

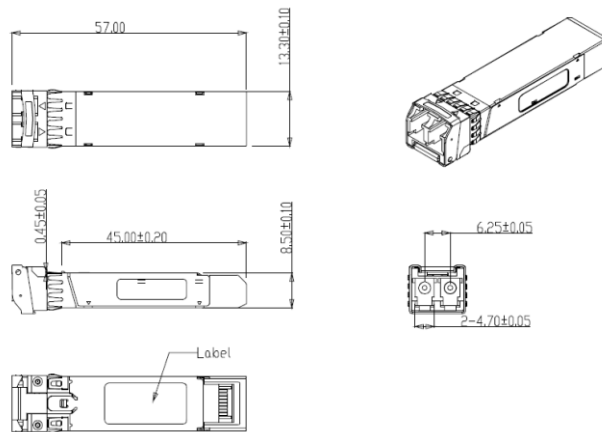


- Supports from 1.25Gbps to 10.3Gbps Operation
- 850nm VCSEL Transmitter & Pin Photo-Detector
- Supports Links up to 300m on 2000MHz/km MMF
- Optical Interface Compliant to IEEE 802.3ae
- Low Power Consumption
- Advanced Firmware - System Encryption stored in Transceiver
- Single +3.3V power Supply
- Hot Pluggable
- 0°C ~ +70°C Operating Temperature

## Overview:

The PDT-SFP-03-10G-850-0030 is a low-cost, high-performance Small Form Pluggable (SFP) transceiver which is specifically designed for fiber communications with up to 10Gbps data rate, using OM3 MMF, over a distance of up to 300m. This VCSEL 10 Gigabit SFP+ Transceiver is designed to transmit and receive optical data over 50/125µm or 62.5/125µm multimode optical fiber (See Datasheet Tables). This is the commercial variant of this product and a wider temperature range variant is also available as part of the Industrial SFP Product Line. This product is compatible with Cisco and Parallax Digital Technologies products, as well as many other leading manufacturers.

## Mechanical Data




## Ordering Information

Model	Description	Part No
PDT-SFP-03-10G-850-0030	10 Gbps SFP+ 1000 BASE-SR LC Om3 MMF 850nm - 300m - 0~70°C	0020-00011

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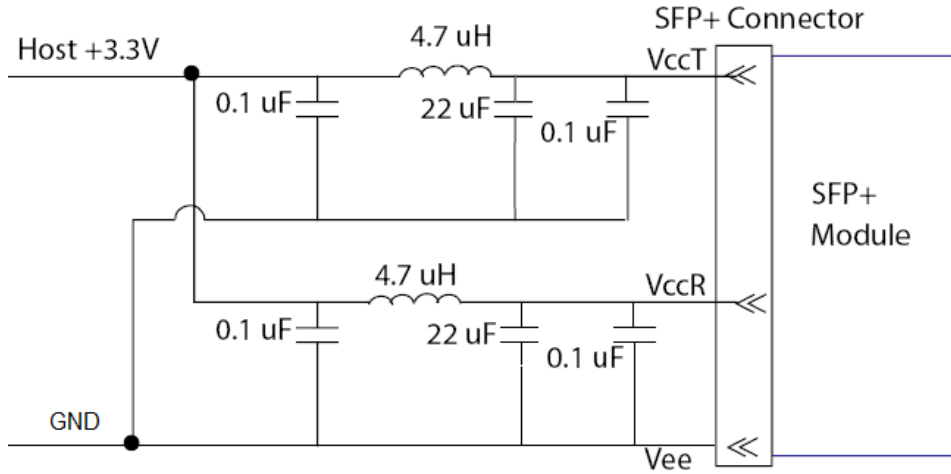


