

Fortinet Compatible 10GBASE-SR SFP+ Transceiver FS-TRAN-SFP+SR-HPC Datasheet

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 $4.7K\Omega$ to $10K\Omega$. 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 4.7K Ω to 10K Ω 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



Fax: (312) 253-4493 Email: sales@hpcoptics.com



ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Min	Тур	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	Тур	Max	Unit	Ref.
Power Supply Voltage	Vcc	3.13	3.30	3.47	\vee	
Power Supply Current	lcc	_	-	300	mA	
Case Operating Temperature	Тс	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	Тур	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	\vee	
TX Fault-High	_	2.0	_	Vcc+0.3	V	
TX Fault-Low	_	Vee-0.3	-	0.8	\vee	
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	Тур	Мах	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			