Hermesys

HERMESYS 10Gb/s 850nm 300m SFP+ Transceiver

Features:

- Compliant to SFP+ MSA
- Fully RoHS Compliant
- All metal housing for superior EMI performance
- Compliant mechanics SFF_8432
- Operating data rate 8.5-10.5Gb/s
- 850nm VCSEL Laser
- High sensitivity PIN photodiode and TIA
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption< 1 .0W
- 0~85℃ operating temperature range
- Single +3.3V power supply

Applications

- 10GBASE-SR
- 8.5/10.5 Gb/s Fiber Channel

Standards

- FC-PI-4 Rev 7.00
- 10GFC Rev 4.0
- IEEE 802.3ae 10GBASE-SR
- SFF-8431 Rev 3
- SFF-8472 Rev 10

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Storage Temperature	T_{stg}	-40	+85	°C
Relative Humidity - Storage	RH_S	0	95	%
Relative Humidity - Operating	RH_O	0	85	%
DC Supply Voltage	V_{CC}	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units	Notes
Case Operating Temperature	T_{CASE}	0		70	°C	C-Temp
DC Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Module Supply Current	I_{CC}			300	mA	

Specifications (Tc=25℃, BOL, unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Note
Transmitter						
Center Wavelength	∂$_C$	nm	830	850	860	
Spectral Width (RMS)	Δ∂	nm			0.45	300m
Optical Output Power	P_{AV}	dBm	-7		0.5	
Extinction Ratio	ER	dB	3.0			
Average launch power of OFF transmitter	P_{OFF}	dBm			-30	
Receiver						
Center Wavelength	∂$_C$	nm		850		
Average Receiver Sensitivity 1	P_{AVG}	dBm			-12	
Receiver Reflectance	R_{REFL}	dB			-12	
Assert LOS	LosA	dBm	-30			
De-Assert LOS	LosD	dBm			-16	
LOS Hysteresis		dB	0.5			

