25Gbps 1310nm 10km SFP28 Optical Transceiver Module

S-PP2531L10-CD

Features

- Hot Pluggable
- LC Duplex optical interface
- 1310nm DFB transmitter, PIN receiver
- Applicable for 10km SMF connection
- All-metal housing for superior EMI performance
- Single 3.3V power supply
- 1.5W maximum power consumption
- Cost effective SFP+ solution, enables higher port
- densities and greater bandwidth
- Operating case temperature: 0 to +70°C
- Compatible with RoHS

Applications

- 25G LR
- eCPRI&CPRI

Description

SFP28 transceiver is designed to transmit and receive optical data over single mode optical fiber for link length 10km.

The SFP28 10km module electrical interface is compliant to SFI electrical specifications. The transmitter input and receiver output impedance is 100 Ohms differential. Data lines are internally AC coupled. The module provides differential termination and reduce differential to common mode conversion for quality signal termination and low EMI.

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	Vcc	-0.5		4	V
Storage Temperature Range	Ts	-40		85	°C
Relative Humidity - Storage	RH_S	0		95	%
Relative Humidity - Operating	RH_O	0		85	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature Range	Tc	0		+70	°C
Power Supply Voltage	V_{cc}	3.14	3.3	3.47	V
Supply Current	I_{cc}			600	mA
Data Rate	BR	-	25.78	-	Gbps

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Electrical Characteristics

Transmitter Electrical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Differential Input Voltage Swing	V_{IN}	200	-	900	mV
Tx Differential Input Impendence	Z_{IN}	-	100	-	Ω
Transmitter Disable Voltage	V_{DIS}	2.0	-	V_{CC}+0.3	V
Transmitter Enable Voltage	V_{EN}	0	-	0.8	V
T_{FAULT} Logic High	V_{TFH}	2.4	-	V_{CC}	V
T_{FAULT} Logic Low	V_{TFL}	V_{EE}	-	V_{EE}+0.4	V
Receiver Electrical Characteristics					
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Differential output Voltage Swing	V_{OUT}	300	-	850	mV
Rx Differential Output Impendence	Z_{OUT}	-	100	-	Ω
LOS Assert Voltage	V_{LOSA}	2.4	-	V_{CC}	V
LOS De-assert Voltage	V_{LOSD}	V_{EE}	-	V_{EE}+0.4	V

Optical and Electrical Characteristics

Transmitter Electrical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Center Wavelength Range	λ	1295	1310	1325	nm	
Spectral Width@-20dB	Δλ	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Launch Optical Power	Pout	-7	-	2	dBm	1
Optical Modulation Amplitude	OMA	-4	-	2.2	dBm	
Launch Power in OMA-TDP		-5			dB	
Transmitter Dispersion Penalty	TDP	-	-	2.7	dB	
Average launch power of OFF transmitter				-20	dBm	
Extinction Ratio	ER	3	-	-	dB	
Relative Intensity Noise	RIN	-	-	-130	dB/Hz	
Eye Diagram	Complies with IEEE802.3cc eye masks when filtered					
Receiver Electrical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Operating Central Wavelength	λ	1295	1310	1325	nm	
Unstressed Receiver OMA Sensitivity	Sen	-	-	-12	dBm	2
Maximum Receiver Power OMA		-	-	2.2	dBm	
Receiver Reflectance	RFL	-	-	-26	dB	
LOS Assert	LOSA	-30	-	-	dBm	
LOS De-Assert	LOSD	-	-	-14	dBm	

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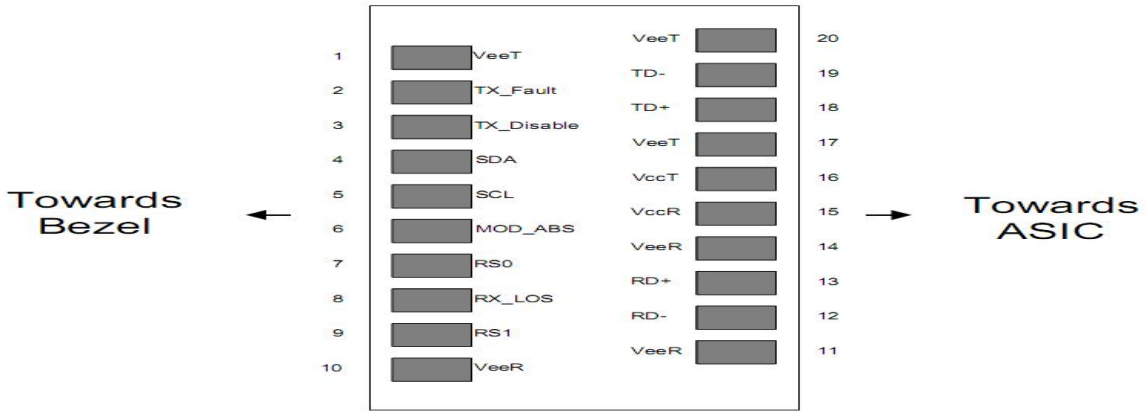
Transmitter Electrical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
LOS Hysteresis	LOSH	0.5	-	-	dB	
Note:						
1. Average power figures are informative only, per IEEE 802.3cc. 2. Measured with 231-1 PRBS@25.78125Gbps,BER<5E-5						

