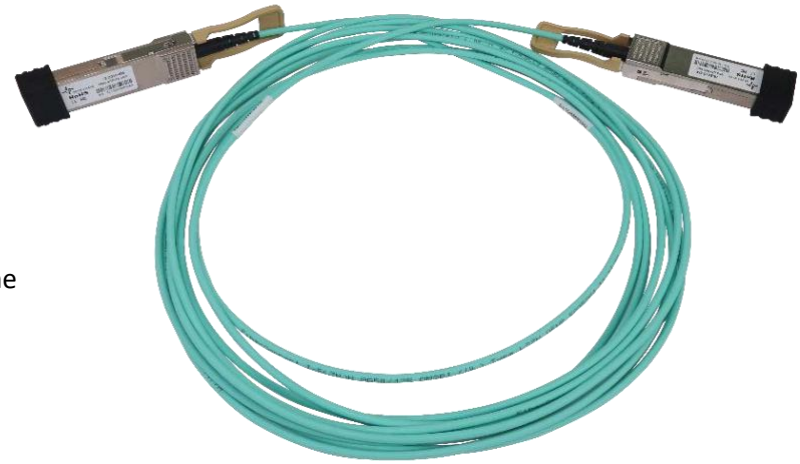
100G QSFP28 AOC

Overview



The Wave2Wave 78-Z010-xxM QSFP28 Active Optical Cable delivers high-density, low-latency connectivity for compute-intensive datacenter environments. This integrated optical assembly provides four full-duplex channels, each operating up to 25Gbps for a total throughput of 100Gbps.

Engineered for next-generation network fabrics, the 78-Z010-xxM series supports IEEE 802.3bm 100G Ethernet electrical specifications and features a limiting receiver design. The electrical interface complies with SFF-8636, while the mechanical interface is based on SFF-8665, ensuring seamless integration into modern system architectures.

Designed for reliability, performance, and interoperability, these AOCs are ideal for high-density aggregation, cloud infrastructure, and AI/HPC interconnects.

Features and Benefits

- Parallel 4-lane 850nm full-duplex active optical cable.
- Up to **25.78Gbps per lane** (100Gbps aggregate bandwidth).
- Fully compliant with **QSFP28 MSA** specifications.
- **RoHS compliant.**
- High-reliability **850nm VCSEL** optical engine.
- **Hot-pluggable** electrical interface.
- Operational case temperature: **0°C to 70°C.**
- **Low-power performance:** <3.5W per cable end.

Applications

- 100G Ethernet connectivity.
- InfiniBand QDR systems.
- Fiber Channel networks.
- High-performance computing (HPC) clusters and interconnects.

NOTES:

XX=different cable lengths on Multimode Fiber (MMF)

Ordering Information								
Part Number	Transmitter	Data Rate	Receiver	BER	Reach	Temp	DDM	RoHS
78-Z010-xxM	850nm VCSEL	25.78Gb/s	PIN	10^{-12}	(XX+1)m	0~ 70 ºC	Available	Compliant
78C-Z010-xxM	850nm VCSEL	25.78Gb/s	PIN	10^{-12}	(XX+1)m	0~ 70 ºC	Available	Compliant
78A-Z010-xxM	850nm VCSEL	25.78Gb/s	PIN	10^{-12}	(XX+1)m	0~ 70 ºC	Available	Compliant
78D-Z010-xxM	850nm VCSEL	25.78Gb/s	PIN	10^{-12}	(XX+1)m	0~ 70 ºC	Available	Compliant
78N-Z010-xxM	850nm VCSEL	25.78Gb/s	PIN	10^{-12}	(XX+1)m	0~ 70 ºC	Available	Compliant

NOTES:

1. 78-Z010-xxM compatible with Generic.
2. 78C- Z010-xxM compatible with Cisco.
3. 78A- Z010-xxM compatible with Arista.
4. 78D- Z010-xxM compatible with Dell.
5. 78N- Z010-xxM compatible with Nokia.

Absolute Maximum Ratings						
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Storage Temperature	Ts	-40	-	85	ºC	-
Relative Humidity	Rh	5	-	95	%	-
Supply Voltage	Vcc	-0.5	-	4.0	V	-

Recommended Operating Conditions						
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Operating Case Temperature	Tc	0	25	70	ºC	-
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	-
Power Supply Current	Icc	-	-	1060	mA	-
Data Rate	-	-	25.78125	-	Gb/s	-
Bit Error Date	-	-	-	10^{-12}	-	-

Electrical Characteristics							
Parameter		**Symbol**	**Min**	**Typical**	**Max**	**Unit**	**Notes**
Module Supply Current		Icc	-	-	1060	mA	-
Power Dissipation		P_D	-	-	3.500	mW	-
Transmitter							
Differential Input Impedance		Zind	90	100	110	Ω	-
Differential Data Input Swing		$V_{IN,P-P,}$	180	-	1000	mVpp	-
TX_FAULT	Transmitter Fault	V_{OH}	2.0	-	Vcc	V	-
	Normal Operation	V_{OL}	0	-	0.8	V	-
TX_DISABLE	Transmitter Disable	V_{IH}	2.0	-	Vcc	V	-
	Transmitter Enable	V_{IL}	0	-	0.8	V	-
Receiver							
Differential Output Impedance		Zout	90	100	110	Ω	-
Differential Data Output Swing		$V_{OUT,P-P}$	300	-	850	mV	1
Data Output Rise Time, Fall Time		Tr/Tf	28	-	-	ps	2
RX_LOS	Loss of Signal (LOS)	V_{OH}	2.0	-	Vcc	V	-
	Normal Operation	V_{OL}	0	-	0.8	V	-

NOTES:

1. Internally AC coupled, but requires a external 100Ω differential load termination.
2. 20-80%.
3. LOS is an open collector output. Should be pulled up with 4.7KΩ on the host board.

