		Ω	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Signaling Rate Per Lane	SR		26.56		GBd	
Signaling Speed Accuracy	SSA	-100		100	ppm	
Modulation Format		PAM4				
Average Launch Power Per Lane	POUT	-6.5		4	dBm	1
Outer Optical Modulation Amplitude Per Lane	OMAouter	-4.5		3	dBm	
Optical Output with Tx Off	POFF			-30	dBm	
Extinction Ratio	ER	3			dB	
$\lambda 1$ Center Wavelength (Range)	λ	840		868	nm	2
$\lambda 2$ Center Wavelength (Range)	λ	900		918	nm	3
RMS Spectral Width ($\lambda 1$)	$\Delta\lambda$			0.65	nm	
RMS Spectral Width ($\lambda 2$)	$\Delta\lambda$			0.65	nm	
Transmitter and Dispersion Eye Closure (TDECQ) Per Lane	TDECQ			4.5	dB	
Launch Power in OMAouter Minus TDECQ Per Lane (Minimum)		-5.9			dB	
Optical Return Loss Tolerance (Maximum)	ORLT			12	dB	
Receiver						
Signaling Rate Per Lane	SR		26.56		GBd	
Signaling Speed Accuracy		-100		100	ppm	
Modulation Format		PAM4				
Average Power at Receive Input Per Lane	PIN	-8.5		4	dBm	
Receive Power (OMAouter) Per Lane (Maximum)				3	dBm	
Receiver Sensitivity (OMAouter) Per Lane	S			Max. (-6.6, SECQ - 8)	dBm	4
$\lambda 1$ Center Wavelength (Range)	λ	840		868	nm	2
$\lambda 2$ Center Wavelength (Range)	λ	900		918	nm	3
Rx_LOS - Assert	LOSA	-24.6			dBm	
Rx_LOS - De-Assert	LOSD			-8.6	dBm	
Rx_LOS - Hysteresis	LOSH	0.5			dB	

Notes:

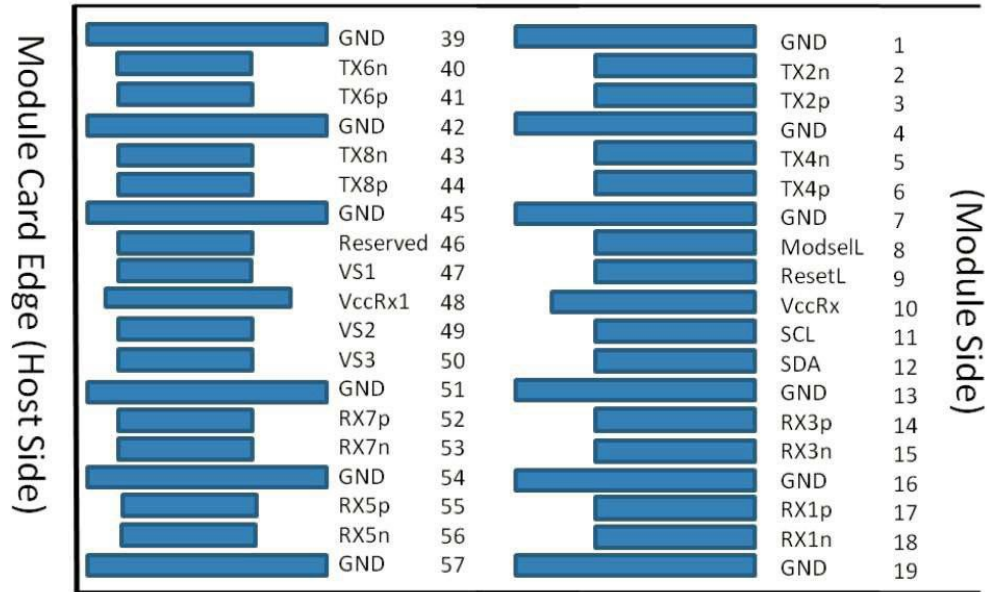
1. Average Optical Output.
2. TxRx pair type TR.
3. TxRx pair type RT.
4. Sensitivity where the BER=2.4E⁻⁴ measured with a PRBS 31Q test pattern @26.56GBaud.

