

VT-MSFPST

Single mode dual fiber
SFP Transceiver



Overview

The VT-MSFPST SFP transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.0625Gbps and 20km transmission distance with SMF. The transceiver consists of three sections: a FP laser transmitter, a PIN photo diode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements. The transceivers are compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA

Feature

- Supports 1.25Gbps/1.0625Gbps bit rates
- Duplex LC connector
- Hot pluggable SFP footprint
- 1310nm FP laser transmitter and PIN photo-detector
- Applicable for 20Km SMF connection
- Low power consumption, < 0.8W
- Digital Diagnostic Monitor Interface
- Compliant with SFP MSA and SFF-8472
- Very low EMI and excellent ESD protection
- Operating case temperature:
Commerical: 0 to 70 °C

Specifications

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	Vcc	-0.5	4.0	V	
Storage Temperature	Ts	-40	85	°C	
Relative Humidity	RH	0	85	%	

Note: Stress in excess of the maximum absolute ratings can cause permanent damage to the transceiver.

General Operating Characteristics

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Data Rate	DR	1.0625	1.25		Gb/s	
Supply Voltage	Vcc	3.13	3.3	3.47	V	
Supply Current	Icc _s			220	mA	
Operating Case Temp.	Tc	0		70	°C	
	Tl	-40		85		

Electrical Characteristics (TOP(C) = 0 to 70 °C, VCC = 3.13 to 3.47 V)

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Differential data input swing	V _{IN,PP}	120		820	mV _{pp}	1
Tx Disable Input-High	V _{IH}	2.0		V _{cc} +0.3	V	
Tx Disable Input-Low	V _{IL}	0		0.8	V	
Tx Fault Output-High	V _{OH}	2.0		V _{cc} +0.3	V	2
Tx Fault Output-Low	V _{OL}	0		0.5	V	2
Input differential impedance	R _{in}		100		Ω	
Receiver						
Differential data output swing	V _{out,pp}	300	650	800	mV _{pp}	3
Rx LOS Output-High	V _{ROH}	2.0		V _{cc} +0.3	V	2
Rx LOS Output-Low	V _{ROL}	0		0.8	V	2

Notes:

1. TD+/- are internally AC coupled with 100Ω differential termination inside the module.
2. Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7k to 10kΩ resistors on the host board. Pull up voltage between 2.0V and V_{cc}+0.3V.
3. RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

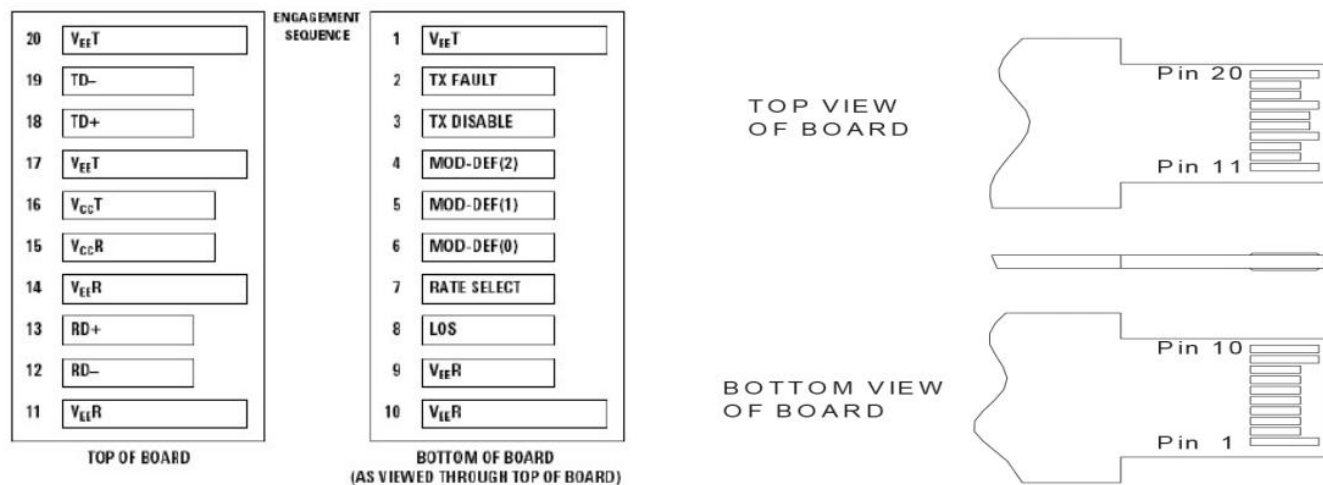
Optical Characteristics (TOP(C) = 0 to 70 °C, VCC = 3.13 to 3.47 V)

