B-730-0005-045-C

Ciena® B-730-0005-045 Compatible TAA 1000Base-DWDM SFP Transceiver 100GHz (SMF, 1541.35nm, 80km, LC, DOM)

Features:

- INF-8074 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- Gigabit Ethernet over DWDM
- 1x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Ciena® B-730-0005-045 compatible SFP transceiver provides 1000Base-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1541.35nm 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.

ProLabs' 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. 022823

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)

ITU Channel	Frequency (THZ)	Center Wavelength (nm)
61	196.1	1528.77
60	196.0	1529.55
59	195.9	1530.33
58	195.8	1531.12
57	195.7	1531.90
56	195.6	1532.68
55	195.5	1533.47
54	195.4	1534.25
53	195.3	1535.04
52	195.2	1535.82
51	195.1	1536.61
50	195.0	1537.40
49	194.9	1538.19
48	194.8	1538.98
47	194.7	1539.77
46	194.6	1540.56
45	194.5	1541.35
44	194.4	1542.14
43	194.3	1542.94
42	194.2	1543.73
41	194.1	1544.53
40	194.0	1545.32
39	193.9	1546.12
38	193.8	1546.92
37	193.7	1547.72
36	193.6	1548.51
35	193.5	1549.32
34	193.4	1550.12
33	193.3	1550.92
32	193.2	1551.72
31	193.1	1552.52
30	193.0	1553.33
29	192.9	1554.13
28	192.8	1554.94
27	192.7	1555.75
26	192.6	1556.55
25	192.5	1557.36

24	192.4	1558.17
23	192.3	1558.98
22	192.2	1559.79
21	192.1	1560.61
20	192.0	1561.42
19	191.9	1562.23
18	191.8	1563.05
17	191.7	1563.86

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-5	70	°C
Relative Humidity	RH	5	95	%
Supply Voltage	Vcc	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Supply Voltage	Vcc	3.13	3.30	3.47	V
Power Supply Current	Icc			450	mA
Case Operating Temperature – Commercial	T_A	0		70	°C

Electrical Characteristics (TOP=25°C, Vcc=3.3V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Transmit Input Differential Voltage (TD +/-)		200		2400	mVp-p	1
TX Disable-High		2.0		3.45	V	
TX Disable-Low		0		0.8	V	
TX Fault Output Voltage-High		2.0		Vcc	V	3
TX Fault Output Voltage-Low		0		0.5	V	4
Receiver						
Recieve Input Differential Voltage (RD +/-)		600		1200	mVp-p	5
Output Differential Impedance	Zout	85	100	115	ohms	
Rx_LOS Output Voltage-High		2.0		Vcc	V	3
Rx_LOS Output Voltage-Low		0		0.8	V	4
MOD_DEF (0:2)	VoH	2.0		Vcc	V	6
	VoL	0		0.0	V	

Notes:

1. AC coupled and terminated to 100Ω differential load.
2. Rin > 100 kohms @DC.
3. lo = 400µA; Host Vcc.
4. lo = -4.0mA.
5. Internally AC coupled, but requires a 100Ω differential termination or internal to Serializer/Deserializer.
6. With Serial ID.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Channel Spacing	Δf		100		GHz	
Wavelength Stability	$\Delta_{\lambda c}$	--0.1		-0.1	nm	
Average Output Power	Pout	0		5	dB	
Dispersion Penalty				3	dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	EX	8.2			dB	
Spectral Width (-20dB)				0.3	nm	
Optical Rise/Fall Time (20%~~80%)	tr/tf			260	ps	
Output Optical Eye	IUT-T G.957 Compliant					
Receiver						
Receive Wavelength	C	1528		1564	nm	
Receiver Sensitivity	Se			-24	dBm	1
Receiver Overload	Pmax	-1			Ω	
LOS De-Assert	LOSD			-25	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis		0.5			V	

Notes
1. Measured with PRBS 27-1 test pattern, 1.25Gb/s, EX=8dB, BER<10^{-12}.