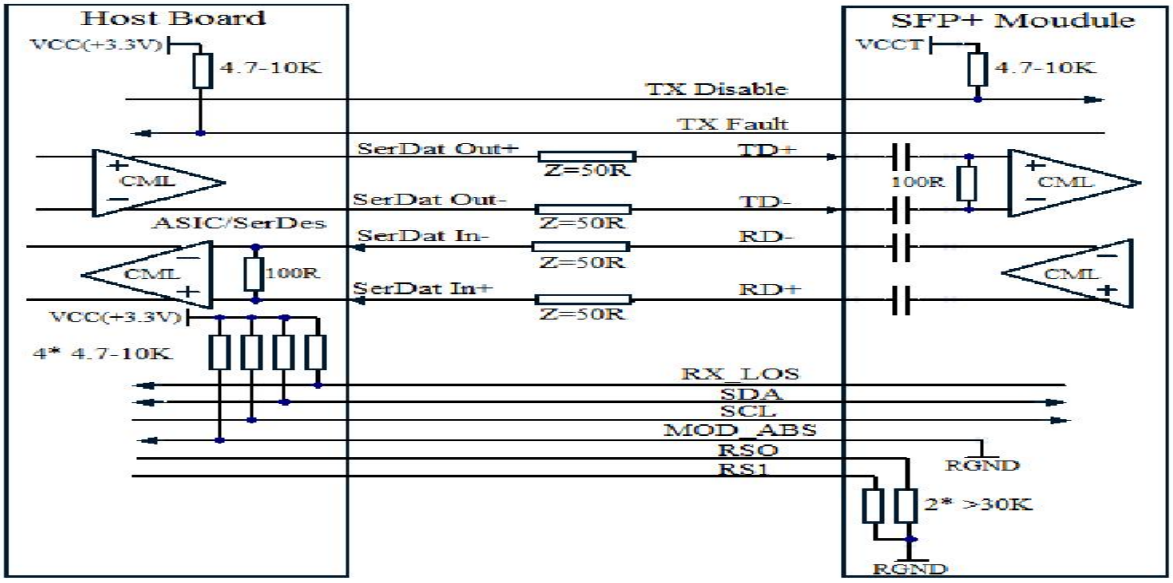
Pin Definitions



Pin	Symbol	Description	Notes
1	VEET	Transmitter Ground	1
2	TFAULT	Transmitter Fault	2
3	TDIS	Transmitter Disable. Laser output disabled on high or open	3
4	SDA	2-wire Serial Interface Data Line	2
5	SCL	2-wire Serial Interface Clock Line	2
6	MOD_ABS	Module Absent. Grounded within the module	
7	RS0	Rate Select 0. Not Used.	4
8	RX_LOS	Loss of Signal indication. Logic 0 indicates normal operation	2
9	RS1	Rate Select 1. Not Used.	4
10	VEER	Receiver Ground	1
11	VEER	Receiver Ground	1
12	RD-	Receiver Inverted DATA out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	

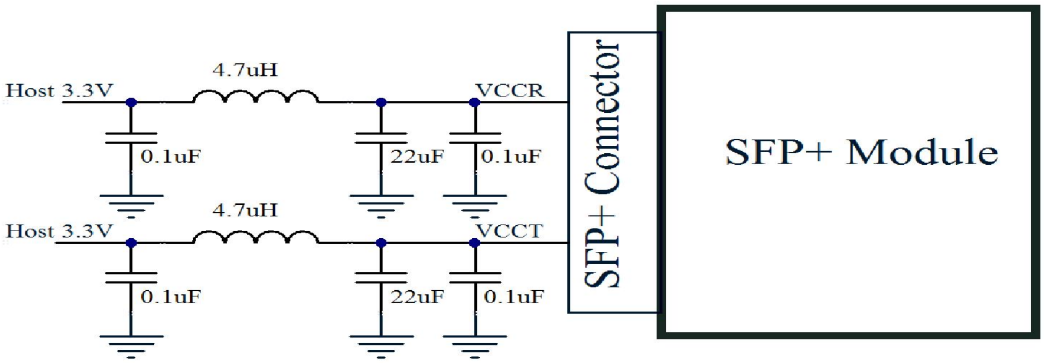
20	VEET	Transmitter Ground	1
Notes			
1. Circuit ground is internally isolated from chassis ground. 2. Shall be pulled up with 4.7k-10k Ohms to a voltage between 3.15V and 3.6V on the host board. 3. Laser output disabled on T_{DIS} >2.0V or open, enabled on T_{DIS} <0.8V. 4. Internally pulled down per SFF-8431 Rev 4.1.			

