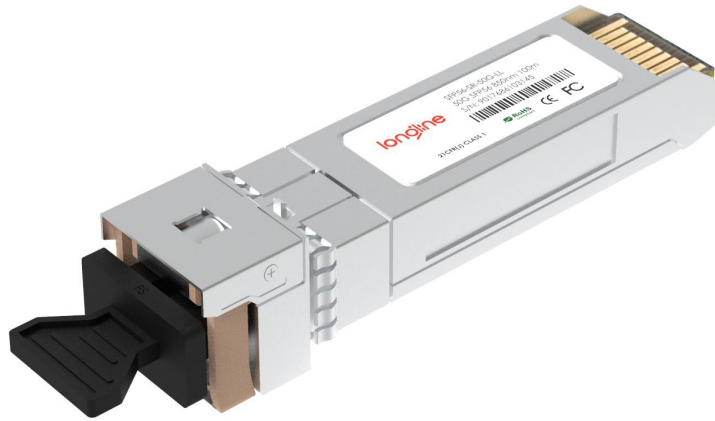


50GBASE-SR SFP56 850nm 100m DOM Transceiver

SFP56-SR-50G-LL



Application

- 25G&50G BASE-SR

Standards

- SFF-8402
- SFF-8419
- SFF-8472
- OIF-CEI-04.0
- IEEE802.3cd

Features

- Supports 25.78Gb/s NRZ and 53.125Gb/s PAM4
- Hot-pluggable SFP56 Footprint
- 850nm VCSEL Laser and Pin Photo-Detector
- Internal CDR on Transmitter and Receiver Channel
- Duplex LC Connector
- Low Power Consumption < 1.5W
- Link Lengths at 25.78G NRZ and 53.125G PAM4 100m over OM4 MMF
- Single +3.3V \pm 5% Power Supply
- Operating Temperature Range: 0°C to 70°C
- Digital Monitoring SFF-8472 Compliant

Description

The 50G SR short-wavelength transceiver is designed for use in 25.78G NRZ and 53.125Gb/s PAM4 data rate over multimode fiber. The transceiver is compliant with SFF-8402, and the mechanical SFP+ 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	Unit	Min.	Max.
Storage Temperature Range	T _s	°C	-40	85
Relative Humidity	RH	%	0	85
Supply Voltage	V _{CC}	V	-0.3	4.0

II. Recommended Operating Conditions

Parameter	Symbol	Unit	Min.	Typ.	Max.
Operating Case Temperature Range	T _c	°C	0		70
Power Supply Voltage	V _{CC}	V	3.1	3.3	3.465
Bit Rate	BR	Gb/s		25.78/53.125	
Bit Error Ratio	BER				5*1E-5
Max. Supported Link Length	L	m			100

III. Electric Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Supply Voltage	V_{CC}	V	3.1	3.3	3.465	
Supply Current	I_{CC}	mA			450	
Transmitter						
Input Differential Impedance	R_{IN}	Ω	80	100	120	1
Single Ended Data Input Swing	V_{IN}	mVp-p	90		500	
Transmit Disable Voltage	V_{DIS}	V	2		V_{CCHOST}	
Transmit Enable Voltage	V_{EN}	V	V_{EE}		$V_{EE}+0.8$	
Transmit Fault Assert Voltage	V_{FA}	V	2		V_{CCHOST}	
Transmit Fault De-Assert Voltage	V_{FDA}	V	V_{EE}		$V_{EE}+0.8$	
Receiver						
Single Ended Data Output Swing	V_{OD}	mVp-p	200		500	
LOS Fault	V_{LOSFT}	V	2		V_{CCHOST}	
LOS Normal	V_{LOSNR}	V	V_{EE}		$V_{EE}+0.8$	

NOTE 1: Differential between TD+ / TD-

IV. Optical Characteristics

(Tested under recommended operating conditions, unless otherwise noted)

Parameter	Symbol	Unit	25.78Gb/s			53.125Gb/s			Note
			Min.	Typ.	Max.	Min.	Typ.	Max.	

