

### SFP-6D-PRO

Rad® SFP-6D Compatible TAA Compliant 1000Base-LX SFP Transceiver (SMF, 1310nm, 10km, DOM, 0 to 70C, LC)

#### Features

- INF-8074 and SFF-8472 Compliance
- Fabry Perot transmitter and PIN receiver
- 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:

- 1000Base-LX Ethernet
- 1x Fibre Channel
- Access and Enterprise

#### Product Description

This Rad® SFP-6D compatible SFP transceiver provides 1000Base-LX throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Rad® 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.



## Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	V <sub>CC</sub>	-0.5	4.0	V
Storage Temperature	T <sub>stg</sub>	-40	85	°C
Operating Case Temperature	T <sub>c</sub>	0	70	°C
Operating Humidity	RH	5	85	%
Receiver Power	R <sub>MAX</sub>		0	dBm
Maximum Bitrate	B <sub>max</sub>		1.25	Gbps

## Electrical Characteristics (T<sub>c</sub>=25°C, V<sub>CC</sub>=3.3 Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	3.15	3.30	3.43	V	
Power Supply Current	I <sub>CC</sub>			303	mA	
Power Consumption				1	W	
<b>Transmitter</b>						
Differential Data Input Swing	V <sub>IN,pp</sub>	120		850	mV	
Input Differential Impedance	Z <sub>IN</sub>	80	100	120	Ω	
<b>Receiver</b>						
Differential Data Output Swing	V <sub>OUT,pp</sub>	300		850	mV	
Output Differential Impedance	Z <sub>IN</sub>	80	100	120	Ω	

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Optical Power (Average)	P <sub>AVE</sub>	-9.5		-3	dBm	1
Optical Extinction Ratio	ER	9			dB	
Optical Wavelength	Tλ	1270	1310	1355	nm	
Insertion Loss	IL		0.6			
<b>Receiver</b>						
Receiver Sensitivity (Average)	R <sub>AVE</sub>			-24	dBm	3
Receiver Overload	P <sub>max</sub>	0			dBm	4
Optical Return Loss	ORL	12			dB	
Receiver Wavelength	Rλ	1260		1565	nm	

### Notes:

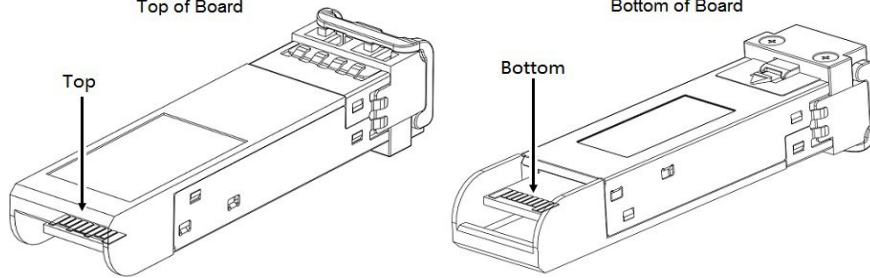
1. Coupled into a single-mode fiber.
2. Per IEEE 802.3ah specification.
3. Average power, back-to-back, @1.25Gbps, BER 1E<sup>-12</sup>, and PRBS 2<sup>31</sup>-1.
4. Exceeding the Receiver Overload can physically damage the module. Please use appropriate attenuation.

## Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. Not Supported.	
3	Tx_Disable	Transmitter Disable. Laser output disabled on “high” or “open.”	2
4	MOD_DEF (2)	Module Definition 2. Data Line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock Line for Serial ID.	3
6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	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).	1
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.	
13	RD+	Receiver Non-Inverted Data Out. AC Coupled.	
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.	
19	TD-	Transmitter Inverted Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

### Notes:

1. The circuit ground is isolated from the chassis ground.
2. Disabled:  $T_{DIS} > 2V$  or Open, Enabled:  $T_{DIS} < 0.8V$ .
3. Should be pulled up with  $4.7k\Omega$  to  $10k\Omega$  on the host board to a voltage between 2V and 3.6V.
4. LOS is an open collector output.



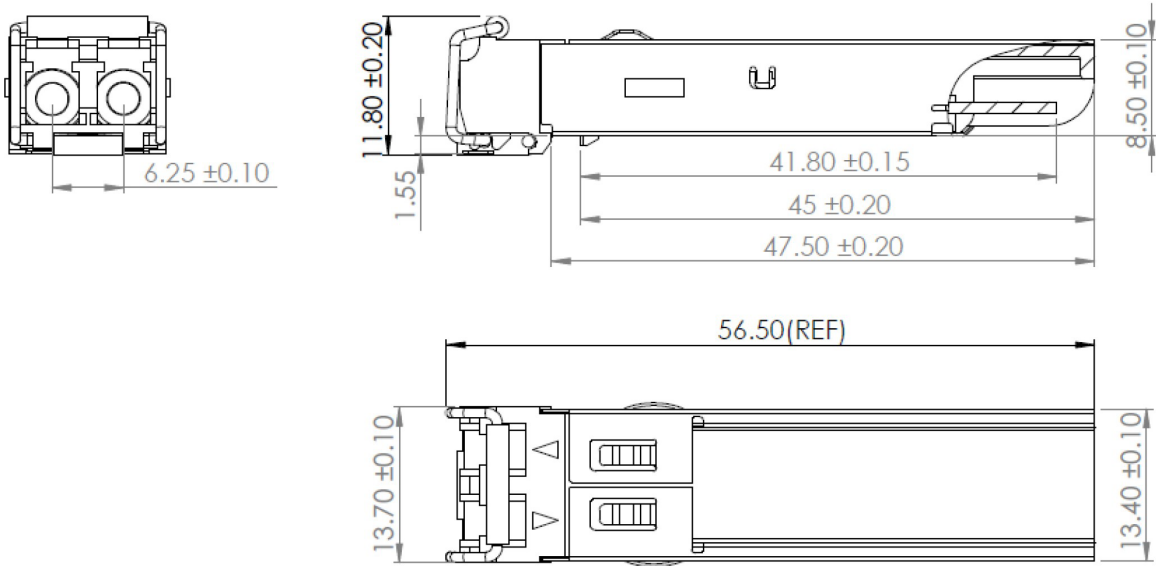
Pin-Out of Connector Block on the Host Board

### Recommended Circuit Schematic



### Mechanical Specifications

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



### EEPROM Information

EEPROM memory map-specific data field description is as below:

2 wire address 1010000X (A0h)		2 wire address 1010001X (A2h)	
0	Serial ID Defined by SFP MSA (96 bytes)	0	Alarm and Warning Thresholds (56 bytes)
95		55	Cal Constants (40 bytes)
	Vendor Specific (32 bytes)	95	Real Time Diagnostic Interface (24 bytes)
127		119	Vendor Specific (8 bytes)
	Reserved, SFF8079 (128 bytes)	127	User Writable EEPROM (120 bytes)
		247	
255		255	Vendor Specific (8 bytes)

**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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