PRODUCT FEATURES



- 100% Fortinet Compatible FS-TRAN-SFP+SR
- Up to 10.3 Gb/s data links
- Hot-pluggable SFP+ transceiver module
- 10GBASE-SR/SW 10G Ethernet
- 10G Fibre Channel
- 850nm VCSEL laser transmitter
- PIN Receiver
- RoHS compliant and Lead Free
- Up to 300m on 50/125um MMF (OM3)
- Metal enclosure for lower EMI
- Duplex LC Connector
- Single 3.3V power supply
- Low power dissipation <0.8W
- Commercial operating temperature range: -0°C to 70°C
- GR-253-CORE Compliant
- Compliant with IEEE 802.3ae
- Compliant with SFP+ MSA SFF-8431

REGULATORY COMPLIANCE

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.7
- ESD to the LC Receptacle: compatible with IEC 61000-4-2 GR-1089-CORE
- Immunity compatible with IEC 61000-4-2
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950
- RoHS compliant with 2002/95/EC 4.1&4.2 2005/747/EC

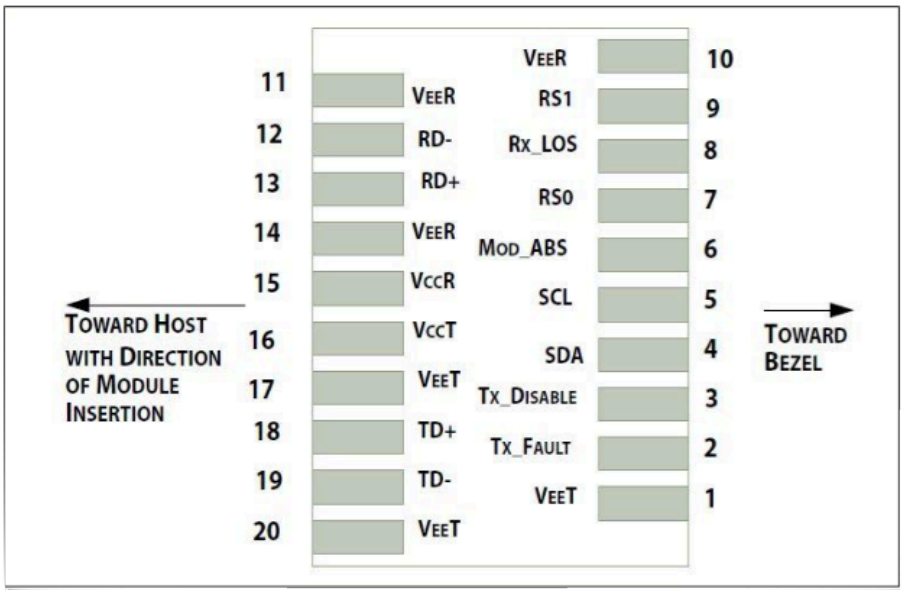
PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1
2	TX Fault	Transmitter Fault. LVTTL –I/O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTTL-I	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I/O	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I	
6	Mod_ABS	Module Absent, Connect to VeeT or Veer in Module	4
7	RH0	Rate Select 0, optionally controls SFP+ module receiver LVTTL-I	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	2
9	RS1	Rate Select 0, optionally controls SFP+ module receiver LVTTL-I	5
10	VeeR	Receiver Ground (Common with Transmitter Ground)	1
11	VeeR	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-Inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground (Common with Transmitter Ground)	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transceiver Ground (Common with Transmitter Ground)	1
18	TD+	Transceiver Non-Inverted DATA in. AC Coupled	
19	TD-	Transmitter Inverted DATA in. AC Coupled	
20	VeeT	Transmitter Ground (Common with Receiver Ground)	1