Pin Descriptions

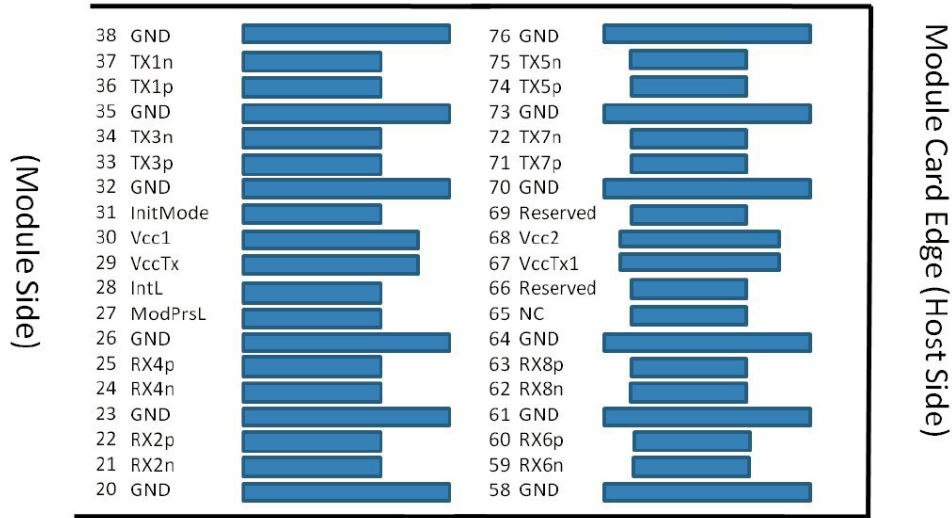
Pin	Logic	Symbol	Name/Descriptions
1		GND	Module Ground.
2	CML-I	Tx2-	Transmitter Inverted Data Input.
3	CML-I	Tx2+	Transmitter Non-Inverted Data Input.
4		GND	Module Ground.
5	CML-I	Tx4-	Transmitter Inverted Data Input.
6	CML-I	Tx4+	Transmitter Non-Inverted Data Input.
7		GND	Module Ground.
8	LVTTL-I	ModSelL	Module Select.
9	LVTTL-I	ResetL	Module Reset.
10		VccRx	+3.3V Power Supply Receiver.
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock.
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data.
13		GND	Module Ground.
14	CML-O	Rx3+	Receiver Non-Inverted Data Output.
15	CML-O	Rx3-	Receiver Inverted Data Output.
16		GND	Module Ground.
17	CML-O	Rx1+	Receiver Non-Inverted Data Output.
18	CML-O	Rx1-	Receiver Inverted Data Output.
19		GND	Module Ground.
20		GND	Module Ground.
21	CML-O	Rx2-	Receiver Inverted Data Output.
22	CML-O	Rx2+	Receiver Non-Inverted Data Output.
23		GND	Module Ground.
24	CML-O	Rx4-	Receiver Inverted Data Output.
25	CML-O	Rx4+	Receiver Non-Inverted Data Output.
26		GND	Module Ground.
27	LVTTL-O	ModPrsL	Module Present.
28	LVTTL-O	IntL	Interrupt.
29		VccTx	+3.3V Power Supply Transmitter.
30		Vcc1	+3.3V Power Supply.
31	LVTTL-I	InitMode	Initialization Mode.
32		GND	Module Ground.
33	CML-I	Tx3+	Transmitter Non-Inverted Data Input.
34	CML-I	Tx3-	Transmitter Inverted Data Input.
35		GND	Module Ground.
36	CML-I	Tx1+	Transmitter Non-Inverted Data Input.
37	CML-I	Tx1-	Transmitter Inverted Data Input.
38		GND	Module Ground.
39		GND	Module Ground.

