25GBASE-ER SFP28 1310nm 30km DOM Transceiver

SFP-25GERL-31

Application

- High-speed storage area networks
- CPRI 10

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
- Single 3.3V power supply
- Operating case temperature range: 0~ 70° C
- RoHS compliant
- 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers

Description

SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 30km (without 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.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit
Storage Temperature	Ts	-40		85	°C
Case Operating Temperature	T_A	0		70	°C
Maximum Supply Voltage	Vcc	0		3.6	V
Relative Humidity	RH	0		85	%

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

Parameter	Symbol	Min	Typ.	Max	Unit	Note
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	

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transmitter						
Input Differential impedance	R_{in}		100		Ω	1
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						
Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	Vo	185		800	mV	
LOS Fault	$V_{LOS\ fault}$	2		Vcc_{HOST}	V	4
LOS Normal	$V_{LOS\ norm}$	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.

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

Parameter	Symbol	Min	Typ.	Max	Unit	Note
Transmitter						
Center Wavelength	λt	1295		1325	nm	
Spectral Width	△λ			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						
Center Wavelength	λr	1260		1370	nm	
Receiver Sensitivity	Sen			-19	dBm	2
Los Assert	LOS_A	-30			dBm	
Los Dessert	LOS_D			-19	dBm	
Los Hysteresis	LOS_H	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}.

IV. Timing Characteristics

Parameter	Symbol	Min	Typ.	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_2w_start_up			300	ms
Time to Initialize	t_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

V. Digital Diagnostic Specifications

Parameter	Symbol	Max	Min	Accuracy	Unit
Transceiver Temperature	DDDTemp	0	+70	±3.0°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	±2dB	dBm
Receiver Average Optical Input Power	DDDRx-Power	-16	-3	±2dB	dBm

VI. 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 resistorsin the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with > 30 kΩ resistorsin 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.