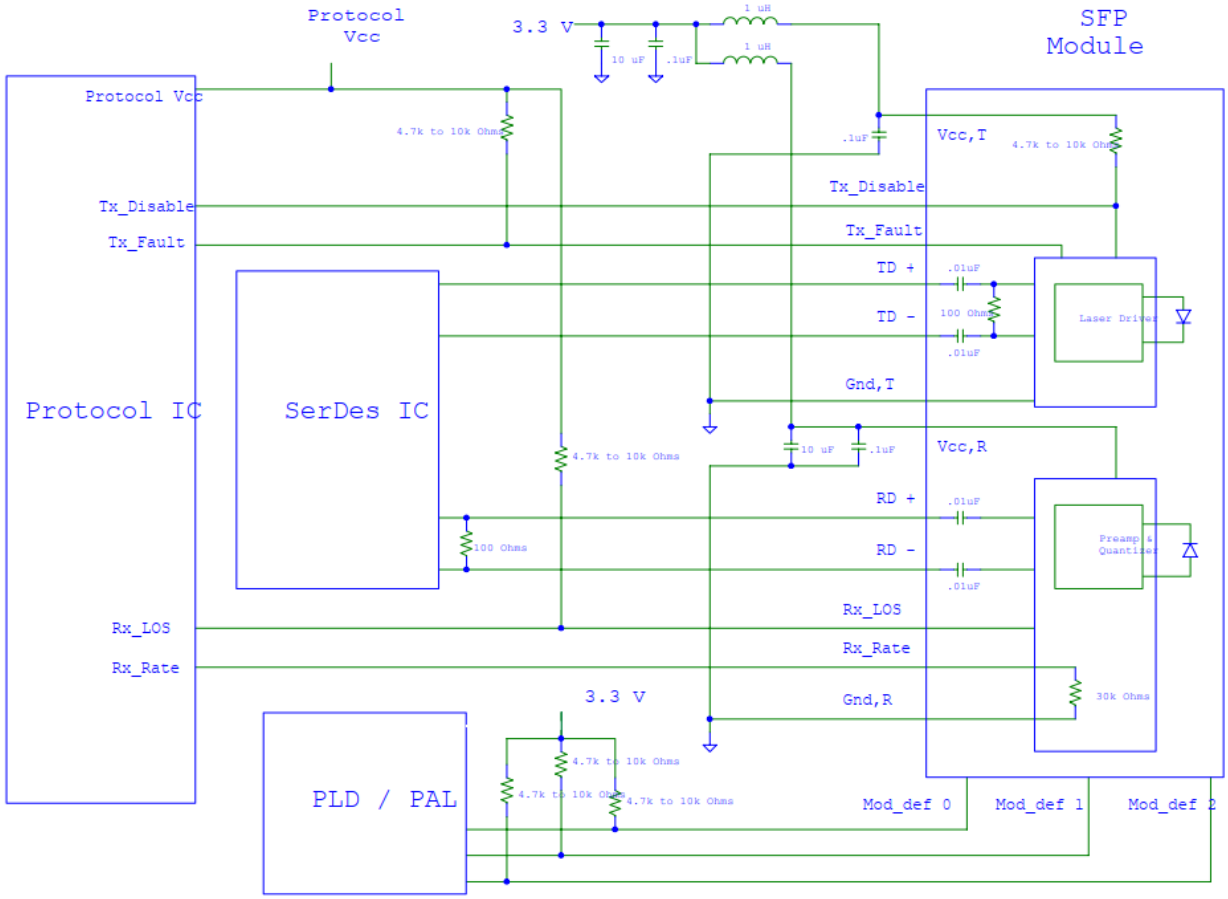
Notes

1. Sensitivity for 10.31G PRBS 2^{31}-1 and ER=3.5dB and BER better than or equal to 10E-12.

Monitoring Interface

Parameter	Symbol	Spec	Units	Conditions / Notes
Temperature		+/-3℃	℃	
Voltage		+/-5%	V	
IBias		+/-10%	mA	
Rx power		+/-2	dBm	@25℃
Tx power		+/-2	dBm	@25℃

Typical Application Circuit

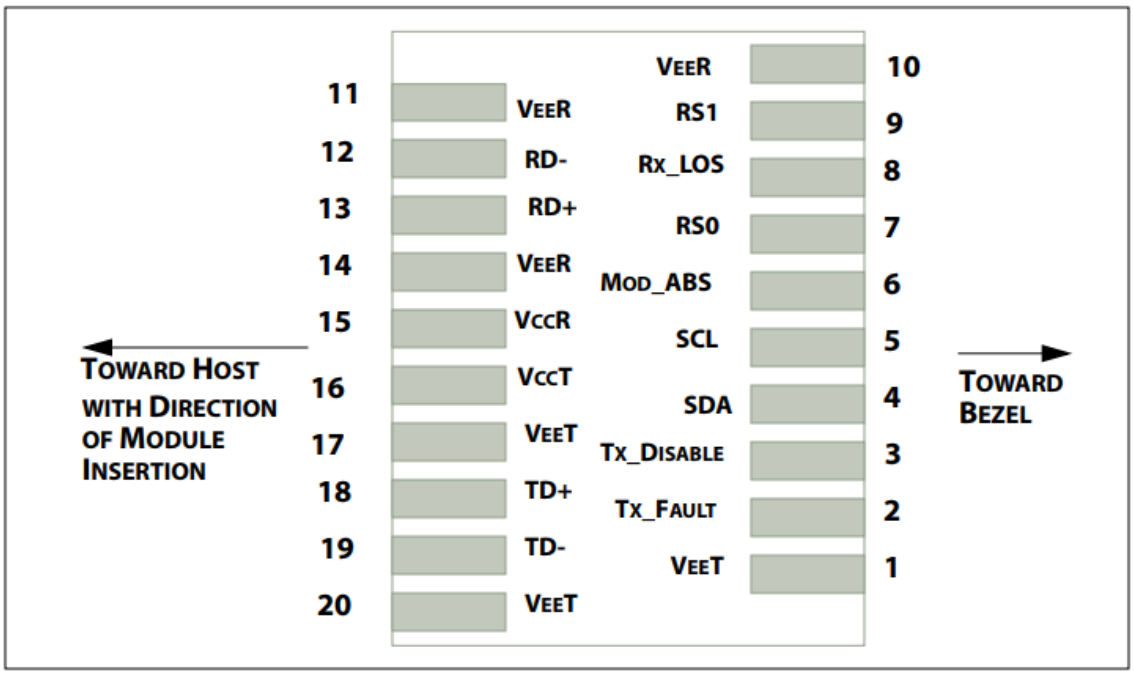


Pin Description

Pin	Name	Function/Description	Notes
1	VeeT	Transmitter Ground	1
2	TX_Fault	Transmitter Fault (LVTTL-O) - High indicates a fault condition	2
3	TX_Disable	Transmitter Disable (LVTTL-I) – High or open disables the transmitter	3
4	SDA	Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2)	4
5	SCL	Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1)	4
6	MOD_ABS	Module Absent (Output), connected to VeeT or VeeR in the module	5
7	RS0	Rate Select 0 – Not used, Presents high input impedance	6
8	RX_LOS	Receiver Loss of Signal (LVTTL-O)	2
9	RS1	Rate Select 1 – Not used, Presents high input impedance	6
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	
12	RD-	Inverse Received Data out (CML-O), AC Coupled	
13	RD+	Received Data out (CML-O), AC Coupled	
14	VeeR	Receiver Ground	
15	VccR	Receiver Power - +3.3V	
16	VccT	Transmitter Power - +3.3 V	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Data In (CML-I), AC Coupled	
19	TD-	Inverse Transmitter Data In (CML-I), AC Coupled	
20	VeeT	Transmitter Ground	1