Transmitter

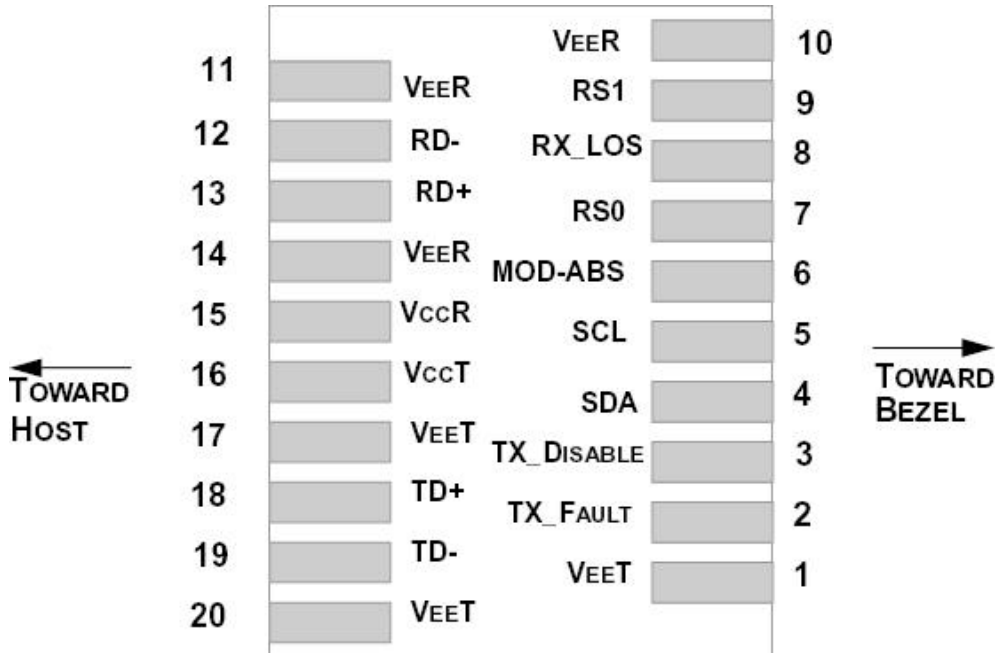
Modulation Format			NRZ			PAM4			
Nominal Wavelength	λ	nm	840		860	840		860	
RMS Spectral Width	$\Delta\lambda$	nm			0.6			0.6	
Tx OMA per Lane	TxOMA	dBm	-6.4		3	-4.5		3	
Optical Output Power	P _{av}	dBm	-8.4		2.4	-6.5		4	
Extinction Ratio	ER	dB	2			3			
Launch Power in OMA Outer Minus TDECQ (Min)		dBm				-5.9			
Optical Return Loss Tolerance	ORL	dB			12			12	
Encircled Flux	FLX	dBm				>86% at 19um			
						<30% at 4.5um			
TDECQ		dB						4.5	
Average Launch Power of OFF Transmitter	P _{OFF}	dBm			-30			-30	

Receiver

Modulation Format			NRZ			PAM4			
Center Wavelength	λ	nm	840		860	840		860	
Damage Threshold	DT	dBm	3.4			5			

Parameter	Symbol	Unit	25.78Gb/s			53.125Gb/s			Note
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Receiver									
Max. Average Receiver Power (Overload)	P_{AVG}	dBm			2.4			4	
Receive Power (OMAOuter) (Overload)		dBm			3			3	
Stressed Receiver Sensitivity (OMA)	R_{SENSE1}	dBm			-5.2			-3.4	
Receiver Reflectance	R_{REFL}	dB			-12			-12	
Max. Receiver Sensitivity (OMAouter)	R_{SENSE2}	dBm			-10.3			-6.5	

