

25Gb/s CWDM SFP28 1470-1570nm 10km Optical Transceiver

Features

- UP to 25.78Gb/s bi-directional data links
- Hot-Pluggable SFP28 footprint
- Duplex LC connector
- Operating case temperature Range: 0~ 70°C
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- CWDM EML laser transmitter
- Up to 10km on 9/125m SMF
- Power Supply :+3.3V
- ROHS compliant

Applications

- 25GE LR
- eCPRI&CPRI

Compliance

- SFF-8472
- SFF-8432
- SFF-8431

Description

The SFP-25G-CW10-L transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 10 km link length.

They are compliant SFF-8472 , and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T _S	-40		+85	°C
Case Operating Temperature	T _A	0		+70	°C
Maximum Supply Voltage	V _{CC}	0		3.6	V
Relative Humidity(Non-condensing)	RH	0		85	%

Electrical Characteristics(TOP = 0 to 70 °C, VCC = 3.15 to 3.46 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	V _{cc}	3.15		3.46	V	
Supply Current	I _{cc}			600	mA	
Power Consumption	P			2	W	
Data Rate	R		25.8		Gb/s	
Fiber Length	L			10	km	
Transmitter						
Input differential impedance	R _{in}		100		Ω	1
Differential input voltage swing	V _{in, pp}	180		450	mV	2
Transmit Disable Voltage	V _D	2		V _{cc}	V	3
Transmit Enable Voltage	V _{EN}	V _{ee}		V _{ee} +0.8	V	
Receiver						
Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	V _o	180		450	mV	
LOS Fault	V _{LOS fault}	2		V _{cc} HOST	V	4
LOS Normal	V _{LOS norm}	V _{ee}		V _{ee} +0.8	V	4

Notes:

[1] Connected directly to TX data input pins. AC coupling from pins into laser driver IC.

[2] Per SFF-8431 Rev 3.0.

[3] Into 100 ohms differential termination.

[4] LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

Optical Characteristics(TOP = 0 to 70°C, VCC = 3.15 to 3.46 Volts)

Table3-Optical Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter						
Center Wavelength	λ_t	$\lambda - 6.5$	λ	$\lambda + 6.5$	nm	
spectral width(-20dB)	$\Delta \lambda$			1	nm	
Average Optical Power	P_{avg}	-2.0		+6.0	dBm	1
Laser Off Power	P_{off}			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	5			dB	
Optical Return Loss Tolerance				-12	dB	
Receiver						
Center Wavelength	λ_r	1260		1610	nm	
Receiver Sensitivity	S_{en}			-12	dBm	2
Los Assert	LOSA	-30			dBm	
Los Dessert	LOSD			-16	dBm	
Los Hysteresis	LOSH	0.5			dB	
Overload		2			dBm	

Notes:

[1] Average power figures are informative only, per IEEE802.3CC.

[2] OMA receiver sensitivity is informative. Shall be measured with conformance test signal for . BER =5E-5.

Timing Characteristics

Table4-Timing Characteristics					
Parameter	Symbol	Min.	Typical	Max.	Units
TX_Disable Assert Time	t_{off}			100	us
TX_Disable Negate Time	t_{on}			2	ms
Time to Initialize 2-wire interface	$t_{w_start_up}$			300	ms
Time to Initialize	t_{start_up}			300	ms
Time to Initialize cooled module and time to powerupacooledmodule to Power level II	$t_{start_up_cooled}$			90	s
Time to Power Up to Level II	t_{power_level}			300	ms
Time to Power Down from Level II	t_{power_down}			300	ms
Tx_Fault assert	Tx_Fault_on			1	ms
Tx_Fault assert for cooled module	$Tx_Fault_on_cooled$			50	ms
TX_FAULT Reset	t_{reset}	10			us
Rx_LOS assert delay	t_{los_on}			100	us
Rx_LOS negate delay	t_{los_off}			100	us

Digital Diagnostic Specifications

Parameter	Symbol	Min.	Max.	Accuracy	Unit
Transceiver Temperature	DDDTemp	0	+70	± 5.0°C	°C
Transceiver Supply Voltage	DDDVoltage	3.15	3.45	± 3.0%	V
Transceiver Bias Current	DDDBias	0	35	± 10%	mA
Transceiver Output Power	DDDTx-Power	-5	+5	± 3dB	dBm
Receiver Average Optical Input Power	DDDRx-Power	-16	-3	± 3dB	dBm

