SPT-P556G-80D

10Gbps SFP+ Optical Transceiver, 80km Reach

Features

- Compliant with SFF-8413 and IEE802.3ae
- Support Multi Rate up to 4.9G/6.144Gbps
- Cooled EML transmitter and APD receiver
- link length up to 80km
- Low Power Dissipation 1.4W Typical (Maximum:2W)
- 0 to 70ºC Operating Case Temperature
- Single 3.3V power supply
- Diagnostic Performance Monitoring of module temperature, supply Voltages, laser bias current, transmit optical power, receive optical power
- RoHS6 compliant and lead free

Applications

- Radio Base Station
- LTE optical repeater application
- OBSAI interface, such as 6.144 Gb/s, 3.072 Gb/s, 1.536 Gb/s, 0.768Gb/s
- CPRI interface, such as 6.144 Gb/s, 4.915 Gb/s, 2.458 Gb/s, 1.229 Gb/s, 0.614Gb/s

Product Description

SPT-P136G-80D is a high performance, cost effective modules, which is supporting Multi Rate 4.9G/6.144Gbps and transmission distance up to 40km on SM fiber. The transceiver consists of two sections: The transmitter section incorporates a 1550nm DFB driver and re-timer. The receiver section consists of a PIN photodiode integrated with a Trans impedance preamplifier (TIA). The module is hot pluggable into the 20-pin connector. The high-speed electrical interface is based on low voltage logic, with nominal 100 Ohms differential impedance and AC coupled in the module.

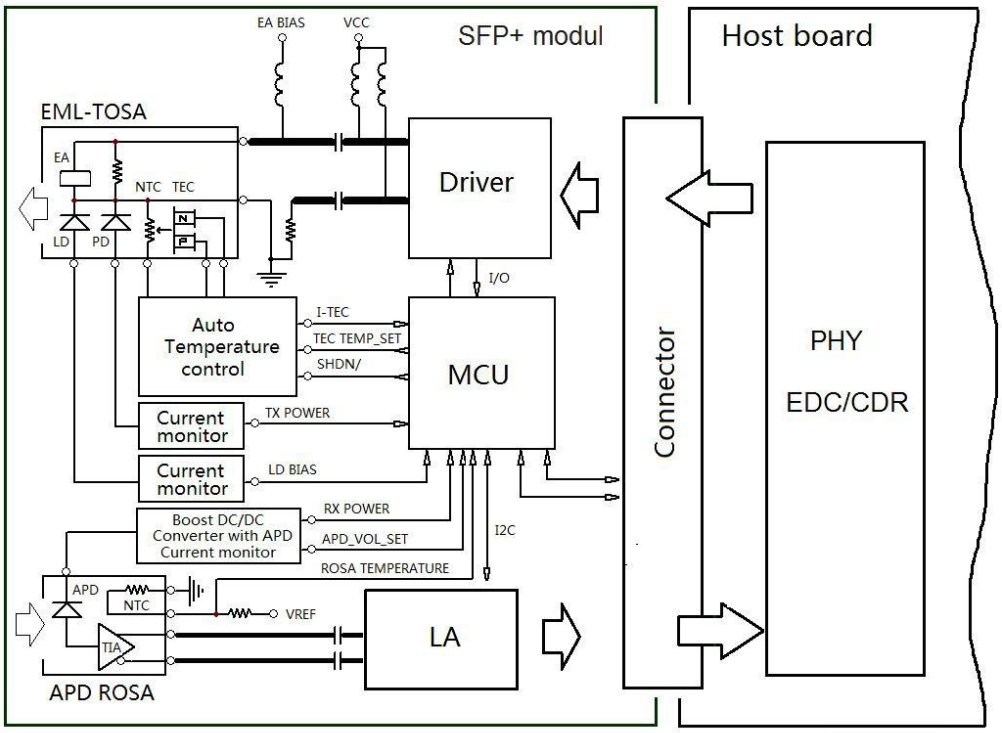


Figure 1. Module Block Diagram

Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc	-0.5	3.8	V
Storage Temperature	Tst	-40	85	ºC
Relative Humidity	Rh	0	85	%

Operating Conditions

Parameter	Symbol	Min.	Typical	Max	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Supply current	Icc		420	610	mA
Operating Case temperature	Tca	-5	-	70	ºC
Module Power Dissipation	Pm	-	1.4	1.5	W

Notes:

[1] Supply current is shared between VCCTX and VCCRX.