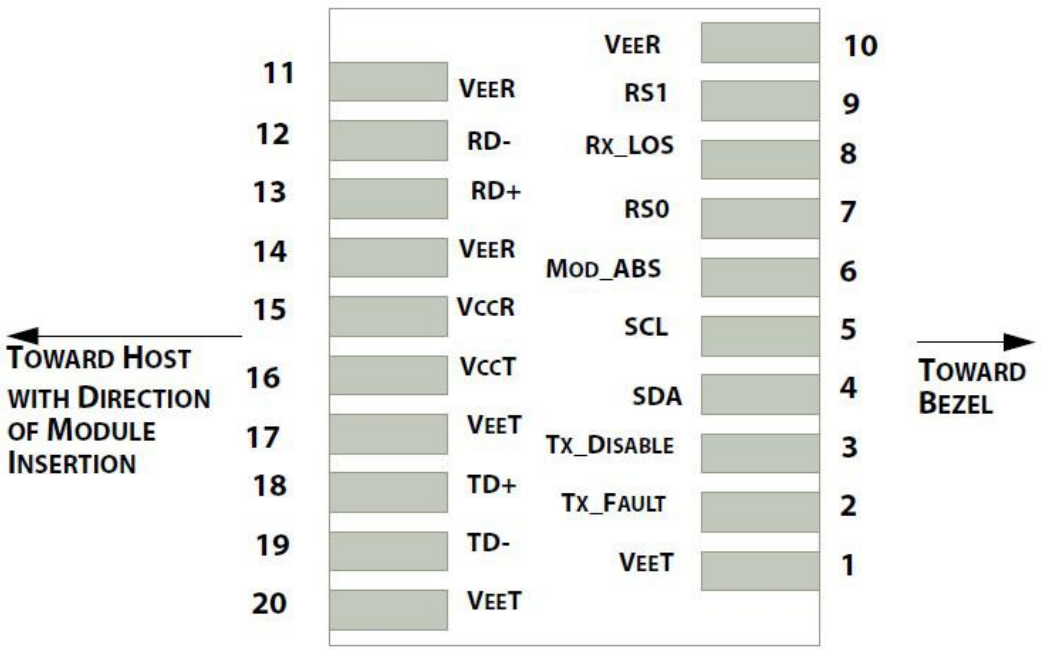
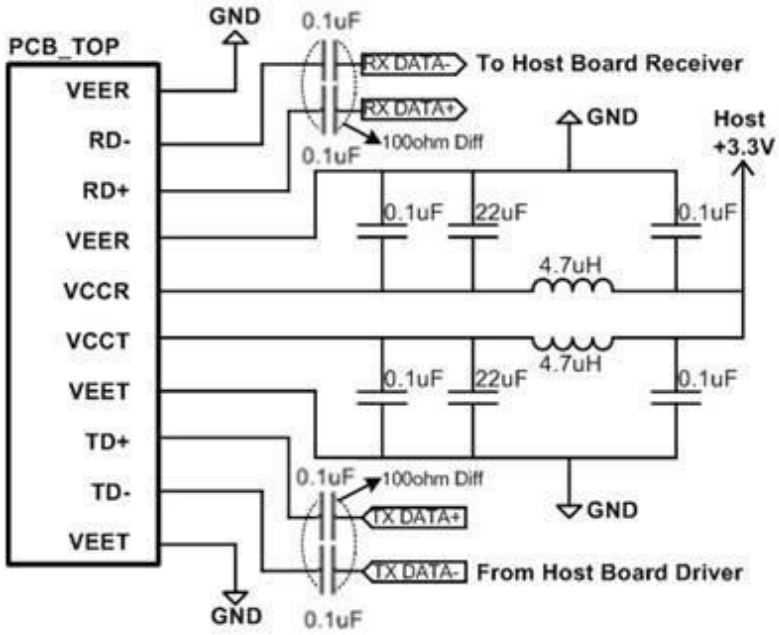
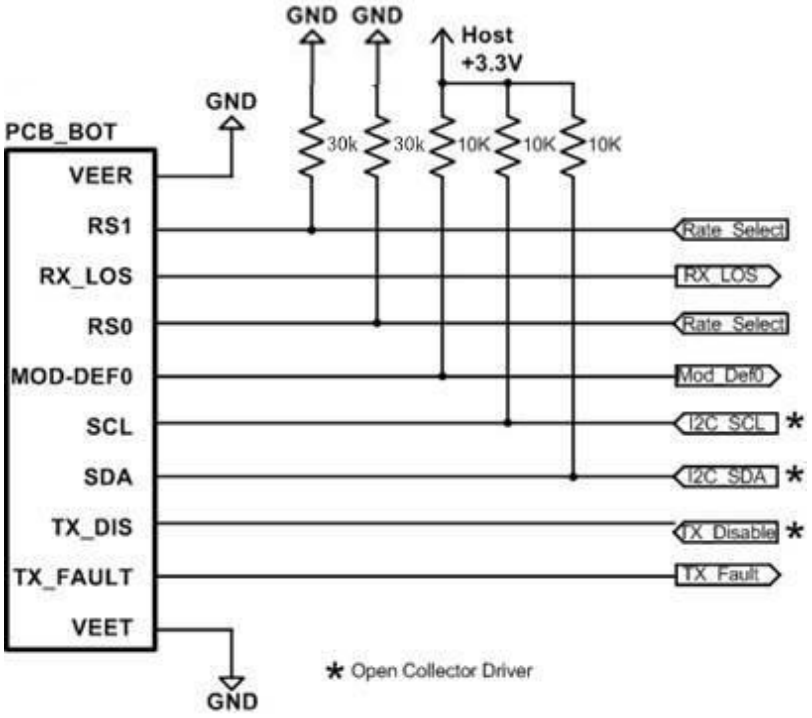