Pin Descriptions

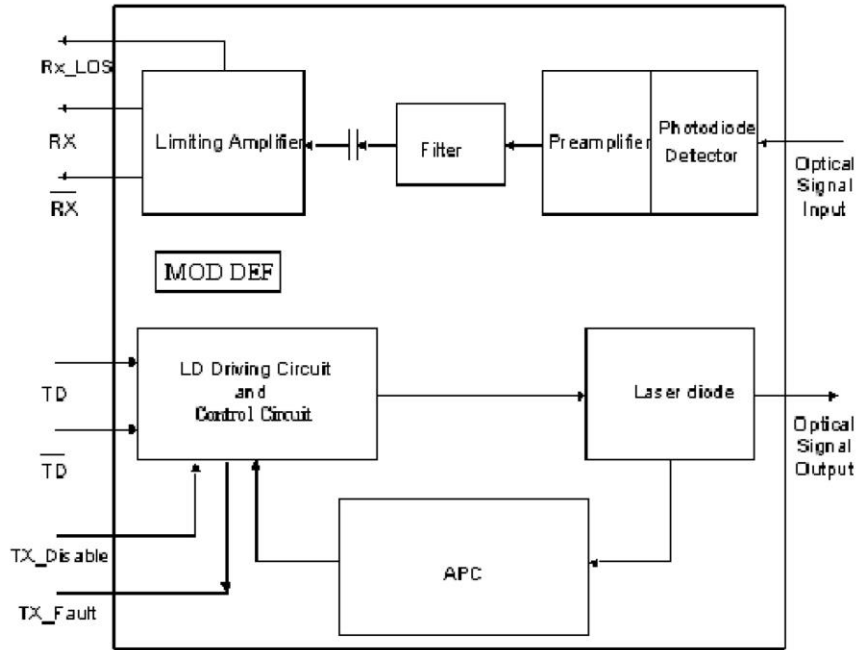| Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	
2	TX Fault	Transmitter Fault Indication	1
3	TX Disable	Transmitter Disable-Module. Laser output disables on high or open.	2
4	MOD DEF (2)	Module Definition 2. Two wire serial ID interface.	3
5	MOD_DEF (1)	Module Definition 1. Two wire serial ID interface.	3
6	MOD_DEF (0)	Module Definition 0. Two wire serial ID interface.	3
7	Rate Select	No connection required.	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VeeR	Receiver Ground (Common with Transmitter Ground)	
10	VeeR	Receiver Ground (Common with Transmitter Ground)	
11	VeeR	Receiver Ground (Common with Transmitter Ground)	
12	RD-	Receiver Inverted DATA out. AC Coupled.	5
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	5
14	VeeR	Receiver Ground (Common with Transmitter Ground)	
15	VccR	Receiver Power Supply +3.3 V±5%.	6
16	VccT	Transmitter Power Supply +3.3 V±5%.	6
17	VeeT	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	7
19	TD-	Transmitter Inverted DATA in. AC Coupled.	7
20	VeeT	Transmitter Ground (Common with Receiver Ground)	

Notes:

1. TX Fault is open collector/drain output, which should be pulled up externally with a 4.7K – 10KΩ resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to <0.8V.

2. TX Disable input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7 –10K resistor. Low (0 – 0.8V): Transmitter on Between (0.8V and 2V): Undefined High (2.0 – VccT): Transmitter Disabled Open: Transmitter Disabled

3. Mod-Def 0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7 - 10K resistor on the host board to supply less than VccT+0.3V or VccR+0.3V. Mod-Def 0, is grounded by the module to indicate that the module is present. Mod-Def 1 is clock line of two-wire serial interface for optional serial ID. Mod-Def 2 is data line of two-wire serial interface for optional serial ID.

4. LOS (Loss of signal) is an open collector/drain output, which should be pulled up externally with a

4.7 – 10K resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to<0.8V.

5. RD-/+: These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω differential at the user SERDES. The AC coupling is done inside the module and thus not required on the host board.

6. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V±5% at the SFP connector pin. The in-rush current will typically be no more than 30mA above steady state supply current after 500ns.

