

# 25G SFP28 850nm 300m DOM Transceiver

E25GSFP28SR-LL



## Application

- Data Center Interconnect
- 25G BASE-ESR Ethernet

## Features

- Supports 25.78Gb/s Bit Rate
- Hot-pluggable SFP28 Footprint
- 850nm VCSEL Laser and PIN Photo-detector
- Internal CDR on Transmitter and Receiver Channel
- Link Lengths at 25.78G 400m over OM4 MMF
- Link Lengths at 25.78G 300m over OM3 MMF
- LC Duplex Connector
- Low Power Consumption < 1W
- RoHS-10 Compliant (lead-free)
- 0°C to 70°C Operating Temperature Range
- Single +3.3V ± 5% Power Supply
- Programmable TX Input Equalizer
- Programmable RX

## Description

The 25G ESR 300M short-wavelength transceiver is designed for using in 25.78Gb/s data rate over multimode fiber. The transceiver is compliant with SFF-8431, and the mechanical SFP28 plug is compatible with SFF-8432. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

## Product Specifications

### I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
<b>Storage Temperature Range</b>	T <sub>s</sub>	-40	85	°C
<b>Relative Humidity</b>	RH	0	85	%
<b>Supply Voltage</b>	V <sub>CC</sub>	-0.3	4.0	V

### II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
<b>Operating Case Temperature</b>	T <sub>OPR</sub>	0		70	°C
<b>Power Supply Voltage</b>	V <sub>CC</sub>	3.14	3.3	3.46	V
<b>Bit Rate</b>	BR		25.78		Gb/s
<b>Bit Error Ratio</b>	BER			5*10 <sup>-5</sup>	
<b>Max Supported Link Length</b>	L			300@OM3 400@OM4	m

### III. Electrical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
<b>Supply Voltage</b>	$V_{CC}$	V	3.14	3.3	3.46	
<b>Supply Current</b>	$I_{CC}$	mA			230	
<b>Transmitter</b>						
<b>Input Differential Impedance</b>	$R_{IN}$	$\Omega$	80	100	120	1
<b>Single Ended Data Input Swing</b>	$V_{IN}$	mVp-p	90		500	
<b>Transmit Disable Voltage</b>	$V_{DIS}$	V	2		$V_{CCHOST}$	
<b>Transmit Enable Voltage</b>	$V_{EN}$	V	$V_{EE}$		$V_{EE}+0.8$	
<b>Transmit Fault Assert Voltage</b>	$V_{FA}$	V	2		$V_{CCHOST}$	
<b>Transmit Fault De-Assert Voltage</b>	$V_{FDA}$	V	$V_{EE}$		$V_{EE}+0.8$	
<b>Receiver</b>						
<b>Single Ended Data Output Swing</b>	$V_{OD}$	mVp-p	200		500	
<b>LOS Fault</b>	$V_{LOSFT}$	V	2		$V_{CCHOST}$	
<b>LOS Normal</b>	$V_{LOSNR}$	V	$V_{EE}$		$V_{EE}+0.8$	

Note:

1. Differential between TD+ / TD-

## IV. Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
<b>Transmitter</b>						
<b>Nominal Wavelength</b>	$\lambda$	nm	840		860	
<b>Spectral Width</b>	DI	nm			0.5	
<b>Optical Modulation Amplitude</b>	$P_{OMA}$	dBm	-4.3		3	
<b>Optical Output Power</b>	$P_{av}$	dBm	-6.4		2.4	
<b>Extinction Ratio</b>	ER	dB	2			
<b>Transmitterand Dispersion Penalty</b>	TDP	dB			5	
<b>Average Launch Power of OFF Transmitter</b>	$P_{OFF}$	dBm			-30	
<b>Receiver</b>						
<b>Center Wavelength</b>	$\lambda$	nm	840		860	
<b>Average Receiver Power</b>	$P_{AVG}$	dBm	-10.3		2.4	1
<b>Stressed Receiver Sensitivity (OMA)</b>	$R_{SENSE}$	dBm			-5.2	2
<b>Receiver Reflectance</b>	$R_{REFL}$	dB			-12	
<b>Assert LOS</b>	$LOS_A$	dBm	-30			
<b>De-Assert LOS</b>	$LOS_D$	dBm			-13	
<b>LOS Hysteresis</b>		dB	0.5			

Notes:

1. Sensitivity for 25.78G PRBS 231-1 and BER better than or equal to  $5 \cdot 10^{-5}$ .
2. The stressed sensitivity value in the table is for system level BER measurements which include the effects of CDR circuit.

