

# 25G CWDM SFP28 1470nm-1570nm 10km DOM Transceiver

CWDM-SFP25G-10M



## Application

- 25GE LR
- eCPRI&CPRI

## 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

## Description

FS's CWDM-SFP25G-10M SFP28 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.

## Product Specifications

### I. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
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	%	

### II. Electrical Characteristics ( $T_{OP} = 0$ to $70$ ° C, $V_{CC} = 3.15$ to $3.46$ Volts)

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
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	
<b>Transmitter Section:</b>						
Input differential impedance	$R_{in}$		100		$\Omega$	1
Differential input voltage swing	$V_{in,pp}$	180		450	mV	2

<b>Transmit Disable Voltage</b>	$V_D$	2		Vcc	V	3
<b>Transmit Enable Voltage</b>	$V_{EN}$	Vee		Vee+0.8	V	
<b>Receiver Section:</b>						
<b>Single Ended Output Voltage Tolerance</b>	V	-0.3		4	V	
<b>Rx Output Diff Voltage</b>	$V_o$	180		450	mV	
<b>LOS Fault</b>	$V_{LOS\ fault}$	2		$V_{CCHOST}$	V	4
<b>LOS Normal</b>	$V_{LOS\ norm}$	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 – 10k $\Omega$  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 ( $T_{OP} = 0$  to  $70^{\circ}$  C, VCC = 3.15 to 3.46 Volts)**

Parameter	Symbol	Min	Typ.	Max	Unit	Ref.
<b>Transmitter Section:</b>						
<b>Center Wavelength</b>	$\lambda_t$	$\lambda - 6.5$	$\lambda$	$\lambda + 6.5$	nm	
<b>spectral width(-20dB)</b>	$\Delta\lambda$			1	nm	
<b>Average Optical Power</b>	$P_{avg}$	-2.0		+6.0	dBm	1
<b>Laser Off Power</b>	$P_{off}$			-30	dBm	
<b>Side Mode Suppression Ratio</b>		30				
<b>Extinction Ratio</b>	ER	5			dB	
<b>Optical Return Loss Tolerance</b>				-12	dB	

**Receiver Section:**

<b>Center Wavelength</b>	$\lambda_r$	1260	1610	nm	
<b>Receiver Sensitivity</b>	Sen		-12	dBm	2
<b>Los Assert</b>	LOS <sub>A</sub>	-30		dBm	
<b>Los Dessert</b>	LOS <sub>D</sub>		-16	dBm	
<b>Los Hysteresis</b>	LOS <sub>H</sub>	0.5		dB	
<b>Overload</b>		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 .

## IV. Timing Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit
<b>TX_Disable Assert Time</b>	t <sub>off</sub>			100	us
<b>TX_Disable Negate Time</b>	t <sub>on</sub>			2	ms
<b>Time to Initialize 2-wire interface</b>	t <sub>2w_start_up</sub>			300	ms
<b>Time to Initialize</b>	t <sub>start_up</sub>			300	ms
<b>Time to Initialize cooled module and time to power up a cooled module to Power level II</b>	t <sub>start_up_cooled</sub>			90	s
<b>Time to Power Up to Level II</b>	t <sub>power_level2</sub>			300	ms
<b>Time to Power Down from Level II</b>	t <sub>power_down</sub>			300	ms
<b>Tx_Fault assert</b>	Tx_Fault_on			1	ms
<b>Tx_Fault assert for cooled module</b>	Tx_Fault_on_cooled			50	ms

<b>TX_FAULT Reset</b>	t_reset	10	us
<b>Rx_LOS assert delay</b>	t_los_on	100	us
<b>Rx_LOS negate delay</b>	t_los_off	100	us