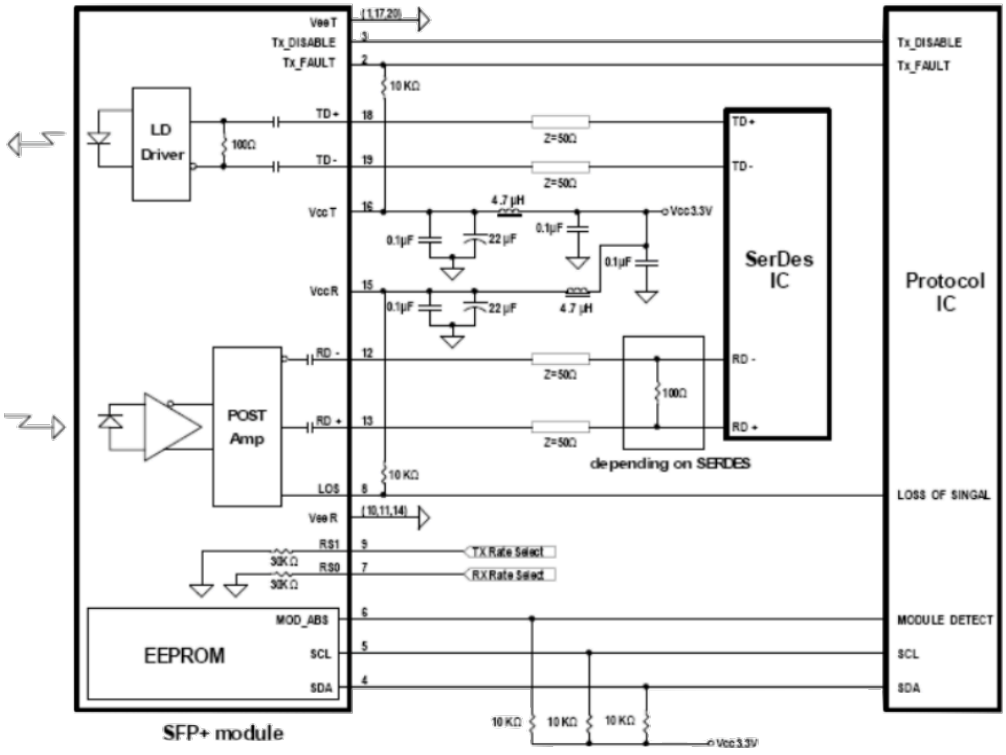
Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resistor in the range 4.7KΩ to 10KΩ. Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contact has voltage exceeding module VccT/R +0.5V.
3. Tx_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contact up to Vcc_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
5. RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module. RS0 optionally selects the optical receive signaling rate coverage. RS1 optionally selects the optical transmit signaling rate coverage.

PIN-OUT OF CONNECTOR BLOCK ON HOST



RECOMMENDED CIRCUIT SCHEMATIC



ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5	-	+4.0	V	
Storage Temperature	TS	-40	-	+85	°C	
Operating Humidity	RH	5	-	85	%	

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Power Supply Voltage	Vcc	3.13	3.30	3.47	V	
Power Supply Current	Icc	-	-	300	mA	
Case Operating Temperature	Tc	0	-	+70	°C	
Data Rate	-	9.95	10.5	10.5	Gbps	
50/125um MMF (OM3)	Lmax	-	-	300	m	

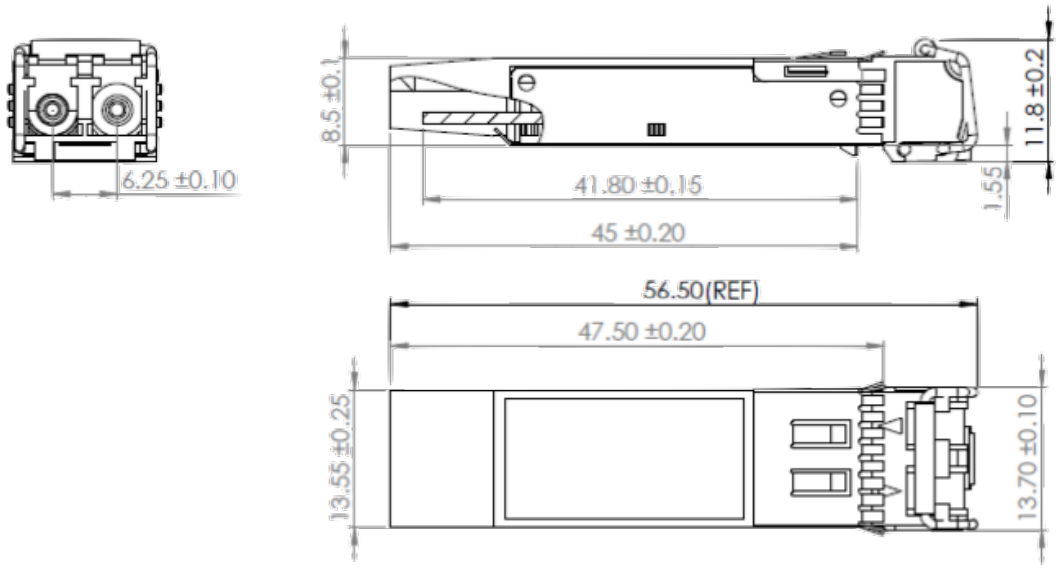
ELECTRICAL CHARACTERISTICS (TOP=25°C, VCC=3.3Volts)