[2] In-rush is defined as current level above steady state current requirements.

Optical Characteristics (TOP = 0 to 70 °C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Center Wavelength	λt	1530	1550	1565	nm	

spectral width	△λ			0.3	nm	
Average Optical Power	Pavg	0		4	dBm	1
Optical Power OMA	Poma	-2.1			dBm	
Laser Off Power	Poff			-30	dBm	
Extinction Ratio	ER	8.2			dB	
Transmitter Dispersion Penalty	TDP			3.0	dB	2
Relative Intensity Noise	Rin			-128	dB/Hz	3
Optical Return Loss Tolerance		21			dB	
Receiver Section:						
Center Wavelength	λr	1260		1600	nm	
Receiver Sensitivity	Sen			-23	dBm	4
Stressed Sensitivity (OMA)	Sen_{ST}			-21	dBm	4
Los Assert	LOS_A	-34		-	dBm	
Los Dessert	LOS_D			-24	dBm	
Los Hysteresis	LOS_H	0.5			dB	
Overload	Sat	0			dBm	5
Receiver Reflectance	Rrx			-26	dB	

Note:

1. Average power figures are informative only, per IEEE802.3ae.
2. TWDP figure requires the host board to be SFF-8431compliant. TWDP is calculated using the Matlab code provided in clause 68.6.6.2 of IEEE802.3ae.
3. 12dB reflection.
4. Conditions of stressed receiver tests per IEEE802.3ae. CSRS testing requires the host board to be SFF-8431 compliant.
5. Receiver overload specified in OMA and under the worst comprehensive stressed condition.

Electrical Characteristics (TOP = 0 to 70 °C, VCC = 3.135 to 3.465 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	Vcc	3.135		3.465	V	
Supply Current	Icc			500	mA	
Power Consumption	P			1.8	W	
Transmitter Section:						
Input differential impedance	R_{in}		100		Ω	1
Tx Input Single Ended DC Voltage Tolerance (Ref VeeT)	V	-0.3		4	V	
Differential input voltage swing	Vin,pp	180		700	mV	2
Transmit Disable Voltage	V_D	2		Vcc	V	3
Transmit Enable Voltage	V_{EN}	Vee		Vee+0.8	V	
Receiver Section:						

Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	Vo	300		850	mV	
Rx Output Rise and Fall Time	Tr/Tf	30			ps	4
LOS Fault	$V_{LOS\ fault}$	2		Vcc_{HOST}	V	5
LOS Normal	$V_{LOS\ norm}$	Vee		Vee+0.8	V	5

Digital Diagnostic Functions

Parameter	Symbol	Min.	Max	Unit	Notes
Accuracy					
Transceiver Temperature	DMI_Temp	-3	+3	degC	Over operating Temp
TX Output optical power	DMI_TX	-3	+3	dB	
RX Input optical power	DMI_RX	-3	+3	dB	-3dBm to -12dBm range
Transceiver Supply voltage	DMI_VCC	-0.08	+0.08	V	Full operating
Bias current monitor	DMI_Ibias	-10%	10%	mA	
Dynamic Range Accuracy					
Transceiver Temperature	DMI_Temp	0	70	degC	
TX Output optical power	DMI_TX	0	4	dBm	
RX Input optical power	DMI_RX	-26	0	dBm	
Transceiver Supply voltage	DMI_VCC	3.0	3.6	V	
Bias current monitor	DMI_Ibias	0	100	mA	

