

25Gb/s SFP28 CWDM 1270-1370nm 40Km DOM Transceiver

Features

- UP to 25.78Gb/s data links
- Hot-Pluggable SFP28 footprint
- Duplex LC connector
- DML laser transmitter, APD photo-detector
- Up to 30km on SMF without FEC
- Up to 40km on SMF with FEC
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceiver
- Power Supply :+3.3V
- Operating case temperature Range: 0~ 70°C
- RoHS Compliant

Applications

- High-speed storage area networks
- CPRI 10

Description

SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 30km(without FEC) 40KM(with FEC) 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	Symbols	Min.	Typical	Max.	Unit	Notes
Storage Temperature	TS	-40		+85	°C	
Case Operating Temperature	TA	0		+70	°C	
Maximum Supply Voltage	Vcc	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	Symbols	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc	3.15		3.46	V	
Supply Current	Icc			450	mA	
Power Consumption	P			1.5	W	
Data Rate	R		25.8		Gb/s	
Transmitter Section:						
Input differential impedance	Rin		100		Ω	1
Differential input voltage swing	Vin,pp	180		700	mV	2
Transmit Disable Voltage	VD	2		Vcc	V	3
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
Receiver Section:						
Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	Vo	185		800	mV	
LOS Fault	VLOS fault	2		VCCHOST	V	4
LOS Normal	VLOS norm	Vee		VEE+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 3.46Volts)

Table3-Optical Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter Section:						
Center Wavelength	λ_t	$\lambda - 6.5$	λ	$\lambda + 6.5$	nm	
spectral width(-20dB)	$\Delta \lambda$			1	nm	
Average Optical Power	Pavg	0		+6	dBm	1
Laser Off Power	Poff			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	4			dB	
Optical Return Loss Tolerance				- 12	dB	
Receiver Section:						
Center Wavelength	λ_r	1260		1370	nm	
Receiver Sensitivity	Sen			- 19	dBm	2
Los Assert	LOSA	-30			dBm	
Los Dessert	LOSD			- 19	dBm	
Los Hysteresis	LOSH	0.5			dB	
Overload		-6			dBm	

Notes:

1. Average power figures are informative only, per IEEE802.3cc.
2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER =5x 10-5 .

Timing Characteristics

Table4-Timing Characteristics						
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
TX_Disable Assert Time	t_off			100	us	
TX_Disable Negate Time	t_on			2	ms	
Time to Initialize 2-wire interface	t_2w_start_up			300	ms	
Time to Initialize	t_2w_start_up			300	ms	
Time to Initialize cooled module and time to power up a cooled module to Power level II	t_start_up_cooled			90	s	
Time to Power Up to Level II	t_power_level2			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 Diagnostics Specifications

Parameter	Symbol	Units.	Min.	Max	Accuracy
Transceiver Temperature	DDDTemp	°C	0	+70	±3°C
Transceiver Supply Voltage	DDDVoltage	V	3.15	3.45	±3%
Transmitter Bias Current	DDDBias	A	0	35	± 10%
Transmitter Output Power	DDDTx-Power	dBm	-5	+5	±2dB
Receiver Average Optical Input Power	DDDRx-Power	dBm	- 16	-3	±2dB