7. TD-/+: These are the differential transmitter inputs. They are AC coupled differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on host board.
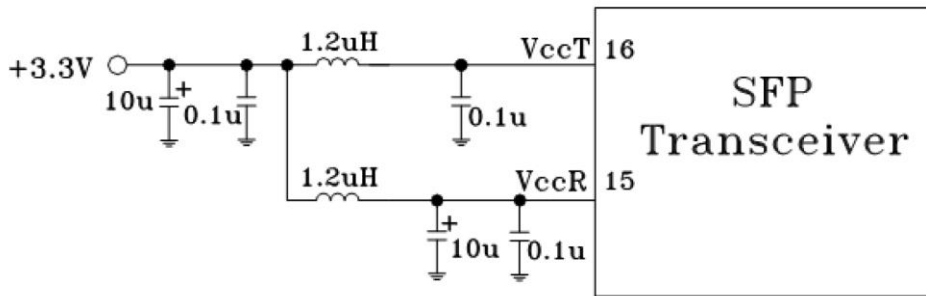
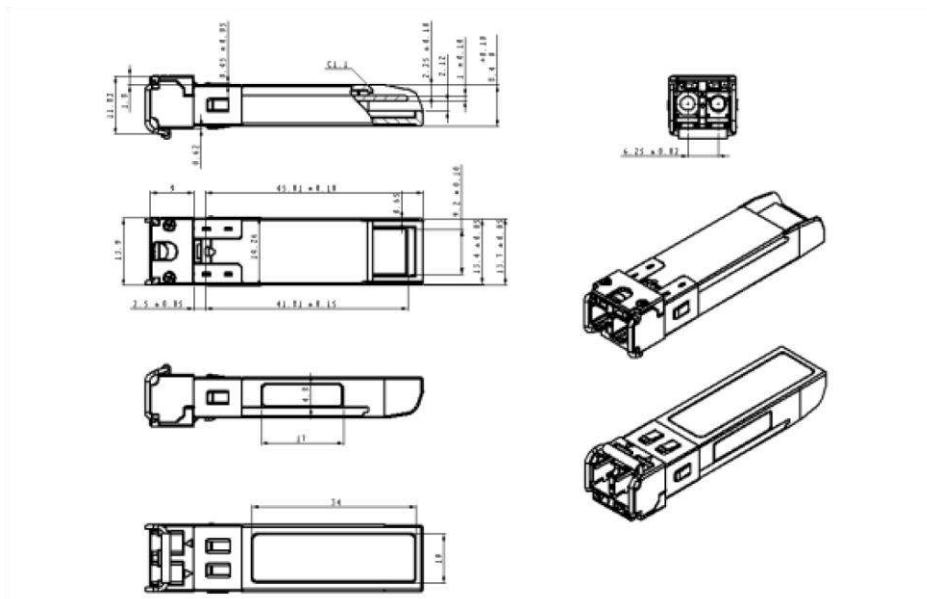|	Top of Board			Bottom of Board
20	VeeT		1	VeeT
19	TD-		2	Tx_Fault
18	TD+		3	Tx_disable
17	VeeT		4	MOD-DEF(2)
16	VccT		5	MOD-DEF(1)
15	VccR		6	MOD-DEF(0)
14	VeeR		7	Rate Select
13	RD+		8	LOS
12	RD-		9	VeeR
11	VeeR		10	VeeR
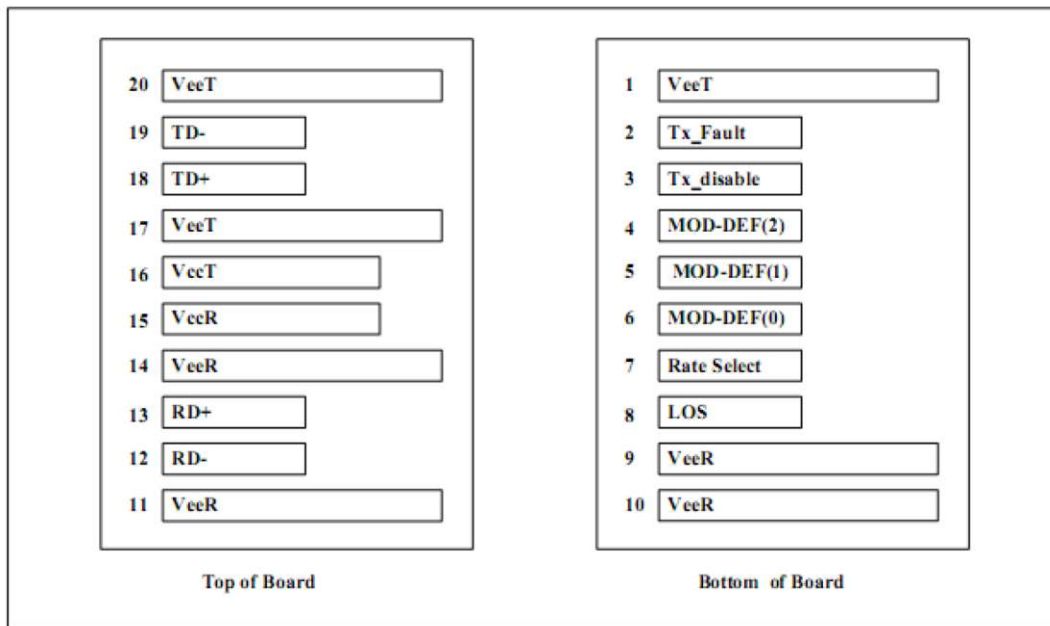
SFP Transceiver Electrical Pad Layout

