

### EX-SFP-10GE-CWE37-PRO

Juniper Networks® EX-SFP-10GE-CWE37 Compatible TAA Compliant 10GBase-CWDM SFP+ Transceiver (SMF, 1370nm, 40km, DOM, 0 to 70C, LC)

#### Features

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



#### Applications:

- 10x Gigabit Ethernet over CWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise
- Mobile Fronthaul CPRI/OBSAI

#### Product Description

This Juniper Networks® EX-SFP-10GE-CWE37 compatible SFP+ transceiver provides 10GBase-CWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1370nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Juniper Networks® 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.

Proline'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.



### CWDM Available Wavelengths

Wavelengths	Min.	Typ.	Max.
27	1264.5	1271	1277.5
29	1284.5	1291	1297.5
31	1304.5	1311	1317.5
33	1324.5	1331	1337.5
35	1344.5	1351	1357.5
37	1364.5	1371	1377.5
39	1384.5	1391	1397.5
41	1404.5	1411	1417.5
43	1424.5	1431	1437.5
45	1444.5	1451	1457.5

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5		3.6	V
Storage Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Relative Humidity (Non-Condensing)	RH	0		85	%
Data Rate	DR	0.6	9.953/10.3125		Gbps

### Notes:

1. Exceeding any one of these values may destroy the device immediately.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	3.15	3.30	3.43	V	
Power Consumption	P <sub>DISS</sub>			1.5	W	
<b>Transmitter</b>						
CML Differential Inputs	V <sub>IN</sub>	150		1200	mVp-p	AC Coupled Inputs
Input AC Common-Mode Voltage		0		25	mV	RMS
Input Differential Impedance	Z <sub>IN</sub>	85	100	115	Ω	R <sub>IN</sub> >100kΩ @DC
Tx_Disable	High	2		V <sub>CC</sub>	V	
	Low	0		0.8		
Tx_Fault	High	2		V <sub>CC</sub> +0.3	V	I <sub>o</sub> = 400μA; Host_V <sub>CC</sub>
	Low	0		0.5		I <sub>o</sub> = -4.0mA
<b>Receiver</b>						
CML Differential Outputs	V <sub>OUT</sub>	350		700	mVp-p	AC Coupled Outputs
Output Differential Impedance	Z <sub>OUT</sub>	85	100	115	Ω	
Rx_LOS	High	2		V <sub>CC</sub> +0.3		I <sub>o</sub> = 400μA; Host_V <sub>CC</sub>
	Low	0		0.8		I <sub>o</sub> = -4.0mA
MOD_DEF(0.2)	VOH	2.5			V	With Serial ID
	VOL	0		0.5	V	With Serial ID

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Center Wavelength	$\lambda_C$	$\lambda-6.5$	$\lambda$	$\lambda+6.5$	nm	
Average Output Power	POUT	0		6	dBm	1
Extinction Ratio	ER	3.5		dB	dB	
Average Power of Off Transmitter	P <sub>off</sub>			-30	dBm	
Side-Mode Suppression Ratio	SMSR	30		dB		
-20dB Spectral Width	$\Delta\lambda$			1	nm	
Transmitter Dispersion Penalty	TDP			3	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Tx_Disable Assert Time	T <sub>off</sub>			10	us	
<b>Receiver</b>						
Center Wavelength	$\lambda_C$	1260		1620	nm	
Receiver Sensitivity	P <sub>min</sub>			-15	dBm	2
Receiver Overload	P <sub>max</sub>	0		dBm	nm	
LOS De-Assert	LOSD			-17	dBm	
LOS Assert	LOSA	-28		dBm		
LOS Hysteresis	LOSH	0.5		dB		

### Notes:

1. Output is coupled into a 9/125 $\mu$ m SMF.
2. Measured with worst ER, BER less than  $1E^{-12}$ , and PRBS  $2^{31}-1$  @10.3125Gbps.

## Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. LVTTTL-O.	2
3	Tx_Disable	Transmitter Disable. Laser output disabled on “high” or “open.” LVTTTL-I.	3
4	SDA	2-Wire Serial Interface Data (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.	
5	SCL	2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.	
6	MOD_ABS	Module Absent. Connect to the VeeT or VeeR in the module.	4
7	RS0	Rate Select 0. Not Used.	5
8	LOS	Loss of Signal Indication. “Logic 0” indicates normal operation. LVTTTL-O.	2
9	RS1	Rate Select 1. Not Used.	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted Data Out. AC Coupled. CML-O.	
13	RD+	Receiver Non-Inverted Data Out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted Data In. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted Data In. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

### Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Host\_Vcc with resistor in the range 4.7kΩ to 10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contact has a voltage exceeding the module VccT/R+0.5V.
3. Tx\_Disable is an input contact with a 4.7kΩ to 10kΩ pull-up resistor to the VccT inside the module.
4. MOD\_ABS is connected to the VeeT or VeeR in the SFP+ module. The host may pull the contact up to the Host\_Vcc with a resistor in the range from 4.7kΩ to 10kΩ. MOD\_ABS is asserted “high” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.



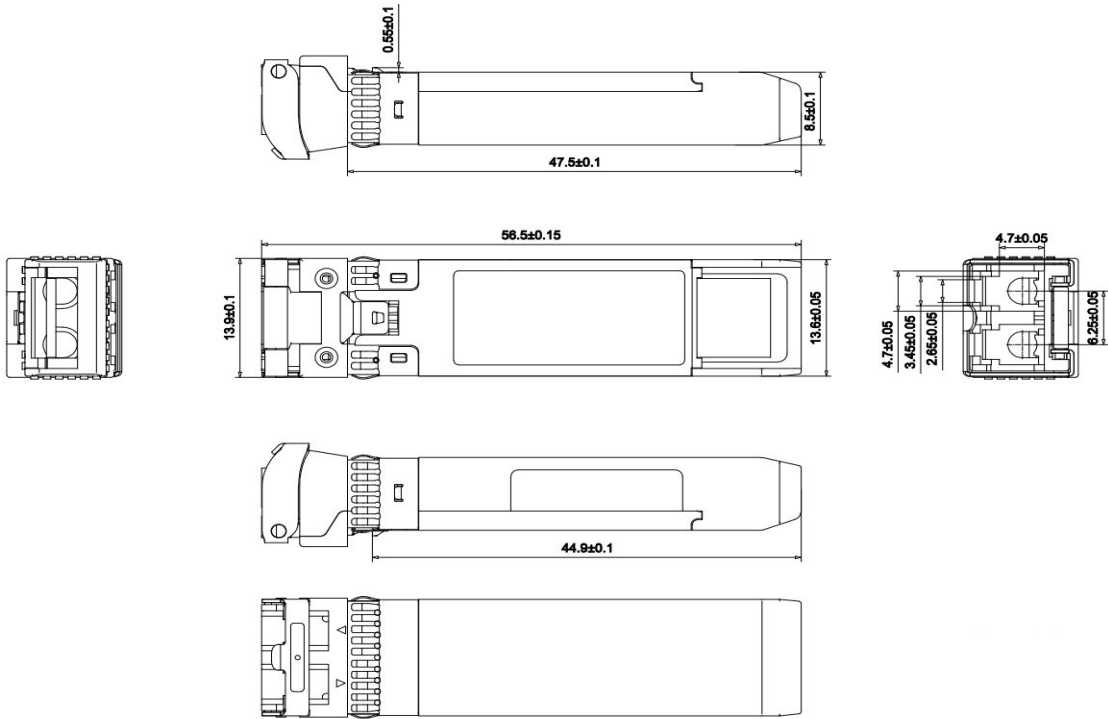
Pin-Out of Connector Block on the Host Board

Recommended Circuit Schematic



## Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



**About Us:**

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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