Pin Description

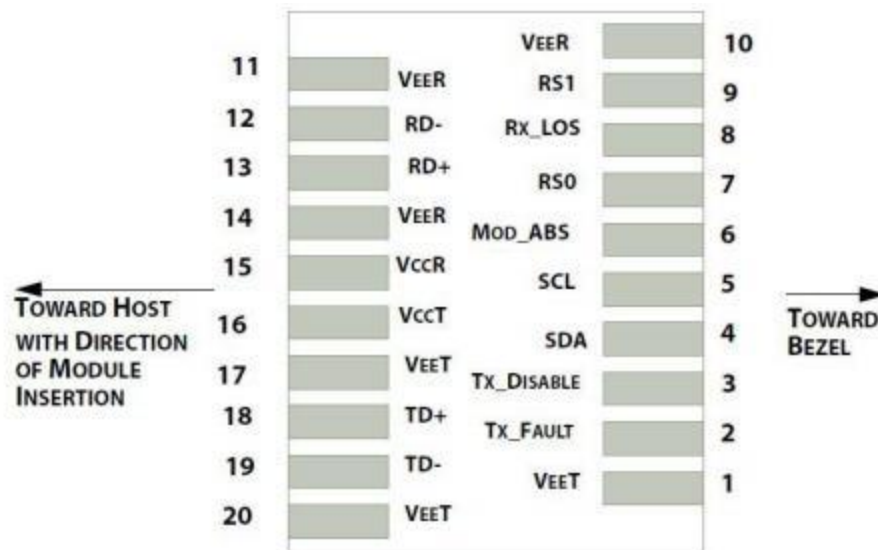


Figure 1 Pin view

Pin Function Definitions

Table4-Pin Function Definitions

Pin	Symbol	Description	Note
1	VeeT	Module transmitter ground	1
2	Fault	Module transmitter Fault	2
3	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 \rightarrow 30 k Ω resistors in the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with \rightarrow 30 k Ω 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

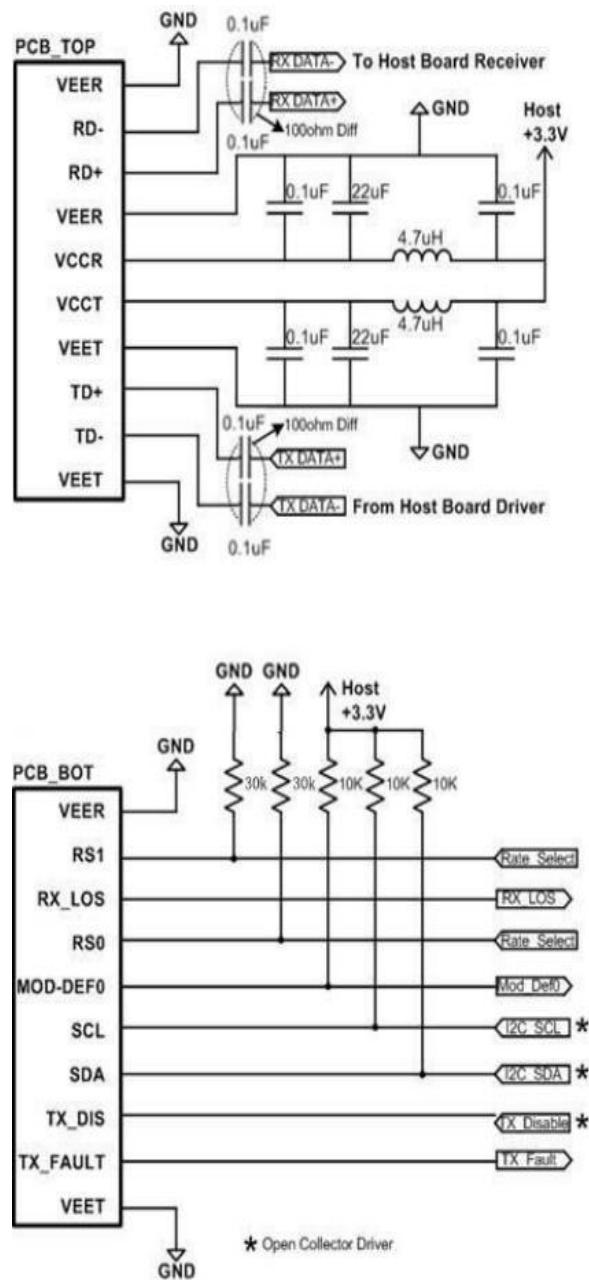
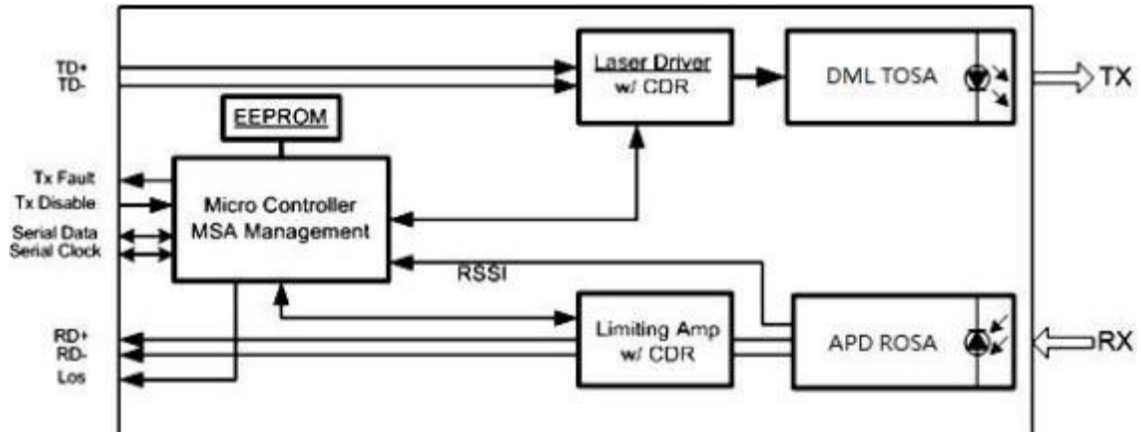