Recommended High-speed Interface Circuit



Recommended Host Board Supply Filtering Circuit

The Transceiver includes internal circuit components to filter power supply noise. Under some conditions of EMI and power supply noise, external power supply filtering may be necessary. If receiver sensitivity is found to be degraded by power supply noise, the filter network illustrated in the following figure may be used to improve performance. The values of the filter components are general recommendations and may be changed to suit a particular system environment. Shielded inductors are recommended.



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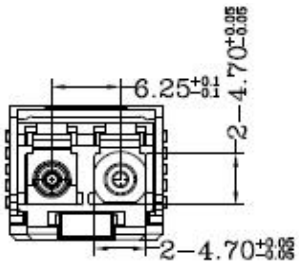
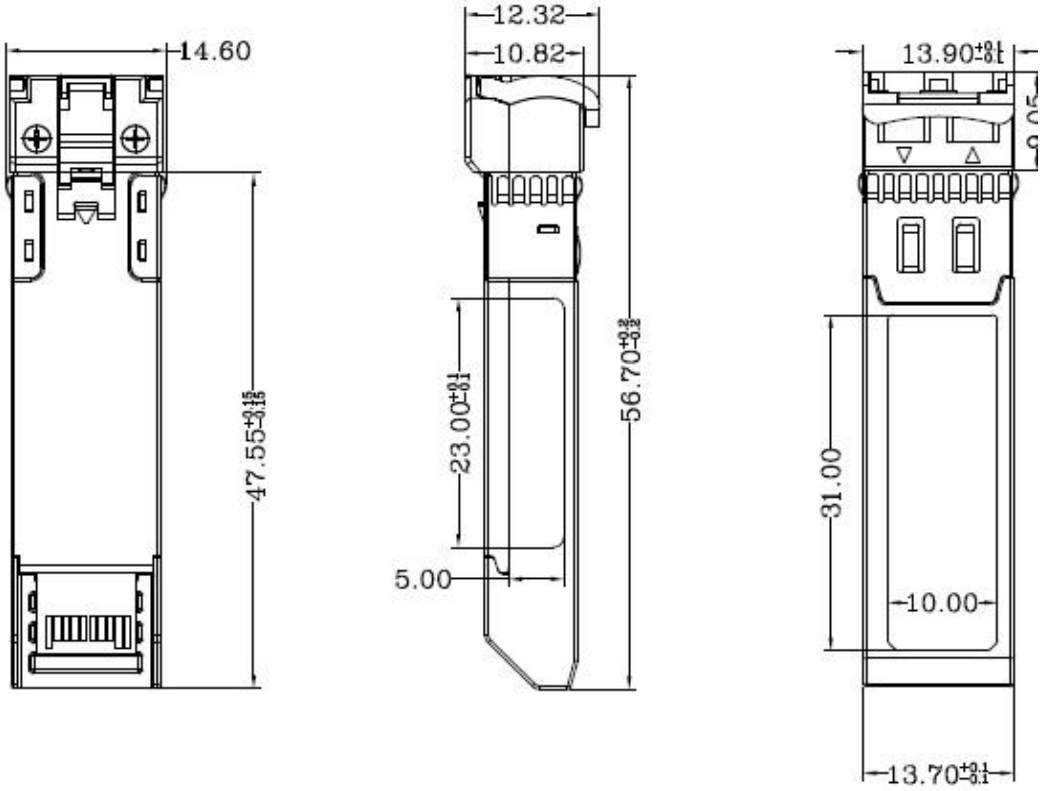
Mechanical Dimensions





Ordering information

Part Number	Product Description
S-PP2531L10-CD	SFP28, 25.78Gbps, 1310nm, LC,SMF, 10km , 0ºC~+70ºC, With DDM