### IV. Pin Function Definitions

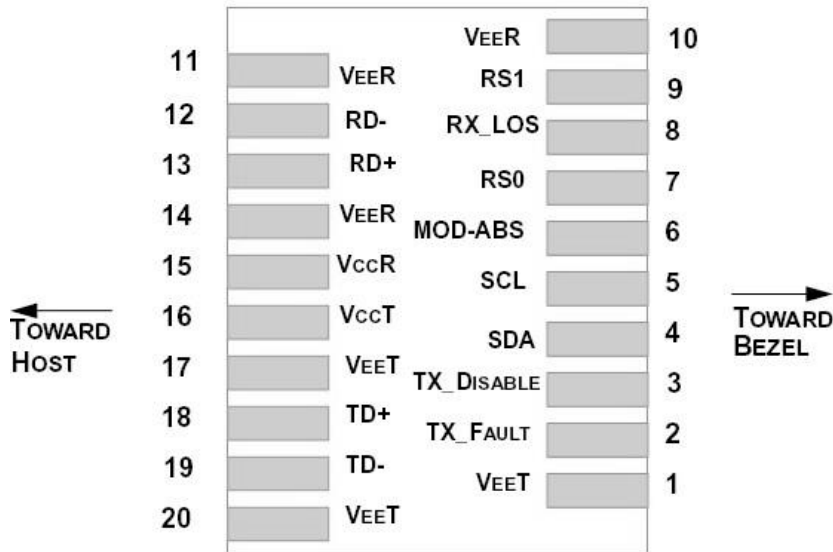


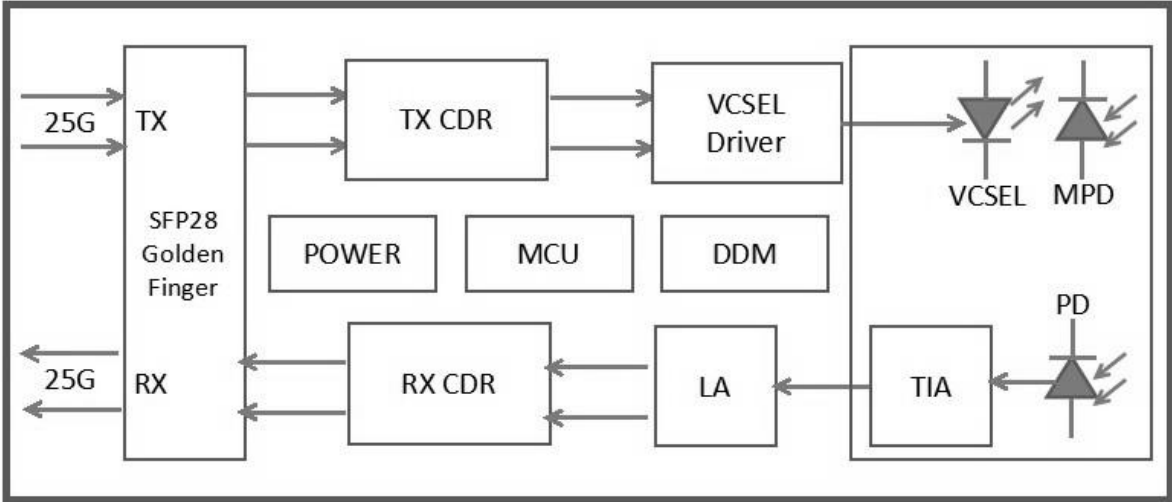
Figure1. Pin Definitions of the Module High Speed Inputs/Outputs

### V. Transceiver Pin Descriptions

Pin No.	Symbol	Name	Definition
<b>1,17,20</b>	VeeT	Transmitter Signal Ground	These pins should be connected to signal ground on the host board.
<b>2</b>	TX Fault	Transmitter Fault Out (OC)	Logic "1" Output = Transmitter Fault Logic "0" Output = Normal Operation This pin is open collector compatible, and should be pulled up to Host Vcc with a 10kΩ resistor.
<b>3</b>	TX Disable	Transmitter Disable In (LVTTL)	Logic "1" Input (or no connection) = Laser off Logic "0" Input = Laser on This pin is internally pulled up to VccT with a 10kΩ resistor.
<b>4</b>	SDA	Module Definition Identifiers	SerialID with SFF8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10kΩ resistors.
<b>5</b>	SCL		
<b>6</b>	MOD-ABS		

Pin No.	Symbol	Name	Definition
<b>7</b>	RS0	Receiver Rate Select (LVTTTL) Transmitter Rate Select (LVTTTL)	NA
<b>9</b>	RS1		
<b>8</b>	LOS	Loss of Signal Out (OC)	This pin is open collector compatible, and should be pulled up to Host Vcc with a 10kΩ resistor.
<b>10,11,14</b>	VeeR	Receiver Signal Ground	These pins should be connected to signal ground on the host board.
<b>12</b>	RD-	Receiver Negative DATA Out (CML)	Light on = Logic "0" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
<b>13</b>	RD+	Receiver Positive DATA Out (CML)	Light on = Logic "1" Output Receiver DATA output is internally AC coupled and series terminated with a 50Ω resistor.
<b>15</b>	VccR	Receiver Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure3. Recommended power supply filter
<b>16</b>	VccT	Transmitter Power Supply	This pin should be connected to a filtered +3.3V power supply on the host board. See Figure3. Recommended power supply filter
<b>18</b>	TD+	Transmitter Positive DATA In (CML)	Logic "1" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.
<b>19</b>	TD-	Transmitter Negative DATA In (CML)	Logic "0" Input = Light on Transmitter DATA inputs are internally AC coupled and terminated with a differential 100Ω resistor.

## VI. Block Diagram



## VII. Diagram Mechanical Drawing