### V. Digital Diagnostic Monitoring Information

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

### VI. Pin Assignment

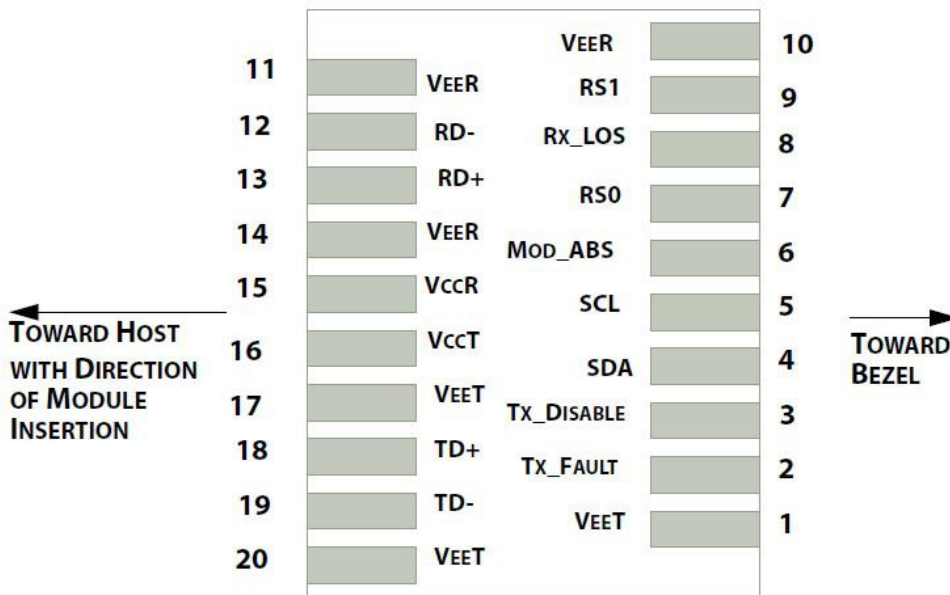


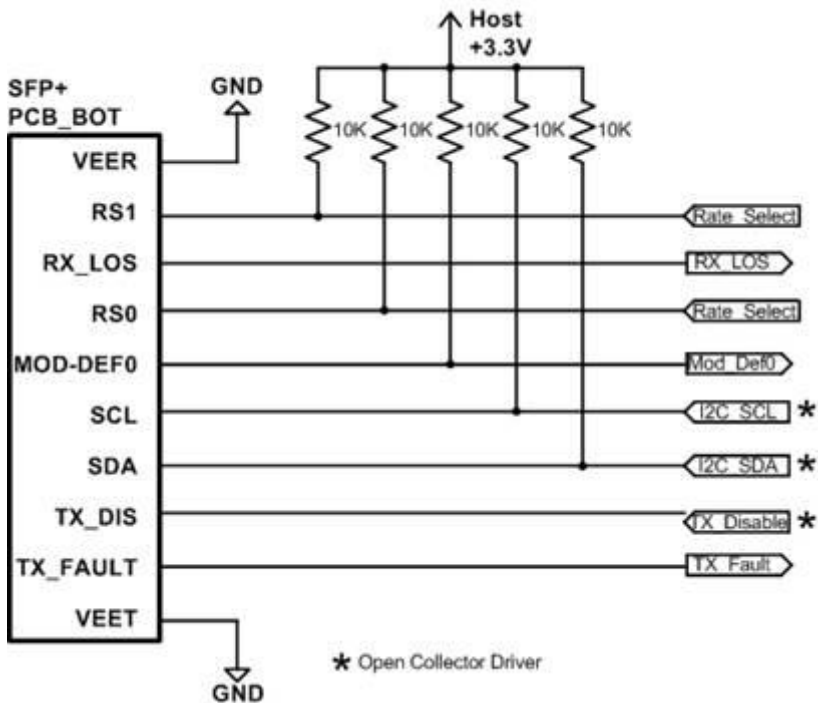
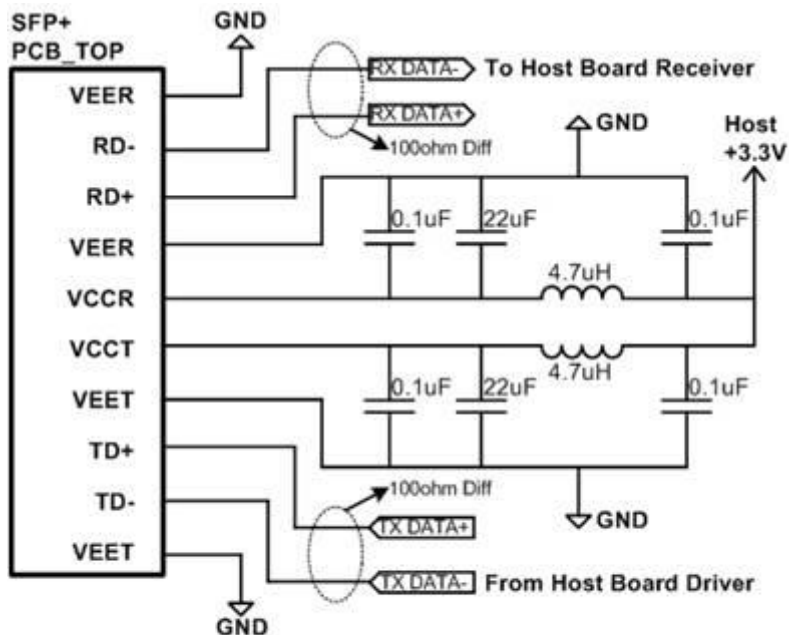
Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Name	Function	Notes
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 > 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:**