Block Diagram

Required Host Board Components

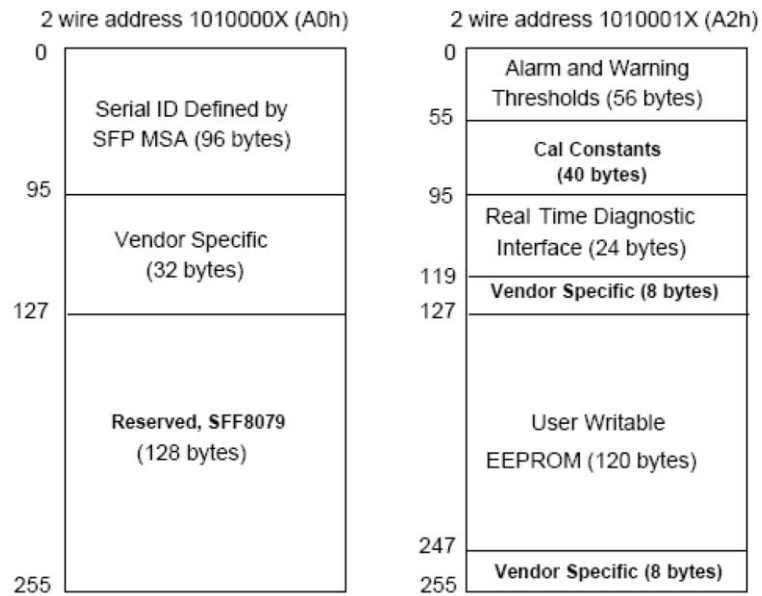**Mechanical Specifications**

EEPROM Information

EEPROM memory map specific data field description is as below:

2 wire address 1010000X (A0h)

```
0
        Serial ID Defined by
        SFP MSA (96 bytes)
95
        Vendor Specific
        (32 bytes)
127
        Reserved, SFF8079
        (128 bytes)
255
```

2 wire address 1010001X (A2h)

```
0
        Alarm and Warning
        Thresholds (56 bytes)
55
        Cal Constants
        (40 bytes)
95
        Real Time Diagnostic
        Interface (24 bytes)
119
        Vendor Specific (8 bytes)
127
        User Writable
        EEPROM (120 bytes)
247
        Vendor Specific (8 bytes)
255
```

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>500 V) Isolation with the case
Electromagnetic Interference (EMI)	FCC Part 15 Class B	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class 1 laser product. Compatible with TµV standards
Component Recognition	UL and CUL	UL file E317337
Environmental	RoHS	RoHS6

About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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