V. Pin Function Definitions



VI. Transceiver Pin Descriptions

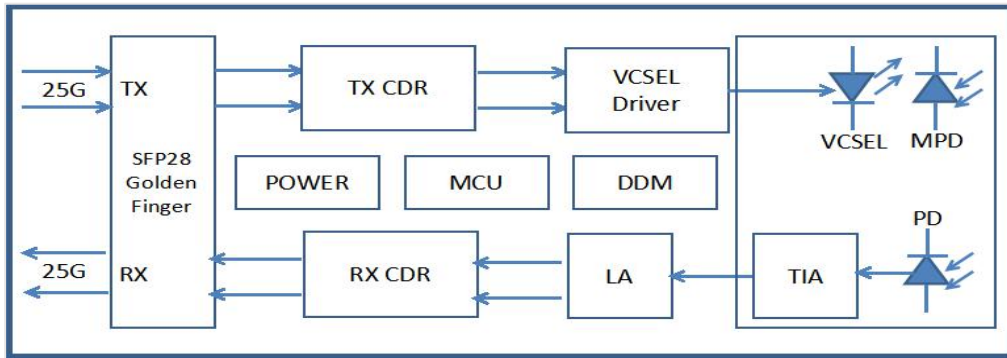
Pin Number	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	These Pins Should Be Connected to Signal Ground on the Host Board.
2	TX Fault	Transmitter Fault Out (OC)	Logic "1" Output = Transmitter Fault Logic "0" Output = Normal Operation This Pin is Open Collector Compatible, and Should Be Pulled up to Host Vcc with A 10kΩ Resistor.
3	TX Disable	Transmitter Disable In (LVTTTL)	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.
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition Pins Should Be Pulled up to Host Vcc with 10kΩ Resistors.
5	SCL		
6	MOD-ABS		
7	RS0	Receiver Rate Select (LVTTTL) Transmitter Rate Select (LVTTTL)	NA
9	RS1		NA
8	LOS	Loss of Signal Out (OC)	This Pin is Open Collector Compatible, and Should Be Pulled Up to Host Vcc with A 10kΩ Resistor.
10,11,14	VeeR	Receiver Signal Ground	These Pins Should Be Connected to Signal Ground on the Host Board.
12	RD-	Receiver Negative DATA Out (CML)	Light on = Logic "0" Output Receiver DATA Output is Internally AC Coupled And series terminated with a5 0Ω resistor.
13	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.
15	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

Pin Number	Symbol	Name	Description
16	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
18	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.
19	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.

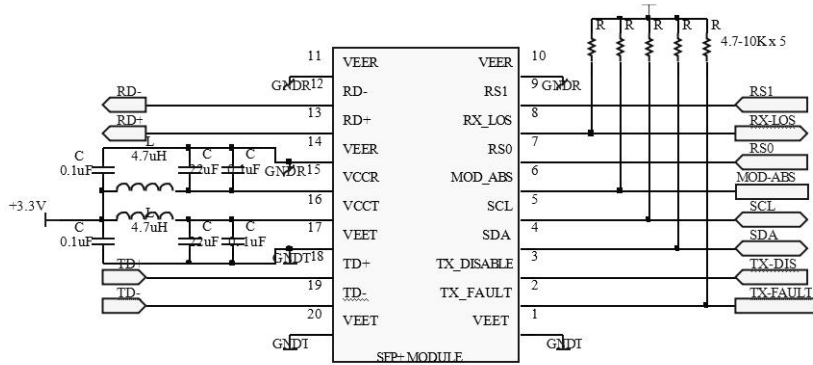
VII. Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class1 (>1500 Volts)
Electrostatic Discharge (ESD) Immunity	Variation of IEC 61000-4-2	LV 4 (Air discharge: 15 KV; Contact discharge : 8 KV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B EN55022 Class B FCC Class B	Compliant with Standards
Immunity	IEC61000-4-3 Class 2 EN55024	Typically show no measurable effect from a 3V/m field swept from 80 to 1000MHz applied to the transceiver without a chassis enclosure.

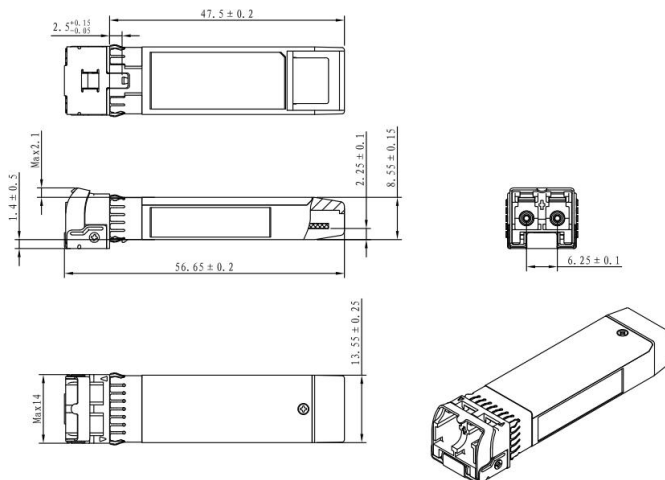
VIII. Principle diagram



IX. Typical Application Circuit



X. Package Outline



Unit: mm

Unspecified Tolerance: ±0.2mm