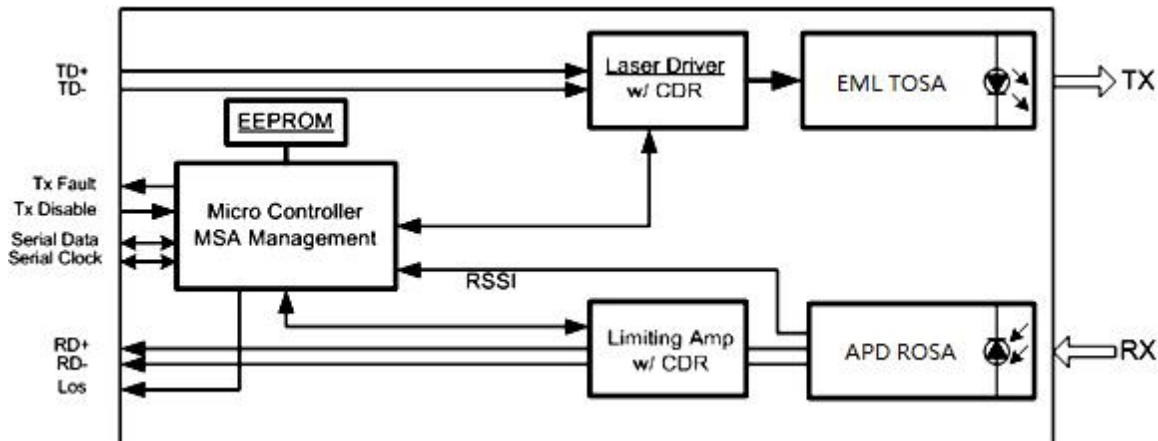
- 1.The module ground pins shall be isolated from the module case.
- 2.This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host\_Vcc on the host board.
- 3.This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
- 4.This pin is an open collector/drain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

### VII. Recommended Circuit

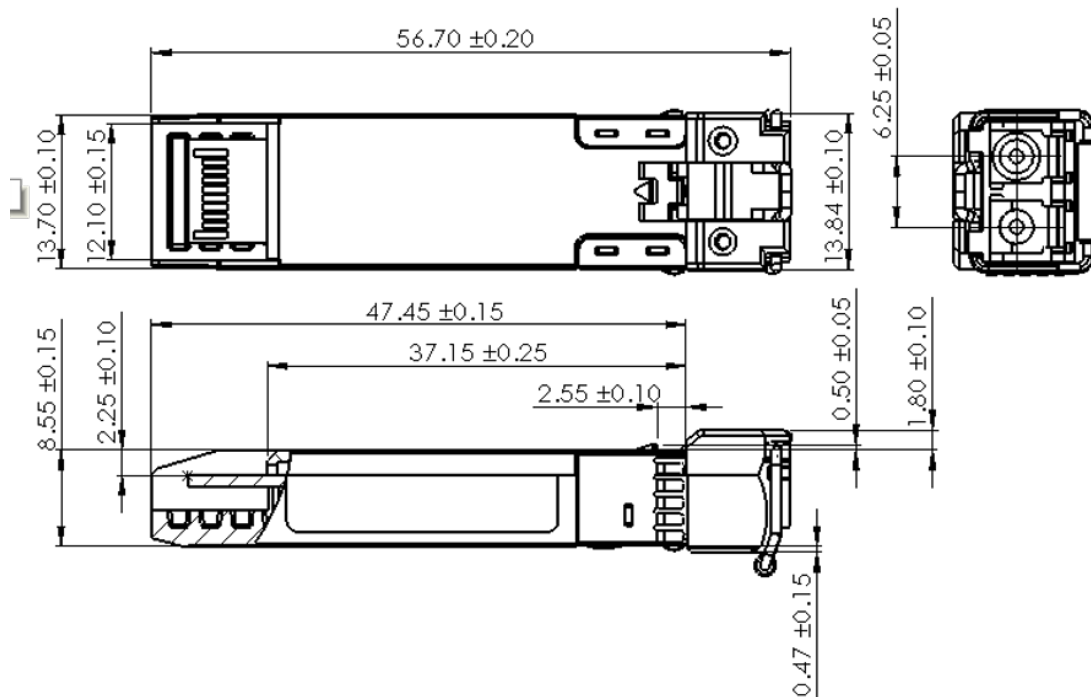


Recommended High-speed Interface Circuit

### VIII. Transceiver Block Diagram



### IX. Diagram Mechanical Drawing





## 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)



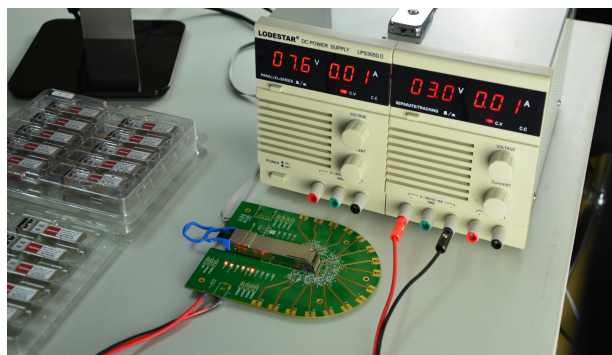
AVAYA 7024XLS(7002QQ-MDA)

## 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 tracing 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
CWDM-SFP25G-10SP	25GBASE CWDM SFP28 1270-1370NM 10KM DOM TRANSCEIVER
CWDM-SFP25G-10M	25GBASE CWDM SFP28 1470-1570NM 10KM DOM TRANSCEIVER
CWDM-SFP25G-40S	25GBASE CWDM SFP28 1270-1370NM 40KM DOM TRANSCEIVER
DWDM-SFP25G-10	25GBASE DWDM SFP28 C17-C61 10KM DOM TRANSCEIVER
LWDM-SFP25G-40	25GBASE LWDM SFP28 1286.66-1309.14NM 40KM DOM TRANSCEIVER



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