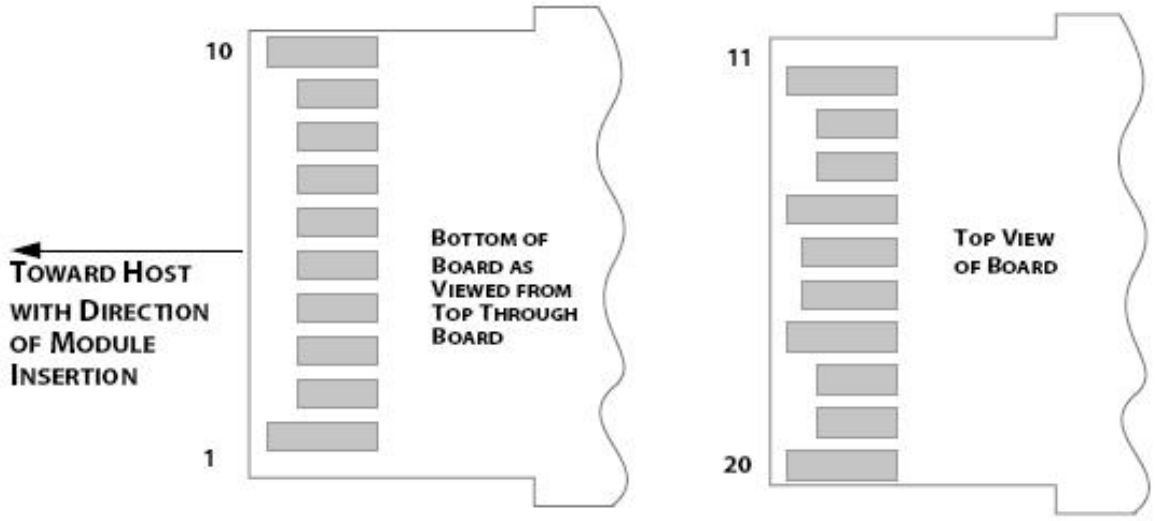
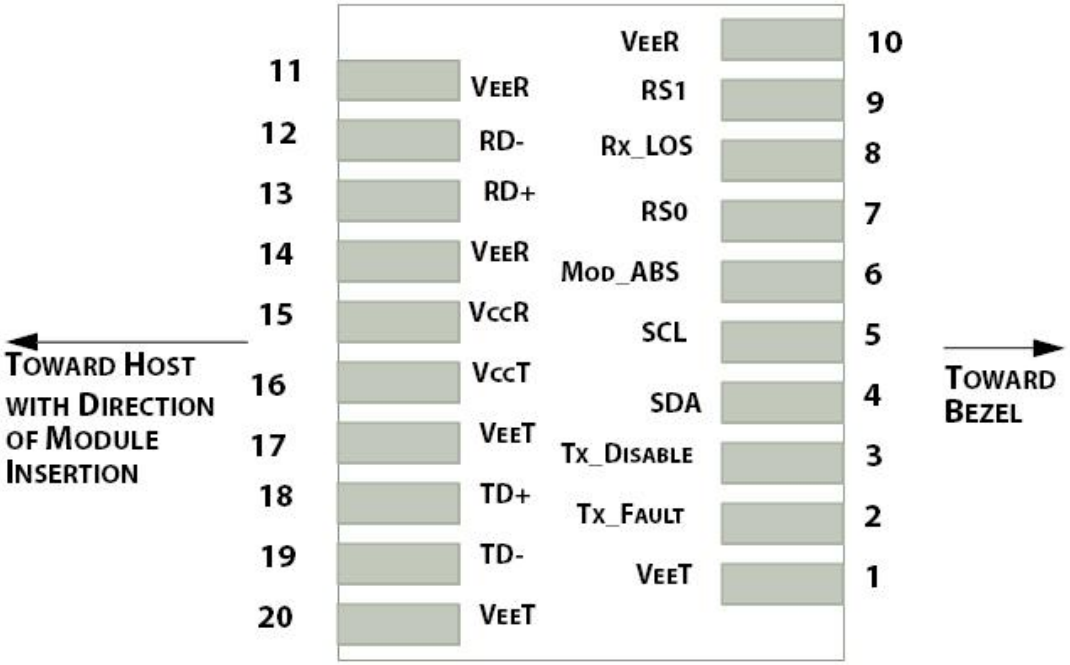


Figure2.Electrical Pin-out Details

Pin Descriptions



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]	RS0 for Rate Select: Open or Low = Module supports ≤4.25Gbps

		High = Module supports 9.95 Gb/s to 10.3125 Gb/s
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	No connection required
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 ground is isolated from module chassis ground within the module.

