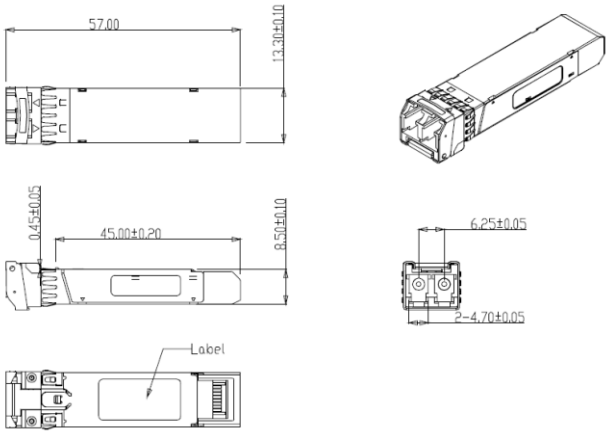
- **Supports from 1.25Gbps to 10.3Gbps Operation**
- **1310nm DFB laser and PIN Photodetector**
- **Supports Links up to 20km using SMF**
- **Compliant with IEEE 802.3ae**
- **Low Power Consumption**
- **Advanced Firmware - System Encryption stored in Transceiver**
- **Single +3.3V power Supply**
- **Hot Pluggable**
- **0°C ~ +70°C Operating Temperature**

Overview:

The PDT-SFP-03-10G-1310-2000 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 SMF, over a distance of up to 20km. The module electrical Interface is compliant to SFI specifications. The Transmitter input and Receiver output has 100 Ohms of differential, and data lines are internally AC Coupled. The module provides differential termination and reduces differential to common mode conversion, for higher quality signal generation and low EMI. 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-02-10G-1310-2000	10 Gbps SFP+ 10GBASE-LR LC SMF 1310nm - 20km - 0~70°C	0020-00013

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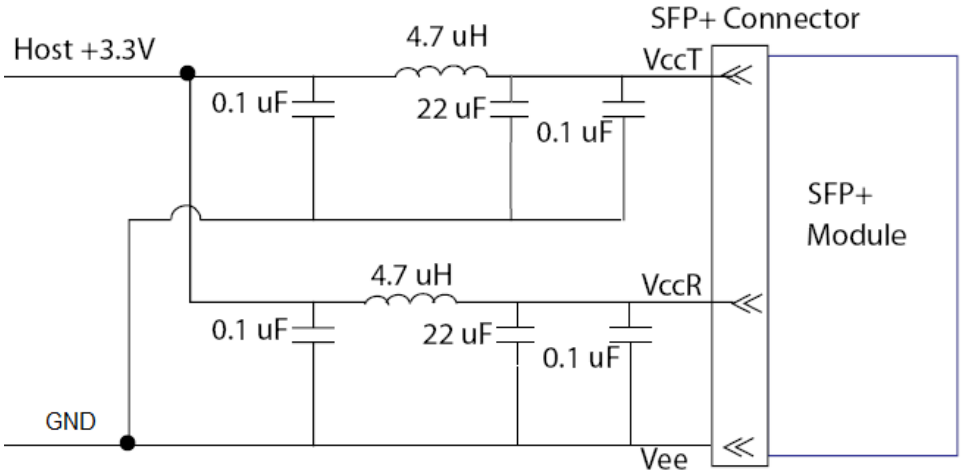
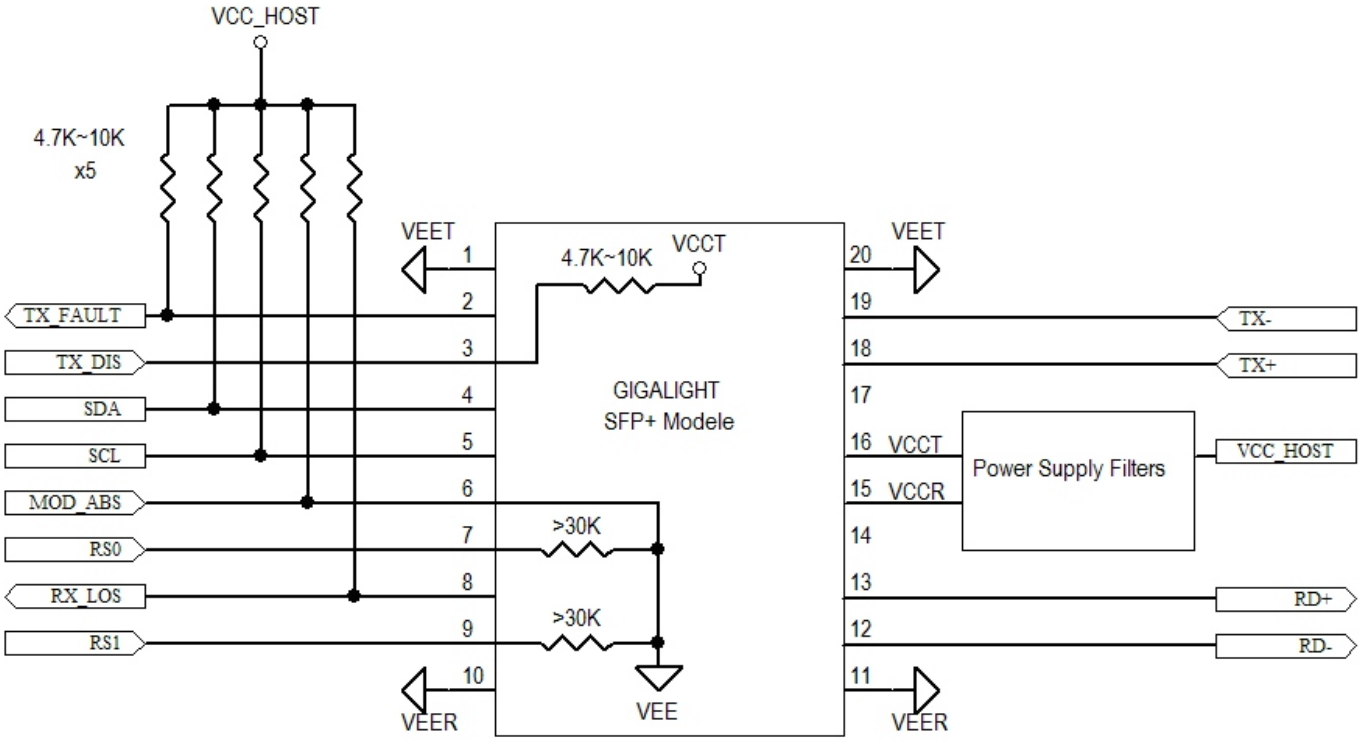