40	CML-I	Tx6-	Transmitter Inverted Data Input.
41	CML-I	Tx6+	Transmitter Non-Inverted Data Input.
42		GND	Module Ground.
43	CML-I	Tx8-	Transmitter Inverted Data Input.
44	CML-I	Tx8+	Transmitter Non-Inverted Data Input.
45		GND	Module 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	Module Ground.
52	CML-O	Rx7+	Receiver Non-Inverted Data Output.
53	CML-O	Rx7-	Receiver Inverted Data Output.
54		GND	Module Ground.
55	CML-O	Rx5+	Receiver Non-Inverted Data Output.
56	CML-O	Rx5-	Receiver Inverted Data Output.
57		GND	Module Ground.
58		GND	Module Ground.
59	CML-O	Rx6-	Receiver Inverted Data Output.
60	CML-O	Rx6+	Receiver Non-Inverted Data Output.
61		GND	Module Ground.
62	CML-O	Rx8-	Receiver Inverted Data Output.
63	CML-O	Rx8+	Receiver Non-Inverted Data Output.
64		GND	Module Ground.
65		NC	Not Connected.
66		Reserved	
67		VccTx1	+3.3V Power Supply.
68		Vcc2	+3.3V Power Supply.
69		Reserved	
70		GND	Module Ground.
71	CML-I	Tx7+	Transmitter Non-Inverted Data Input.
72	CML-I	Tx7-	Transmitter Inverted Data Input.
73		GND	Module Ground.
74	CML-I	Tx5+	Transmitter Non-Inverted Data Input.
75	CML-I	Tx5-	Transmitter Inverted Data Input.
76		GND	Module Ground.