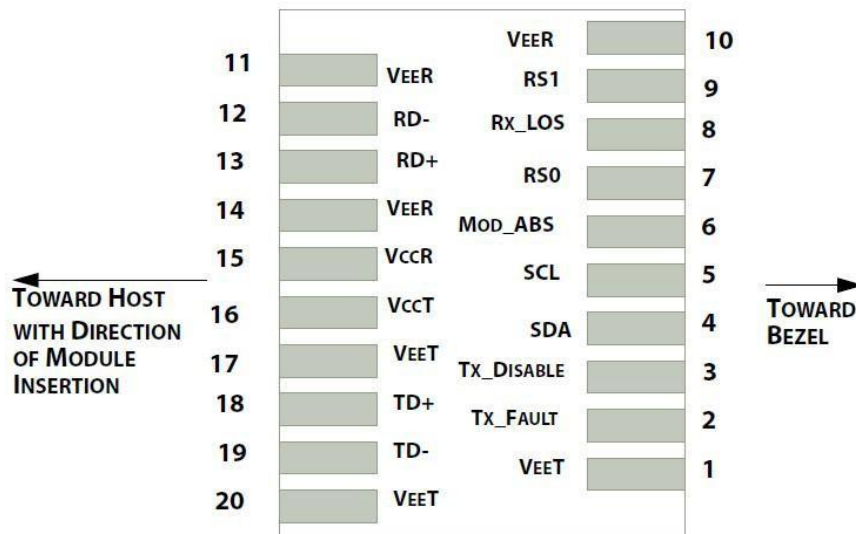
Pin Description

PIN	Symbol	Name/Description	Ref.
1	VeeT	Module transmitter ground	1
2	Tx Fault	Module transmitter fault	2
3	Tx Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2 wire serial interface data input/output (SDA)	4
5	SCL	2 wire serial interface clock input (SCL)	4
6	MOD- ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate select0: module inputs and are pulled low to VeeT with → 30 kΩ resistors in the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with → 30 kΩ resistors in the module.	
10	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non- inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	VeeT	Module transmitter ground	1

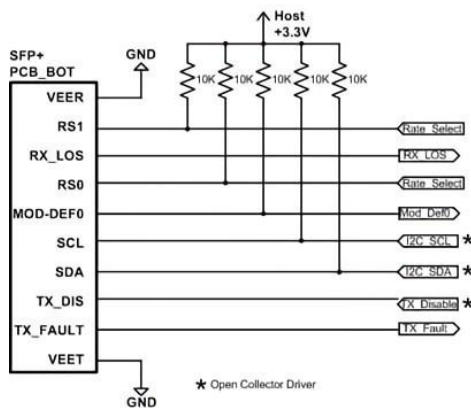
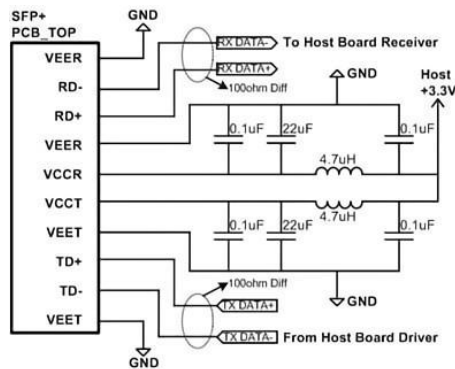
Notes:

- [1] The module ground pins shall be isolated from the module case.
- [2] This pin is an open collector/drain output pin and shall be pulled up with 4.7K- 10Kohms to Host_Vcc on the host board.
- [3] This pin shall be pulled up with 4.7K- 10Kohms to VccT in the module.