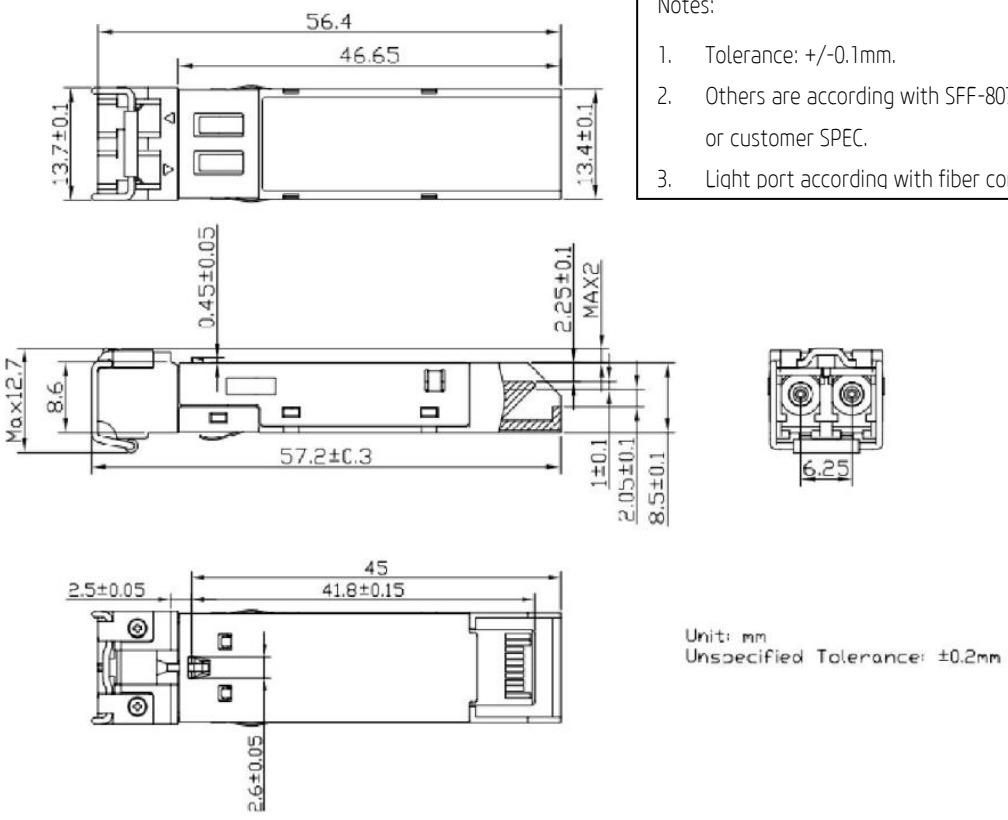
Notes：

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.
3. This input is internally biased high with a 4.7KΩ to 10KΩ pull-up resistor toVccT.
4. Two-Wire Serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.
6. Rate select can also be set through the 2-wire bus in accordance with SFF-8472 v. 10.2.
   Rx Rate Select is set at Bit 3, Byte 110, Address A2h. Tx Rate Select is set at Bit 3, Byte 118, Address A2h.
   Writing a "1" selects maximum bandwidth operation. Rate select is the logic OR of the input state of Rate Select Pin and 2-wire bus.



SFP+ pad assignment top view

Mechanical Dimensions



Notes:

1. Tolerance: +/-0.1mm.
2. Others are according with SFF-8074i/SFF-8432 MSA or customer SPEC.
3. Light port according with fiber connector SPEC.

Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1 (> 1500 Volts)
Electrostatic Discharge (ESD) Immunity	Variation of IEC 61000-4-2	LV4(Air discharge:15KV Contact discharge:8 KV Performance criterion: B
Electromagnetic Interference (EMI)	CISPR22 ITE Class B EN55022 Class B FCC Class B	Compliant with standards
Immunity	IEC61000-4-3 Class 2 EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.

Ordering Information

Specifications									
Part. No	Rate Gb/s	Tx	Tx WL nm	Po dBm	Rx	Sen. dBm	Top ℃	Reach m	Other
SFP-22010003XXDW	10.3125	VCSEL	850	-7 ~ 0.5	PIN/TIA	<-12	0~85	300	RoHS
1st X=Compatible with which equipment (1=Intel, 2=Huawei, 3=Cisco, 4=Generic 2nd X=Connector Type (0=SC 1=LC 2=ST 3=FC 4=MTRJ									

Warnings

Handing Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Please follow guidelines according to proper ESD procedures.

Laser Safety:

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.