Electrical Pin-Out Details

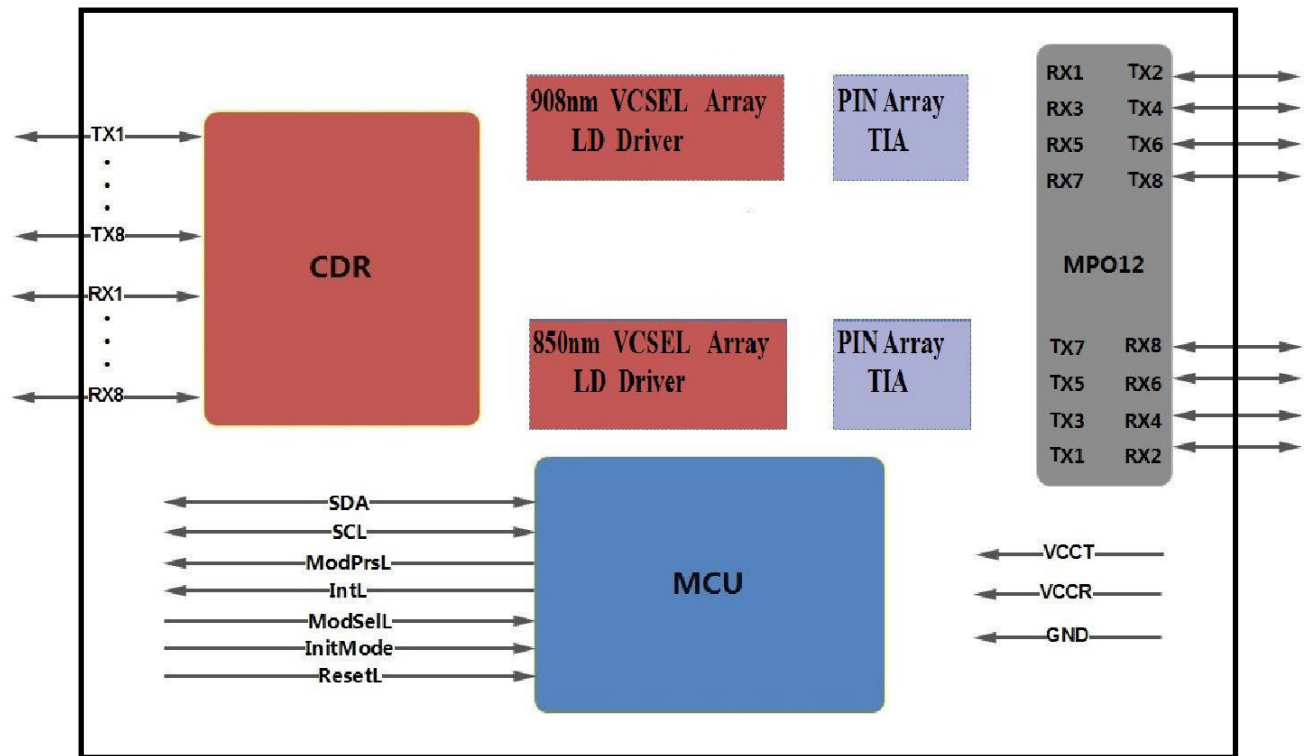


Bottom side viewed from bottom

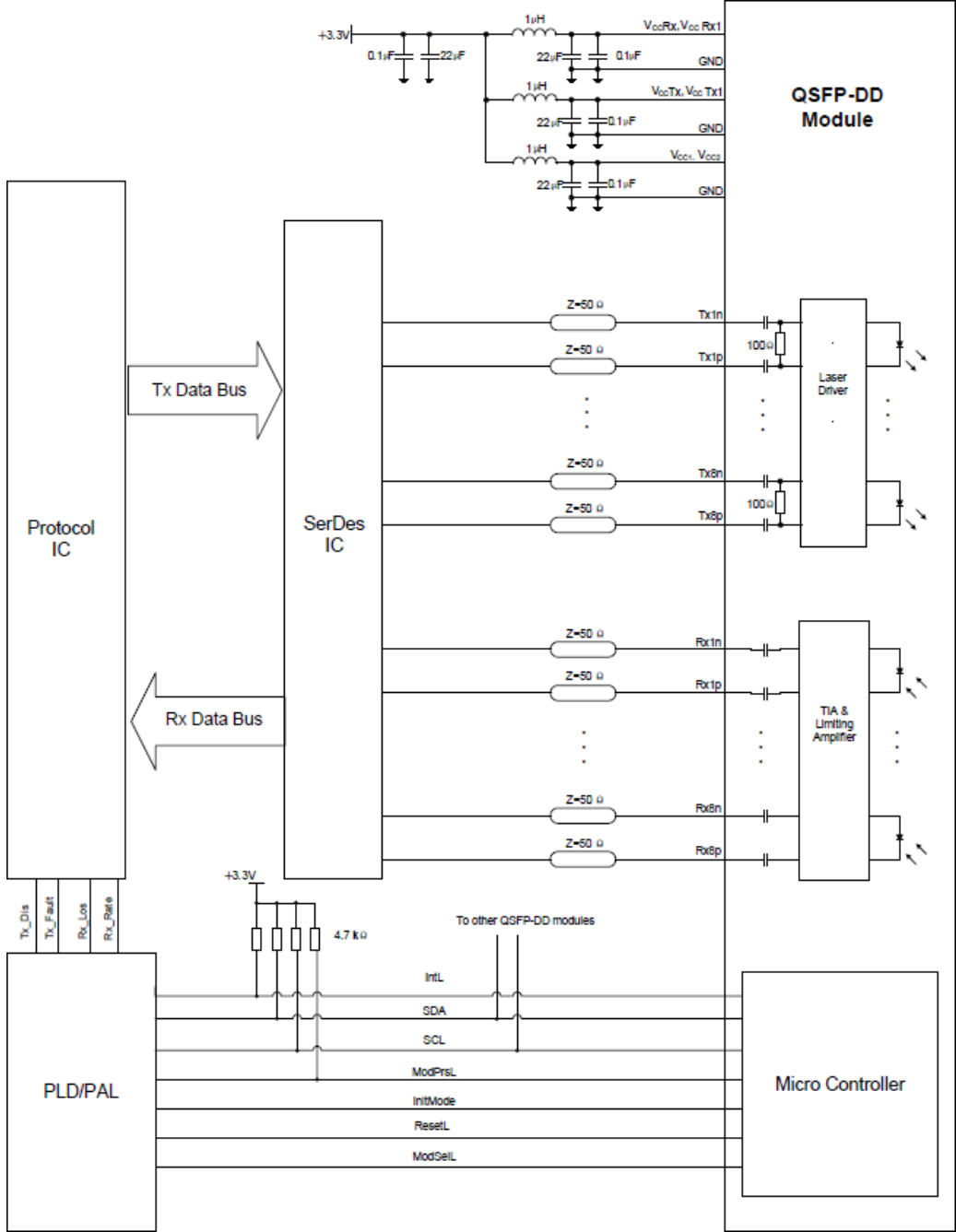


Top side viewed from top

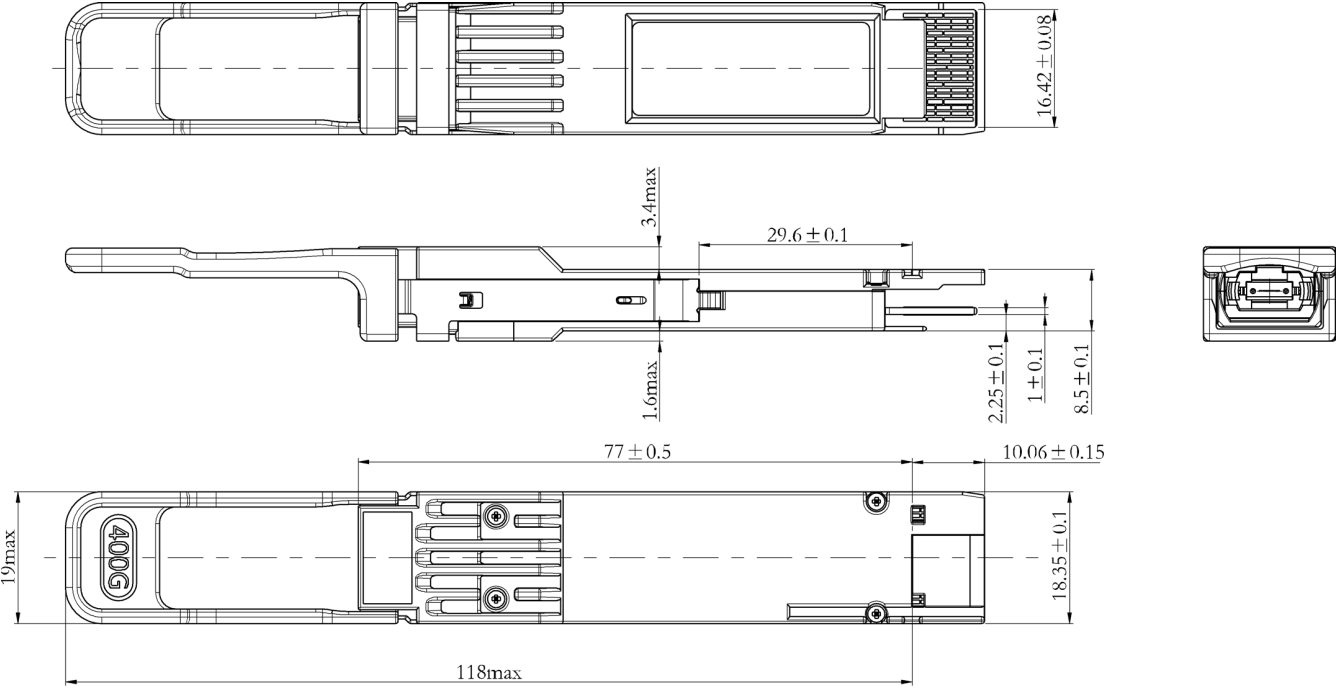
Transceiver Block Diagram



Electrical Interface



Mechanical Specifications



NOTES:
1.TOLERANCE: +/-0.1MM.
2.OTHERS ACCORDING WITH QSFP-DD MSA OR CUSTOMER SPEC.
3.LIGHT PORT ACCORDING WITH FIBER CONNECTOR SPEC.

OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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