[2].should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

[3]Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup 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 resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Recommended

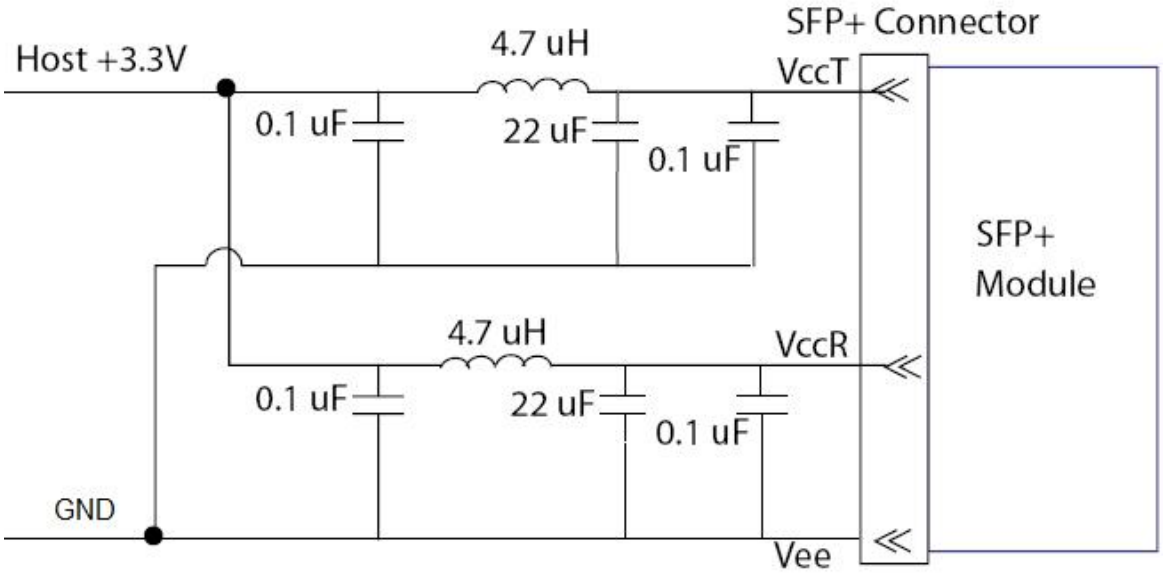


Figure3. Host Board Power Supply Filters Circuit

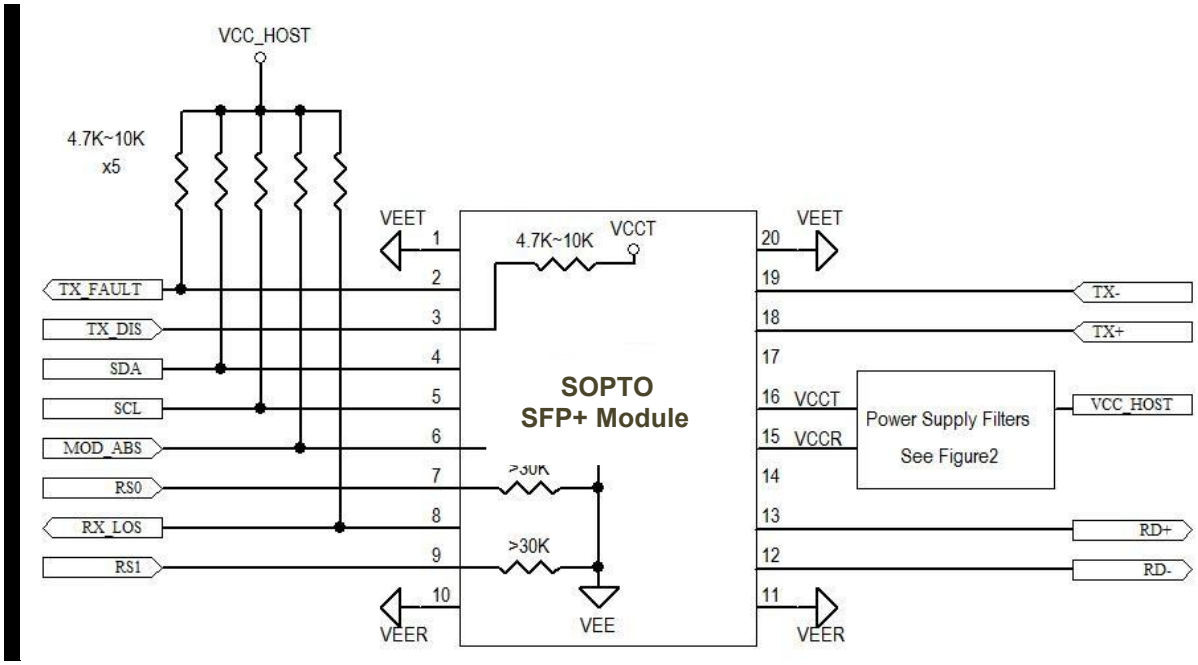
