



# Network Transmission Small Format Pluggables Transceiver Modules

## Overview

GE's SFP Transceiver Modules are now IFS. The IFS family of Small Form Factor Pluggable (SFP) Transceiver Modules are designed for high performance integrated duplex data transmission over optical fiber. These SFP transceiver modules are compliant with the industry's SFP Multi-source Agreement (MSA) standard.

The IFS SFP Transceiver Modules offer the ability to enable the SFP ports on any IFS Ethernet equipment that have a built-in SFP Mini-GBIC interface. These modules are hot-swappable without any interruption of the host equipment operation. These SFP modules are available for 100Base-FX or 1000Base-SX/LX transmission over single mode or multi-mode optical fiber.

## Standard Features

### Design

- Plug-and-play capability for easy installation
- Hot-swappable
- Low power dissipation

### Optical Performance

- Data rate 100Mbps to 1.25Gbps (varies by module)
- Single mode or multi-mode fiber (varies by module)
- LC duplex receptacle

### Standards Compliance

- Mini-GBIC Interface compliant
- Multi-source Agreement (MSA) compliant
- Class 1 laser safety standard IEC 60825 compliant

### Warranty

- 3-year warranty

# Mini-GBIC SFP Transceiver Modules



## Specifications

Absolute Maximum Ratings					
Parameter		Symbol	Min.	Max.	Unit
Storage Temperature		T <sub>s</sub>	-40	+85	°C
Supply Voltage		V <sub>CC</sub> T V <sub>CC</sub> R	-0.5	4.0	V
Storage Relative Humidity		RH	5	95	%
Data Rate GigE Ethernet	SFP1000SX-220 SFP1000LX-10km	DR	-	1.25	Gbps
Data Rate Fast Ethernet	SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	DR	-	125	Mbps

Recommended Operating Conditions						
Parameter		Symbol	Min.	Type	Max.	Unit
Case Operating Temperature		T <sub>c</sub>	0	—	70	°C
Supply Voltage		V <sub>CC</sub>	3.1	3.3	3.5	V
Supply Current	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	I <sub>TX</sub> + I <sub>RX</sub>	-	160 180 150 150	300 300 300 300	mA

Transmitter Electro-Optical Interface (over Case Operating Temperature)						
Parameter		Symbol	Min.	Type	Max.	Unit
Transmitter Differential Input Voltage		TD +/-	400		2400	mV
Optical Output Power	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>O</sub>	-9.5 -9.5 -20 -15	- - - -	-4 -3 -14 -8	dBm
Optical Extinction Ratio	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	E <sub>R</sub>	9 9 10 8.2	- - - -	- - - -	dB
Center Wavelength	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	λ <sub>C</sub>	830 1285 1270 1261	850 1310 - -	860 1343 1380 1360	nm
Spectral Width (RMS)	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	Δλ	- - - -	- - - -	0.85 2.8 7.7 4	nm
Optical Rise/Fall Time	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	t <sub>r</sub> / t <sub>f</sub>	- - 0.6 -	- - - -	260 260 3.0 2	ns
Total Jitter	SFP1000SX-220 SFP1000LX-10km	T <sub>J</sub>	- -	- -	227 227	ps
Random Jitter	SFP1000SX-220 SFP1000LX-10km	R <sub>J</sub>	- -	- -	0.76 0.76	ns