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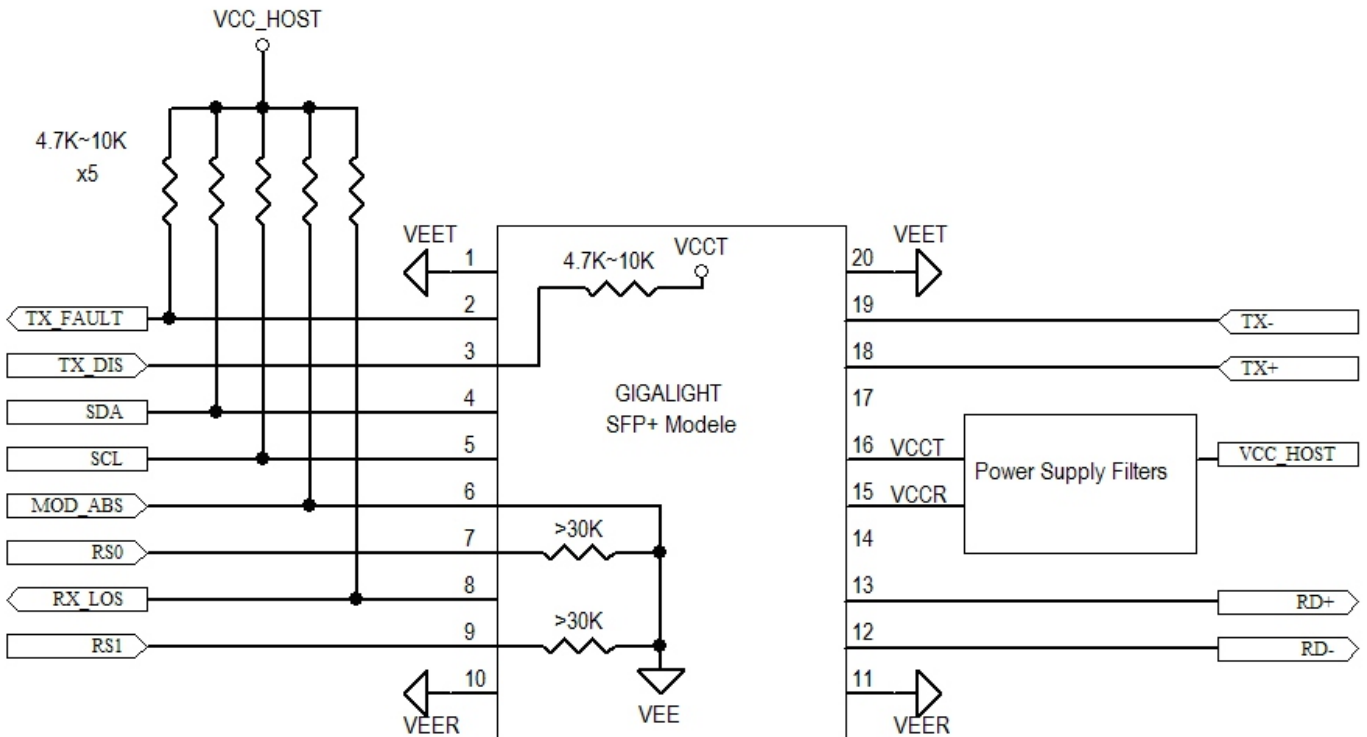
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**Host Board Power Supply Filters Circuit**



**Host Module Interface**

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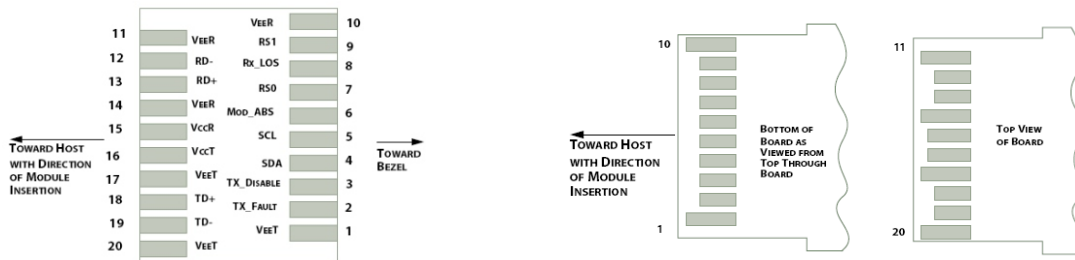


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### Pin Definitions

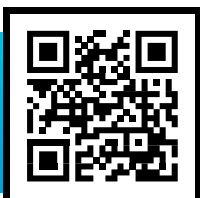
Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground



Notes:

- 1 - Module Circuit GND is isolated from the Module Chassis GND within the module.
- 2 - This should be pulled up with 4.7kΩ~10kΩ Ohm resistor on the host board to a voltage between 3.15V and 3.6V.
- 3 - Tx Disable is an input contact with a 4.7kΩ to 10kΩ pull up resistor to VccT inside the module.
- 4 - Mod ABS is connected to VeeT or VeeR in the SFP+ Module. The host may pull this contact up to Vcc Host with a 4.7kΩ to 10kΩ pull up resistor. Mod ABS is asserted 'HIGH' when the SFP+ Module is physically absent from the host slot.
- 5 - RS0 and RS1 and module inputs and are pulled LOW to VeeT with >30kΩ resistors, in the module.

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Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_t$	840	850	860	nm	
Spectral Width (RMS)	Pm	-	-	Note1	nm	
Average Optical Power	Pavg	-6.5	-	-1	dBm	2
Extinction Ratio	ER	3.5			dB	3
Transmitter Dispersion Penalty	TDP	-	-	3.9	dB	
Relative Intensity Noise	Rin	-	-	-128	dB/Hz	12dB reflection
Optical Return Loss Tolerance		-	-	12	dB	
<b>Receiver</b>						
Centre Wavelength	$\lambda_r$	840	850	860	nm	
Receiver Sensitivity	Psens	-	-	-11.1	dBm	4
Stressed Sensitivity in OMA		-	-	-7.5	dBm	4
LOS function	LOS	-30	-	-12	dBm	
Overload	Pin	-	-	-1.0	dBm	4
Receiver Reflectance		-	-	-12	dB	