Host Board Power Supply Filters Circuit



Host Module Interface

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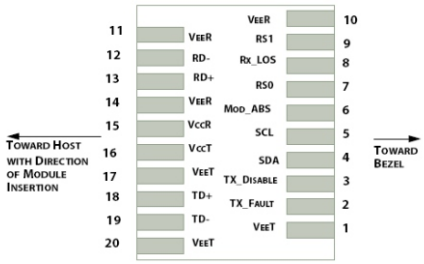
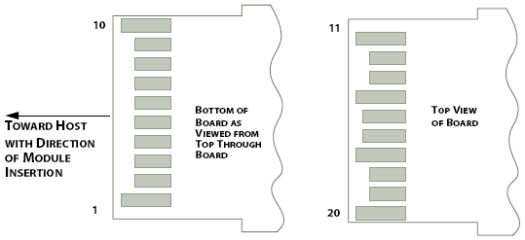
Technical Data

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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Technical Data

Parameter	Unit	Values
Operating Reach	**m**	**20K**
Transmit		
Centre wavelength (range)	nm	1260 -1355
Side Mode Suppression Ratio (min)	dB	30
Launched power		
– maximum	dBm	+0.5
– minimum	dBm	-8.2 Notes1
– OMA	dBm	-5.2
– OMA-TDP (min)	dBm	-6.2
Transmitter and dispersion penalty	dB	0 Notes4
Average launch power of OFF transmitter (max)	dBm	-30
Extinction ratio (min)	dB	3.5 Notes2
RIN12 OMA (max)	dB/Hz	-128
Optical Return Loss Tolerance (min)	dB	12
Receiver		
Centre wavelength (range)	nm	1260-1355
Receive overload (max) in average power[1]	dBm	0.5
Receive sensitivity (min) in average power[1]	dBm	-14.4 Notes3
Receiver sensitivity (max) in OMA (footnote 2)	dBm	-12.6 Notes3
Receiver Reflectance (max)	dB	-12
Stressed receiver sensitivity (max) in OMA[2]	dBm	-10.3
Vertical eye closure penalty (min)[3]	dB	2.2
Stressed eye jitter (min)[3]	UIp-p	0.7
Receive electrical 3dB upper cutoff frequency (max)	GHz	12.3
Receiver power (damage, Max)	dBm	1.5

Notes:
1. The optical power is launched into SMF
2. Measured with a PRBS 2^{31}-1 test pattern@10.3125Gbps
3. Measured with a PRBS 2^{31}-1 test pattern@10.3125Gbps BER≤10^{-12}
4. In G.652 and G.655(NDSF)

Optical Characteristics

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

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Technical Data

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Data Rate		1.250	10.3125	-	Gbps	
Power Consumption		-		1000	mW	
Transmitter						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
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	
Receiver						
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

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	V_{CC}	-0.5	+4.0	V
Storage Temperature	Tc	-40	+85	°C
Operating Case Temperature (Standard)	Tc	0	+70	°C
Relative Humidity	RH	5	95	%
RX Input Average Power	Pmax	-	0	dBm

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max	Unit
Power Supply Voltage	V_{CC}	3.135	3.300	3.465	V
Operating Case Temperature (Commercial)	T_C	0	25	70	°C

Recommended Operating Conditions

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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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