Transmitter Electro-Optical Interface (over Case Operating Temperature)						
Parameter		Symbol	Min.	Type	Max.	Unit
<b>Transmitter Differential Input Voltage</b>		TD +/-	400		2400	mV
Tx_Fault - High		V <sub>Fault_H</sub>	2	-	V <sub>CC</sub>	V
Tx_Fault - Low	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	V <sub>Fault_L</sub>	V <sub>EE</sub> V <sub>EE</sub> V <sub>EE</sub>	- - -	V <sub>EE</sub> +0.8 V <sub>EE</sub> +0.5 V <sub>EE</sub> +0.8	V
Tx_Disable - High		V <sub>Disable_H</sub>	2	-	V <sub>CC</sub>	V
Tx_Disable - Low		V <sub>Disable_L</sub>	V <sub>EE</sub>	-	V <sub>EE</sub> +0.8	V
<b>Receiver Differential Output Voltage</b>		RD +/-	400	-	2000	mV
Receiver Overload (Maximum)	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>INMAX</sub>	-3 -3 -8 -5	- - - -	- - - -	dBm
Receiver Sensitivity (Minimum)	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>INMIN</sub>	- - - -	- - - -	-17 -20 -32 -34	dBm
Operating Center Wavelength	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	$\lambda_C$	770 1260 1270 1260	- - - -	860 1620 1380 1620	nm
Receiver Loss of Signal - TTL Low (Assert)	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>RX_LOS D</sub>	- - - -	- - - -	-17.5 -22 -32 -34	dBm
Receiver Loss of Signal - TTL High (De-assert)	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>RX_LOS A</sub>	-35 -35 -45 -45	- - - -	- - - -	dBm
Receiver Loss of Signal Hysteresis	SFP1000SX-220 SFP1000LX-10km SFP100FX1310-TSC-2Km SFP100FX1310-TSC-20Km	P <sub>RX_LOS H</sub>	0.5 0.5 1.5 1	- - - -	- - - -	dB

Environmental Specifications	
<b>Operating</b>	
Temperature	0~70°C
Relative Humidity	5%~95% (non-condensing)
<b>Storage</b>	
Temperature	-40~85°C
Relative Humidity	5%~95% (non-condensing)

Electrical Specification	
<b>Input Voltage: 3.3V DC</b>	
AS/NZS CISPR 22 : 2006	

Reliability	
MTBF > 50,000 hrs @ 25°C	

**Note: V<sub>CC</sub>=3.1 V to 3.5 V to 3.5 V, TBAB=0P P°C to 70P P°C**

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 change without notice.

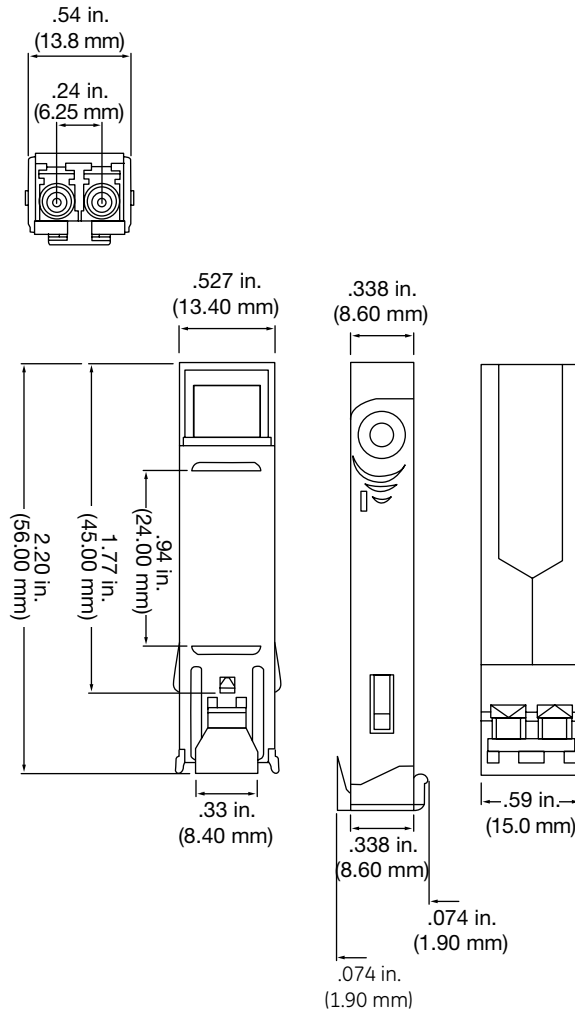
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## Ordering Information

Gigabit SFP Modules	
SFP1000SX-220	1000 Base-SX SFP Module - (multi-mode) 220m
SFP1000LX-10km	1000 Base-LX SFP Module - (single mode) 10km
Fast SFP Modules	
SFP100FX1310-TSC-2km	100 Base-FX SFP Module - (multi-mode) 2km
SFP100FX1310-TSC-20km	100 Base-FX SFP Module - (single mode) 20km

## Dimensional Diagrams



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