



FN-TRAN-GC-SKY

Fortinet® FN-TRAN-GC Compatible 10/100/1000Base-TX SFP Transceiver (Copper, 100m, RJ-45, -40 to 85C)

Product Description

This Fortinet® FN-TRAN-GC compatible SFP transceiver provides 10/100/1000Base-TX throughput up to 100m over a copper connection via a RJ-45 connector. It can operate at temperatures between -40 and 85C. This TX module supports 10/100/1000Base auto-negotiation and can be configured to fit your needs. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Fortinet®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

Features:

- Up to 1.25Gbps bi-directional data links
- Compliant with SFP MSA
- Compliant with IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- RJ-45 connector
- Hot-pluggable
- Single power supply 3.3V
- Auto-sense MDI/MDIX
- RoHS Compliant and Lead-Free
- Operating Temperature: -40 to 85 Celsius
- RoHS Compliant and Lead Free



Applications:

- 1000Base Ethernet
- Access and Enterprise

For your product safety, please read the following information carefully before any manipulation of the transceiver:



ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Data Rate	DR	10		1000	Mb/sec	1
Cable Length	CL			100	m	2
Bit Error Rate	BER			10 ⁻¹²		
Storage Temperature	Tstg	-40		85	°C	3
Supply Current	I _{cc}		370	420	mA	
Maximum Voltage	V _{MAX}			4	V	
Operating Temperature	T _c	-40		85	°C	

Notes:

1. IEEE 802.3 compatible.
2. Category 5 UTP.
3. Ambient temperature.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Input Voltage	V _{CC}	3.14	3.3	3.46	V	
Power Consumption	P		1.22	1.38	W	
Single-Ended Input Swing	V _{IN,pp}	250		1200	mV	
Single-Ended Output Swing	V _{OUT,pp}	275		800	mV	
Rise/Fall Time (20-80%)	T _r /T _f		175		ps	
Tx Input Impedance	Z _{IN}		50		Ω	1
Rx Output Impedance	Z _{OUT}		50		Ω	1
Transmitter						
Line Frequency	F _L		125		MHz	1
Tx Output Impedance Differential	Z _{OUT,TX}		100		Ω	2
Rx Input Impedance Differential	Z _{IN,RX}		100		Ω	2
Low-Speed Electrical Signal						
SFP Output - Low	V _{OL}	0		0.5	V	1
SFP Output - High	V _{OH}	Host_Vcc-0.5		Host_Vcc+0.3	V	1
SFP Input - Low	V _{IL}	0		0.8	V	1
SFP Input - High	V _{IH}	2		Vcc+0.3	V	1

Notes:

1. Single-ended.
2. 5-level encoding.
3. For all frequencies between 1MHz and 125MHz.
4. External 4.7kΩ to 10kΩ pull-up resistor required.

Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	Tx_Fault	Transmitter Fault. Not Supported.	
3	Tx_Disable	Transmitter Disable. PHY disabled on “high” or “open.”	2
4	MOD_DEF(2)	Module Definition 2. 2-Wire Serial Interface Data.	3
5	MOD_DEF(1)	Module Definition 1. 2-Wire Serial Interface Clock.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No Connection Required.	
8	LOS	Loss of Signal.	
9	VeeR	Receiver Ground (Common with Transmitter Ground).	1
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	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted Data In. AC Coupled.	
19	TD-	Transmitter Inverted Data In. AC Coupled.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

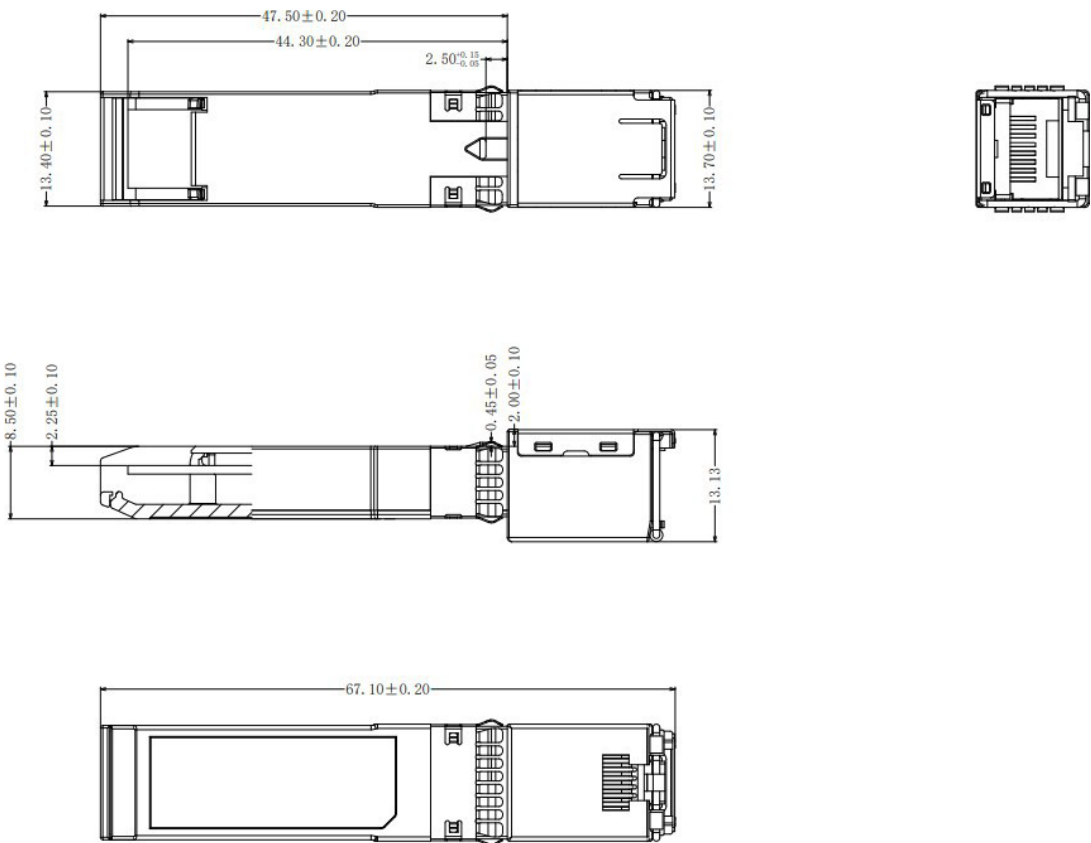
Notes:

1. The circuit ground is connected to the chassis ground.
2. Disabled: $T_{DIS} > 2V$ or open. Enabled: $T_{DIS} < 0.8V$.
3. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and 3.6V.

Electrical Pad Layout



Mechanical Specifications



About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