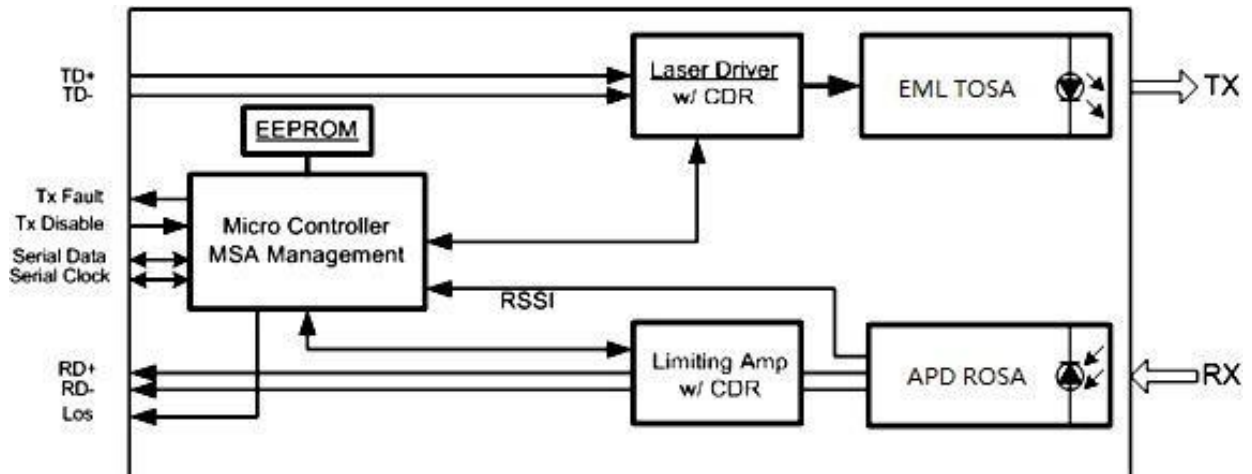
[4] This pin is an open collector/drain output pin and shall be pulled up with 4.7K- 10Kohms to Host_Vcc on the host board.



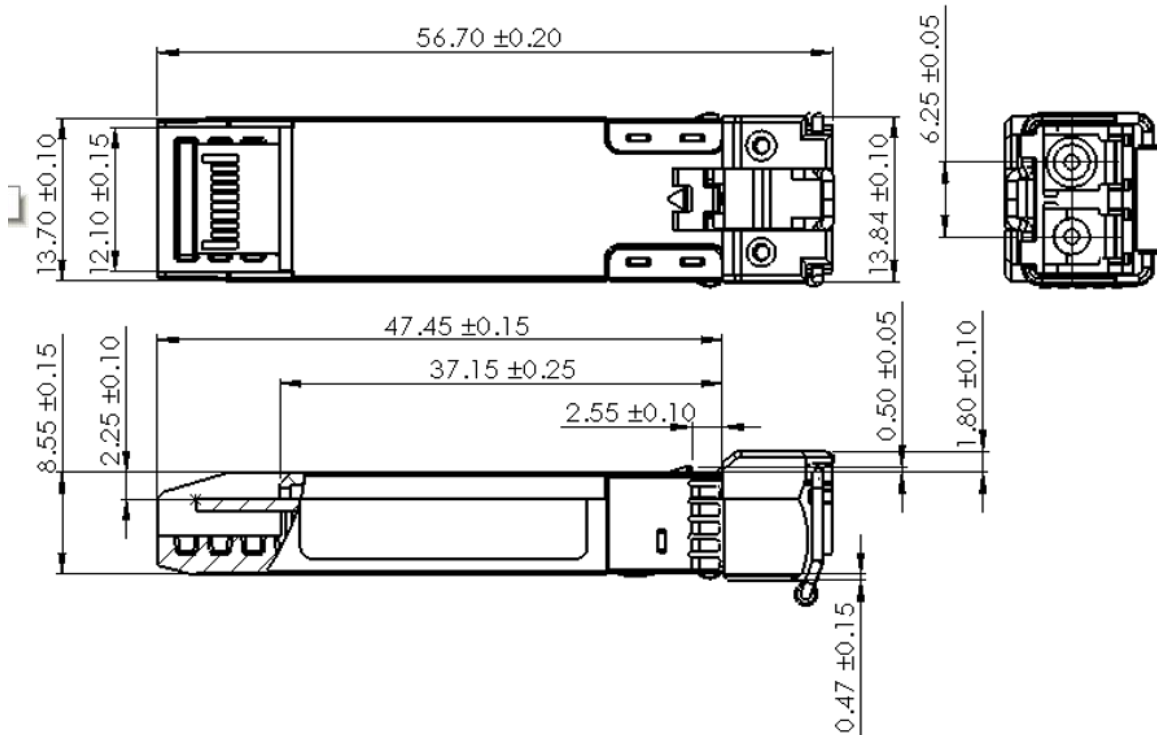
Recommended Circuit



Transceiver Block Diagram



Mechanical Dimensions



Further Information:

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