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Input differential impedance	Zin	90	100	110	Ω	
Differential data input swing	Vin, pp	120	600	850	mV	
TX Disable-High	-	2.0	-	Vcc+0.3	V	
TX Disable-Low	-	Vee-0.3	-	0.8	V	
TX Fault-High	-	2.0	-	Vcc+0.3	V	
TX Fault-Low	-	Vee-0.3	-	0.8	V	
Receiver						
Single ended data output swing	Vout, pp	300	600	850	mV	
Output Differential Impedance	Zin	90	100	110	Ω	
LOS-High	-	2.0	-	Vcc+0.3	V	
LOS-Low	-	Vee-0.3	-	0.8	V	

OPTICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Transmitter					
Output Opt. Power	AOP	-5		-1	dBm
Optical Modulation Amplitude	P(OMA)	-4.3	-2		dBm
Extinction Ratio	ER	3			dB
Transmitter and Dispersion Penalty	TDP			3.9	dB
Average Launch Power of OFF TX	Poff			-45	dBm
Optical Wavelength	λ	840	850	860	nm
Side mode Suppression Ratio	SMSR	30			dB
Optical Return Loss Tolerance	ORLT			12	dB
Relative Intensity Noise	RIN			-128	dB/Hz
Transmitter Reflectance				-12	dB
Receiver					
RX Sensitivity	PIN			-11.1	dBm
Overload		-1			dBm
Receiver Reflectance				-12	dB
Optical Center Wavelength	λC	840	850	860	nm
LOS Assert		-30			dBm
LOS De-Assert				13	dBm
LOS Hysteresis		0.5			dB

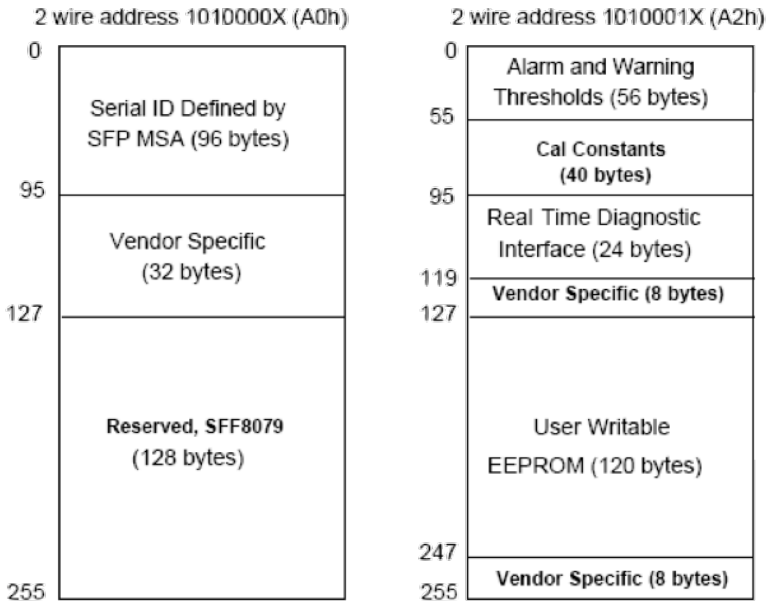
MECHANICAL SPECIFICATIONS



FS-TRAN-SFP+SR-HPC

EEPROM INFORMATION

EEPROM memory map specific data field description is as below:



DIGITAL DIAGNOSTIC MONITORING INTERFACE

The digital diagnostic monitoring interface also defines another 256-byte memory map in EEPROM, which makes use of the 8 bit address 1010001X (A2h). The monitoring specification of this product is described in this table.

Parameter	Range	Accuracy	Calibration
Temperature	0°C to 70°C	±3°C	Internal
Voltage	2.97 to 3.63V	±3%	Internal
Bias Current	0 to 100mA	±10%	Internal
TX Power	-5 to 1dBm	±2dB	Internal
RX Power	-11.1 to -1dBm	±3dB	Internal

ORDERING INFORMATION

Part Number	Product Description
FS-TRAN-SFP+SR-HPC	Fortinet Compatible 10GBASE-SR SFP+ Transceiver