Diagram of Host Board Connector Block Pin Numbers and Names

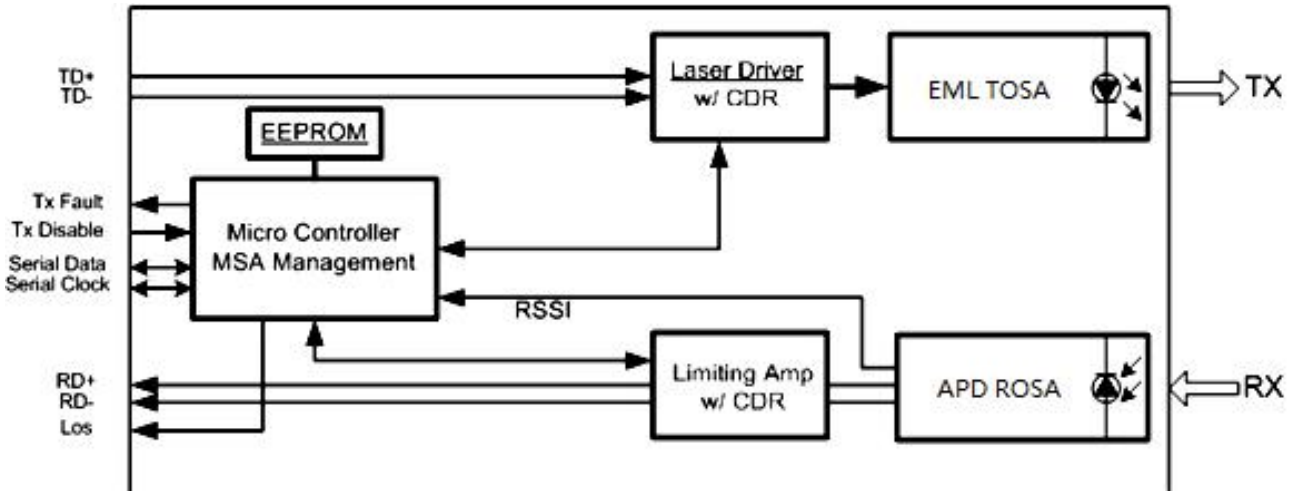
VII .Recommended Circuit:



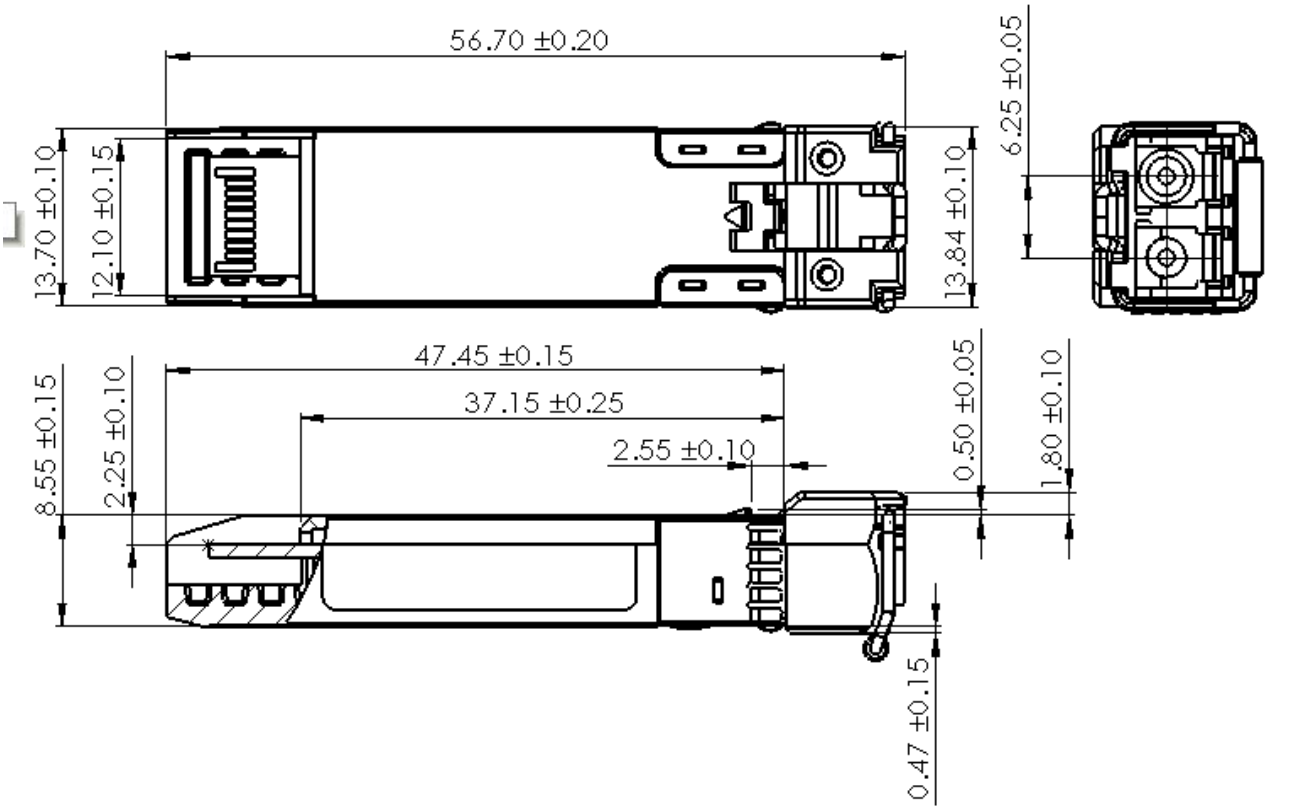


Recommended High-speed Interface Circuit

VIII. Transceiver Block Diagram



IX. Mechanical Dimensions



Test Center

FS.COM transceivers are tested to ensure connectivity and compatibility in our test center before shipped out. FS.COM test center is supported by a variety of mainstream original brand switches and groups of professional staff, helping our customers make the most efficient use of our products in their systems, network designs and deployments.

The original switches could be found nowhere but at FS.COM test center, eg: Juniper MX960 & EX 4300 series, Cisco Nexus 9396PX & Cisco ASR 9000 Series, HP 5900 Series & HP 5406R ZL2 V3(J9996A), Arista 7050S-64, Brocade ICX7750-26Q & ICX6610-48, Avaya VSP 7000 MDA 2, etc.

Cisco ASR 9000 Series(A9K-MPA-1X40GE)

ARISTA 7050S-64(DCS-7050S-64)

Juniper MX960

Brocade ICX 7750-26Q

Extreme Networks X670V VIM-40G4X

Mellanox M3601Q

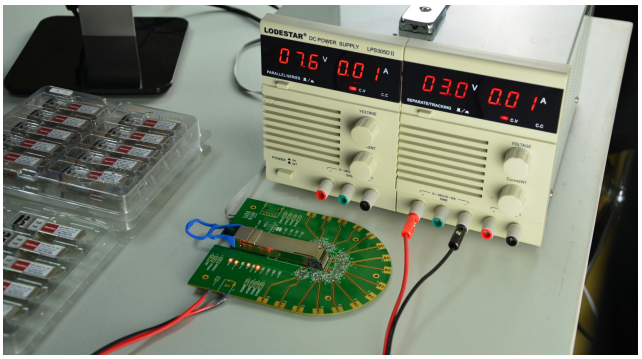
Dell N4032F

HP 5406R ZL2 V3(J9996A)

AVAYA 7024XLS(7002QQ-MDA)

Test Assured Program

FS.COM truly understands the value of compatibility and interoperability to each optics. Every module FS.COM provides must run through programming and an extensive series of platform diagnostic tests to prove its performance and compatibility. In our test center, we care of every detail from staff to facilities—professionally trained staff, advanced test facilities and comprehensive original-brand switches, to ensure our customers to receive the optics with superior quality.



Our smart data system allows effective product management and quality control according to the unique serial number, properly tracking the order, shipment and every part.

Our in-house coding facility programs all of our parts to standard OEM specs for compatibility on all major vendors and systems such as Cisco, Juniper, Brocade, HP, Dell, Arista and so on.

With a comprehensive line of original-brand switches, we can recreate an environment and test each optics in practical application to ensure quality and distance.

The last test assured step to ensure our products to be shipped with perfect package.

Order Information

Part Number	Description
SFP-25GSR-85	25G SFP28 850nm 100m Dom Tranceiver
SFP-25GLR-31	25G SFP28 1310nm 10km DOM Tranceiver
SFP-25GERL-31	25G SFP28 1310nm 30km DOM Tranceiver
SFP-25GER-31	25G SFP28 1310nm 40km DOM Tranceiver
SFP28-25G-BX	25G SFP28 1270nm-TX/1330-RX 10km DOM Tranceiver
SFP28-25G-BX	25G SFP28 1330nm-TX/1270-RX 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1270nm 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1290nm 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1310nm 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1330nm 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1350nm 10km DOM Tranceiver
CWDM-SFP25G-10SP	25G CWDM SFP28 1370nm 10km DOM Tranceiver

Notes:

25G SFP28 transceiver module is individually tested on corresponding equipment such as Cisco, Arista, Juniper,Dell,Brocade and other brands, and passes the monitoring of FS.COM intelligent quality control system.