160-9401-900-2DW54-AO

Ciena® 160-9401-900-2DW54 Compatible TAA 100GBase-DWDM 100GHz PAM4 QSFP28 Transceiver (SMF, 1534.25nm, 80km w/EDFA/DCM, LC, DOM)

Features

- SFF-8665 Compliance
- 100GHz DWDM ITU Grid
- Duplex LC Connector
- Commercial Temperature 20 to 70 Celsius
- Hot Pluggable
- Single-mode Fiber
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free

Applications

- 100GBase Ethernet
- Access, Metro and Enterprise

Product Description

This Ciena® 160-9401-900-2DW54 compatible QSFP28 transceiver provides 100GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1534.25nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Ciena® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

Rev. 090122

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Wavelength Guide (100GHz ITU-T Channel)

Channel #	Frequency (GHz)	Wavelength (nm)	Frequency (GHz)	Wavelength (nm)
	L0		L1	
16	191600	1564.68	191650	1564.27
17	191700	1563.86	191750	1563.45
18	191800	1563.05	191850	1562.64
19	191900	1562.23	191950	1561.83
20	192000	1561.42	192050	1561.01
21	192100	1560.61	192150	1560.2
22	192200	1559.79	192250	1559.39
23	192300	1558.98	192350	1558.58
24	192400	1558.17	192450	1557.77
25	192500	1557.36	192550	1556.96
26	192600	1556.56	192650	1556.15
27	192700	1555.75	192750	1555.34
28	192800	1554.94	192850	1554.54
29	192900	1554.13	192950	1553.73
30	193000	1553.33	193050	1552.93
31	193100	1552.52	193150	1552.12
32	193200	1551.72	193250	1551.32
33	193300	1550.92	193350	1550.52
34	193400	1550.12	193450	1549.72
35	193500	1549.32	193550	1548.91
36	193600	1548.52	193650	1548.11
37	193700	1547.72	193750	1547.32
38	193800	1546.92	193850	1546.52
39	193900	1546.12	193950	1545.72
40	194000	1545.32	194050	1544.92
41	194100	1544.53	194150	1544.13
42	194200	1543.73	194250	1543.33
43	194300	1542.94	194350	1542.54
44	194400	1542.14	194450	1541.75
45	194500	1541.35	194550	1540.95
46	194600	1540.56	194650	1540.16
47	194700	1539.77	194750	1539.37
48	194800	1538.98	194850	1538.58

49	194900	1538.19	194950	1537.79
50	195000	1537.4	195050	1537
51	195100	1536.61	195150	1536.22
52	195200	1535.82	195250	1535.43
53	195300	1535.04	195350	1534.64
54	195400	1534.25	195450	1533.86
55	195500	1533.47	195550	1533.07
56	195600	1532.68	195650	1532.29
57	195700	1531.9	195750	1531.51
58	195800	1531.12	195850	1530.72
59	195900	1530.33	195950	1529.94
60	196000	1529.55	196050	1529.16
61	196100	1528.77	196150	1528.38

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Signal Input Voltage	Vin	-0.5		Vcc+0.5	V
Power Supply Voltage	Vcc	-0.5		3.6	°C
Storage Temperature	TS	5		85	°C
Operating Temperature	Tcase	20		70	°C

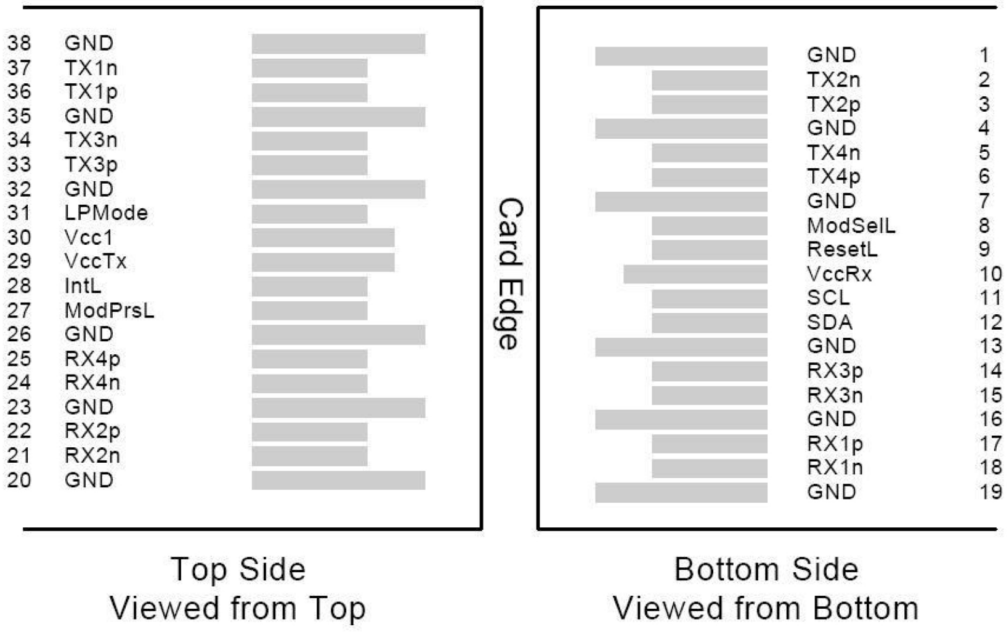
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Dissipation	P_D		4	5	W	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Wavelength	λC	1480	λ	1580	nm	
Channel Spacing	Δf		100		GHz	
Optical Extinction Ratio	ER		6		dB	
Side-Mode Suppression Ratio	SMSR	30			dB	
Spectral Width	Δλ		+/-25	1	GHz	
Optical Transmit Power	Pout/lane	-11	-10	-8	dBm	
Receiver						
Optical Wavelength	λC	1480		1580	nm	
Receiver Max. Sensitivity	Pmin	-3	-2.5	-2	dBm	
Damage Threshold	Pmax	10			dBm	
Optical Return Loss	ORL			20	dBm	
LOS Hysteresis	LOSH		1.0		dB	
LOS Assert	LOSA	-10			dBm	
LOS De-Assert	LOSD			-3	dBm	