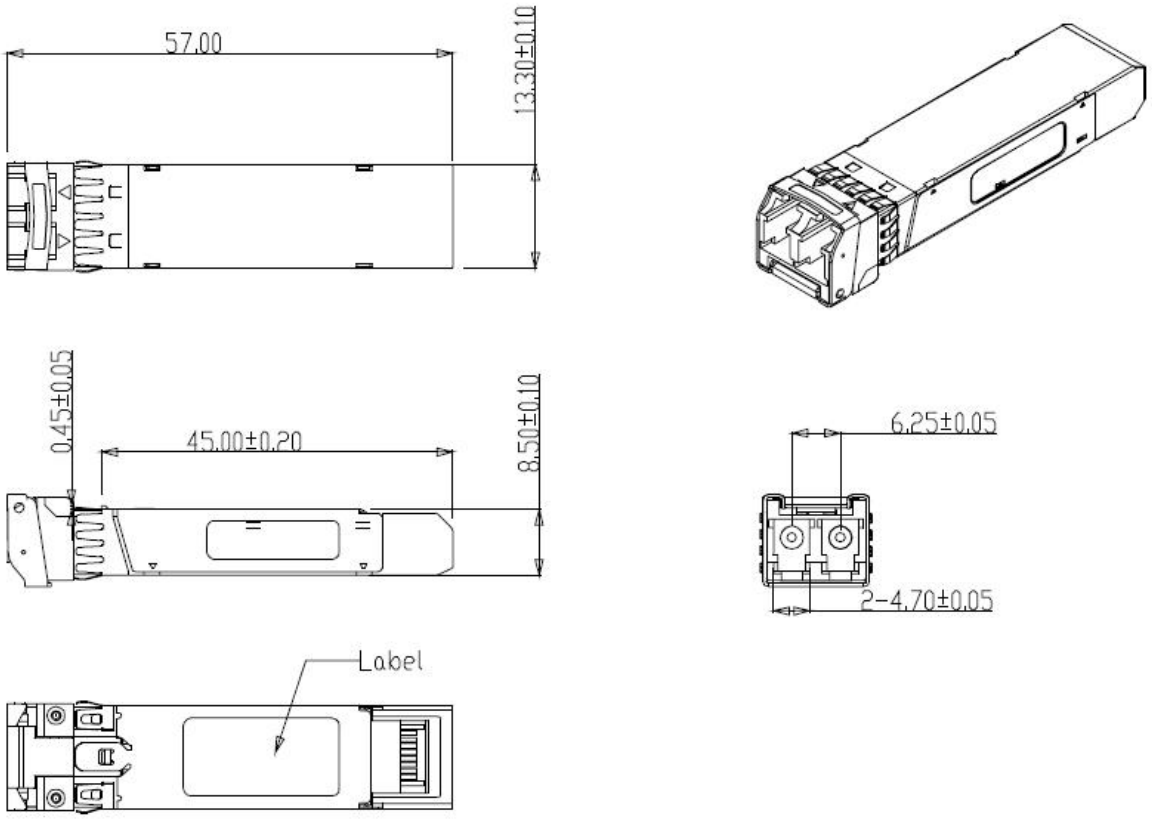


Figure4. Host-Module Interface

Mechanical Dimensions



Unit:mm

Figure 5. Mechanical Specifications

Ordering information

Part Number	Product Description
SPT-P556G-80D	1550nm, 4.9G/6.144Gbs, 80km, 0ºC ~ +70ºC,DDM

Note: If you need more customized services, please contact us.

E-mail: info@sopto.com.cn

Web : http://www.sopto.com.cn