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Operating Wavelength	λ	1270	1310	1360	nm	
Ave. output power (Enabled)	P _{AVE}	-9		-3	dBm	1
Extinction Ratio	ER	9			dB	1
RMS spectral width	$\Delta\lambda$			0.65	nm	
Rise/Fall time (20%~80%)	T _r /T _f			0.26	ns	2
Dispersion penalty	TDP			3.9	dB	
Output Optical Eye	Compliant with IEEE802.3 z (class 1 laser safety)					
Receiver						
Operating Wavelength	λ	1260		1610	nm	
Receiver Sensitivity	P _{SEN1}			-22	dBm	3
Overload	P _{AVE}	-3			dBm	3
LOS Assert	P _a	-35			dBm	
LOS De-assert	P _d			-24	dBm	
LOS Hysteresis	P _d -P _a	0.5			dB	

Notes:

1. Measured at 1250Mb/s with PRBS $2^{23} - 1$ NRZ test pattern.
2. Unfiltered, measured with a PRBS $2^{23} - 1$ test pattern @1.25Gbps
3. Measured at 1250Mb/s with PRBS $2^{23} - 1$ NRZ test pattern for BER < 1x10⁻¹²

Pin Definition And Functions



Digital Diagnostic Specifications

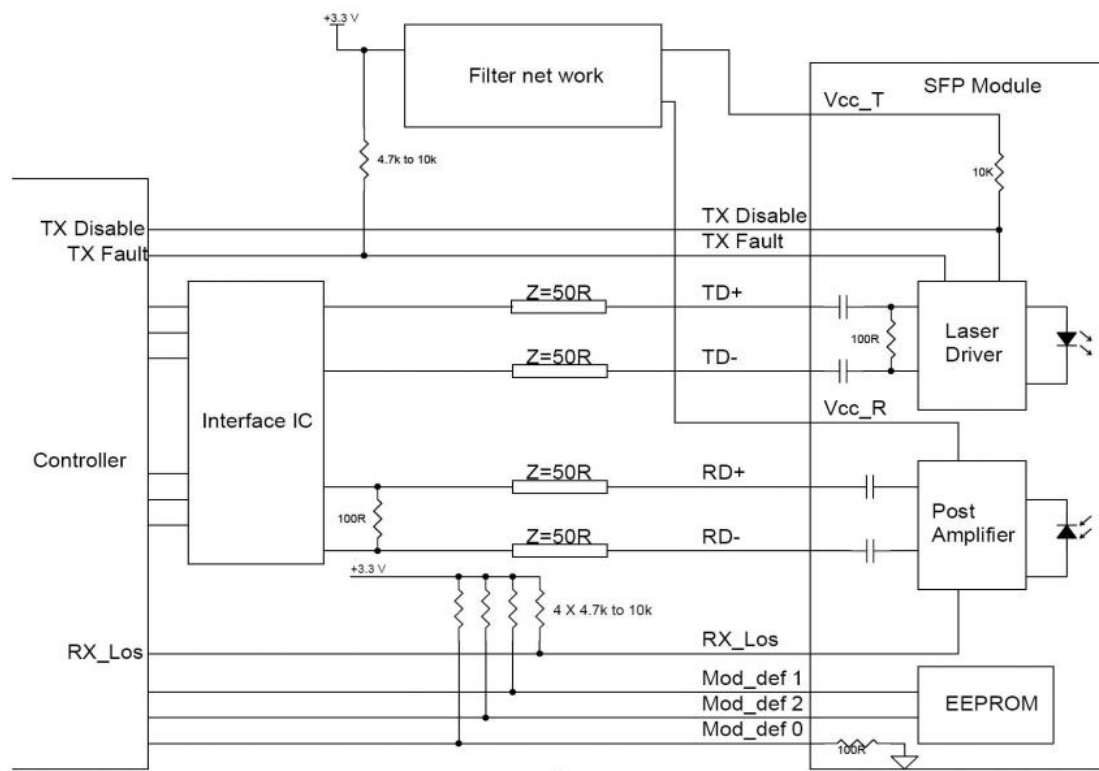
The VT-MSFPST transceivers can be used in host systems that require either internally or externally calibrated digital diagnostics.

Parameter	Symbol	Units	Min.	Max.	Accuracy	Note
Transceiver temperature	DTemp-E	°C	-5	+75	±5°C	
Transceiver supply voltage	DVoltage	V	2.8	4.0	±3%	
Transmitter bias current	DBias	mA	2	15	±10%	1
Transmitter output power	DTx-Power	dBm	-12	-1	±3dB	
Receiver average input power	DRx-Power	dBm	-25	0	±3dB	

Notes:

1. The accuracy of the Tx bias current is 10% of the actual current from the laser driver to the laser 3. Internal/ External Calibration compatible.

Typical Interface Circuit



Dimensions