Electrical Pin-out Details



Pin Descriptions

Pin	Logic	Symbol	Name/Descriptions	Plug Sequence	Ref.
1		GND	Ground	1	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	3	
4		GND	Ground	1	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	3	
7		GND	Ground	1	1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		VccRx	+3.3V Power Supply Receiver	2	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	1
14	CML-O	Rx3p	Receiver Non-Inverted Data output	3	
15	CML-O	Rx3n	Receiver Inverted Data output	3	
16		GND	Ground	1	1
17	CML-O	Rx1p	Receiver Non-Inverted Data output	3	
18	CML-O	Rx1n	Receiver Inverted Data output	3	
19		GND	Ground	1	1
20		GND	Ground	1	1
21	CML-O	Rx2n	Receiver Inverted Data output	3	
22	CML-O	Rx2p	Receiver Non-Inverted Data output	3	
23		GND	Ground	1	1
24	CML-O	Rx4n	Receiver Inverted Data output	3	
25	CML-O	Rx4p	Receiver Non-Inverted Data output	3	
26		GND	Ground	1	1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29		VccTx	+3.3V Power Supply Transmitter	2	2
30		Vccl	+3.3V Power Supply	2	2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	1

Notes:

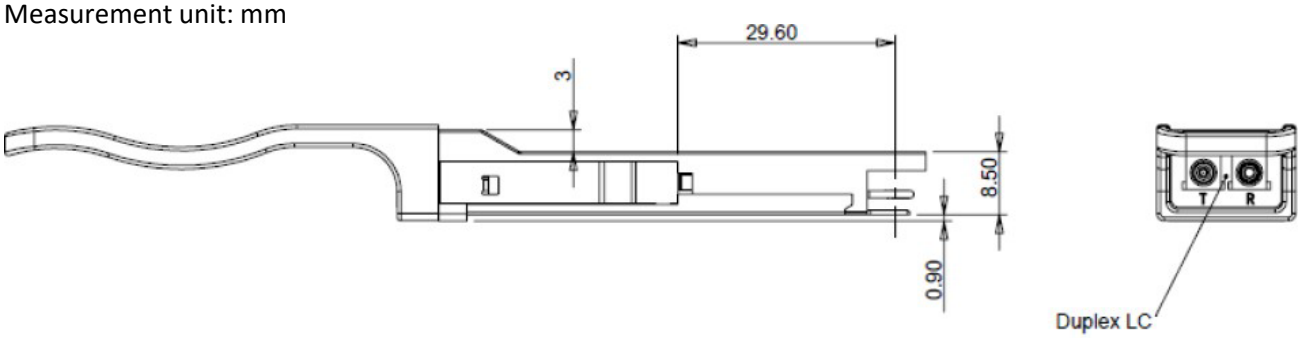
1. GND is the symbol for signal and supply (power) common for the QSFP28 module. All are common within the QSFP28 module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. VccRx, Vcc1 and VccTx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figures 3 and 4. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP28 Module in any combination. The connector pins are each rated for a maximum current of 500Ma.

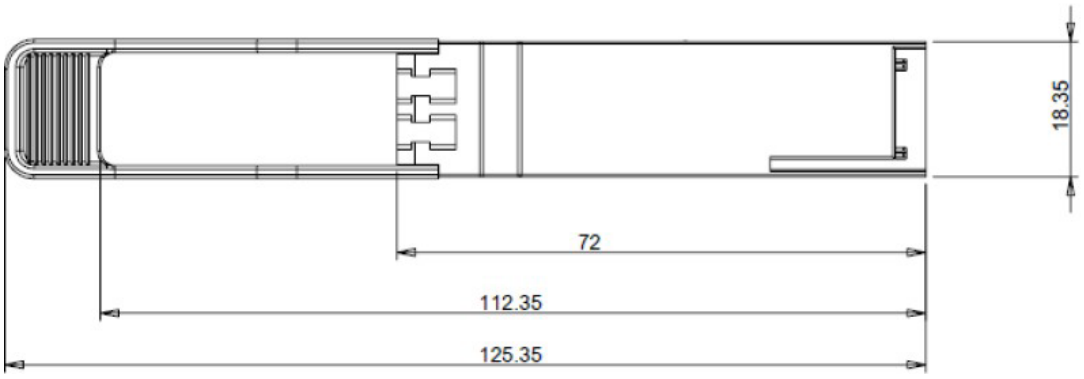
DOM Specifications

Parameter	Min.	Typ.	Max.	Unit
Receive Power Monitor Accuracy	-2		2	dB
Transmit Power Monitor	-2		2	dB
Laser Bias Current Monito Accuracy	-10		10	%
Transceiver Temperature Monitor Accuracy	-5		5	˚C
Internally Measured Transceiver Supply Voltage			3	%

Mechanical Specifications

Measurement unit: mm





About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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