Figure 2 Recommended Circuit

Transceiver Block Diagram



Mechanical Dimensions

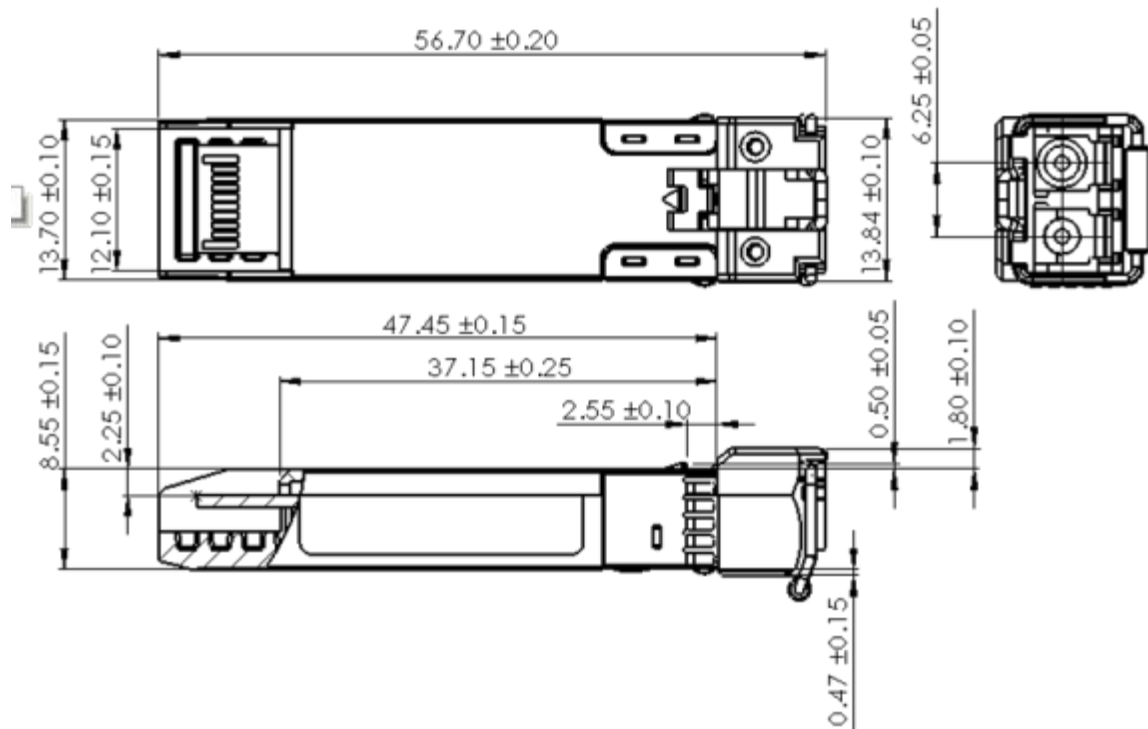


Figure 3 Mechanical Outline

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