### Optical Characteristics

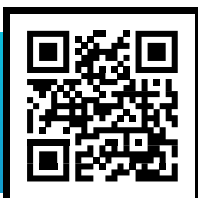
**Notes:**

1. Tradeoffs are available between spectral width, center wavelength and minimum OMA, as shown in the table below.
2. The optical power is launched into MMF.
3. Measured with a PRBS<sup>121</sup> test pattern @ 10.3125Gbps
4. Measured with a PRBS<sup>121</sup> testpattern @ 10.3125Gbps, BER  $\leq 1 \times 10^{-12}$

Center Wavelength (nm)	RMS Spectral width (nm)								
	Up to 0.05	0.05 to 0.1	0.1 to 0.15	0.15 to 0.2	0.2 to 0.25	0.25 to 0.3	0.3 to 0.35	0.35 to 0.4	0.4 to 0.45
840 to 842	-4.2	-4.2	-4.1	-4.1	-3.9	-3.8	-3.5	-3.2	-2.8
842 to 844	-4.2	-4.2	-4.2	-4.1	-3.9	-3.8	-3.6	-3.3	-2.9
844 to 846	-4.2	-4.2	-4.2	-4.1	-4.0	-3.8	-3.6	-3.3	-2.9
846 to 848	-4.3	-4.2	-4.2	-4.1	-4.0	-3.8	-3.6	-3.3	-2.9
848 to 850	-4.3	-4.2	-4.2	-4.1	-4.0	-3.8	-3.6	-3.3	-3.0
850 to 852	-4.3	-4.2	-4.2	-4.1	-4.0	-3.8	-3.6	-3.4	-3.0
852 to 854	-4.3	-4.2	-4.2	-4.1	-4.0	-3.9	-3.7	-3.4	-3.1
854 to 856	-4.3	-4.3	-4.2	-4.1	-4.0	-3.9	-3.7	-3.4	-3.1
856 to 858	-4.3	-4.3	-4.2	-4.1	-4.0	-3.9	-3.7	-3.5	-3.1
858 to 860	-4.3	-4.3	-4.2	-4.2	-4.1	-3.9	-3.7	-3.5	-3.2

### Minimum 10GBASE-SR OMA as a Function of Wavelength and Spectral Width

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Technical Data

Fiber Type	Min Modal Bandwidth @850nm MHz/*km	Range
62.5um MMF	160	2~26
	200	2~33
50um MMF	400	2~66
	500	2~82
	2000	2~300

**Performance vs Fiber**

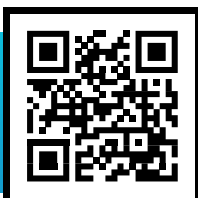
Parameter	Symbol	Min.	Typical	Max	Unit
Power Consumption				1	W
TX_Fault,RX_LOS	VOL	0		0.4	V
	VOH	Host_Vcc-0.5		Host_Vcc+0.3	V
TX_DIS	VIL	-0.3		0.8	V
	VIH	2.0		VCCT+0.3	V
RS0,RS1	VIL	-0.3		0.8	V
	VIH	2.0		VCCT+0.3	V

**Low Speed Characteristics**

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Data Rate		-	10.3125	-	Gbps	
Power Consumption		-	-	1000	mW	
<b>Transmitter</b>						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
C common mode voltage tolerance		15	-	-	mV	
Tx Input Diff Voltage	VI	400		1600	mV	
Tx Fault	VoL	-0.3		0.4	V	At 0.7mA
Data Dependent Input Jitter	DDJ			0.10	UI	
Data Input Total Jitter	TJ			0.28	UI	
<b>Receiver</b>						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
Rx Output Diff Voltage	Vo	300		850	mV	
Rx Output Rise and Fall Time	Tr/Tf	30			ps	20% to 80%
Total Jitter	TJ			0.70	UI	
Deterministic Jitter	DJ			0.42	UI	

**Electrical Characteristics**

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Technical Data

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	V <sub>CC</sub>	0	+3.6	V
Storage Temperature	T <sub>c</sub>	-40	+85	°C
Operating Case Temperature (Standard)	T <sub>c</sub>	0	+70	°C
Relative Humidity	RH	5	95	%
RX Input Average Power	P <sub>max</sub>	-	0	dBm

**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Typical	Max	Unit
Power Supply Voltage	V <sub>CC</sub>	3.135	3.300	3.465	V
Operating Case Temperature (Standard)	T <sub>c</sub>	0	25	70	°C

**Recommended Operating Conditions**

Feature	Agency	Standard	Certificate / Comments
Laser Safety	FDA	CDRH 21 CFR 1040 and Laser Notice No. 50	1120292-000
Product Safety	UL	UL and CUL EN60950-2:2007	E347511
Environmental protection	SGS	RoHS Directive 2002/95/EC	GZ1001008918/CHEM
EMC	WALTEK	EN 55022:2006+A1:2007 EN 55024:1998+A1+A2:2003	WT10093759-D-E-E

**Compliance Data**

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