Pin Description			
Pin	**Name**	**Description**	**Notes**
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	-
3	Tx2+	Transmitter Non-Inverted Data output	-
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	-
6	Tx4+	Transmitter Non-Inverted Data output	-
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2

Pin	Name	Description	Notes
10	VccRx	3.3V Power Supply Receiver	-
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	-
15	Rx3-	Receiver Inverted Data Output	-
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	-
18	Rx1-	Receiver Inverted Data Output	-
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	-
22	Rx2+	Receiver Non-Inverted Data Output	-
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	-
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	-
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	-
30	Vcc1	3.3V power supply	-
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	-
34	Tx3-	Transmitter Inverted Data Output	-
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	-
37	Tx1-	Transmitter Inverted Data Output	-
38	GND	Transmitter Ground (Common with Receiver Ground)	1

NOTES:

1. GND is the symbol for signal and supply (power) common for QSFP+ modules. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1 and VccTx are the receiving and transmission power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP+ transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

Pin Assignment

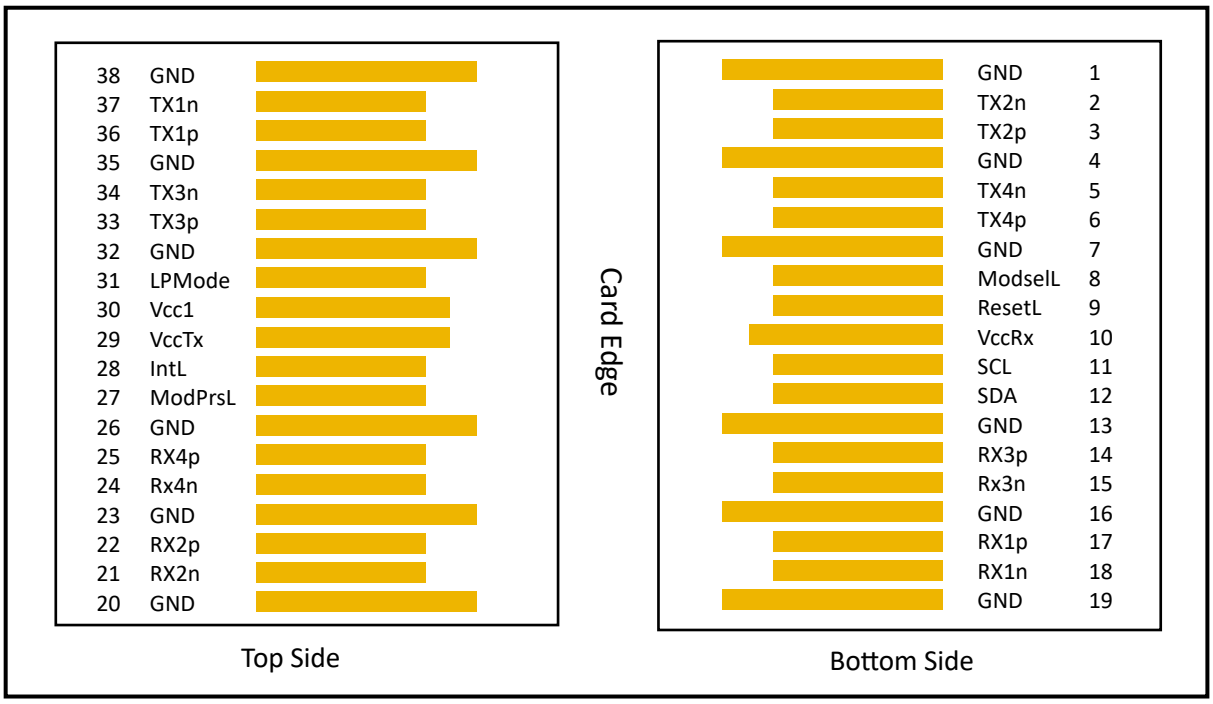
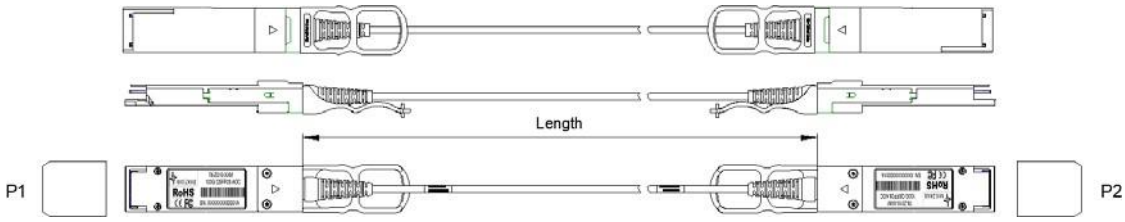


Figure 1. Pin out of Connector Block on Host Board

Mechanical Dimension



Safety & Handling

Electrostatic Discharge (ESD):
This device is sensitive to electrostatic discharge. Always handle in an ESD-protected environment and follow industry-standard grounding and anti-static procedures to prevent potential damage.

Laser Safety:
The integrated optical components emit laser radiation that may be harmful to the eyes. Avoid direct or indirect exposure to the optical port when the device is powered.

Electrical Interface

