

100BASE-T SFP Copper RJ-45 100m SGMII Transceiver

SFP-FB-GE-T



Application

- 125 Mb/s Fast Ethernet

Features

- Up to 125Mb/s Bi-directional Data Links
- Support 100BASE-T Full Duplex Default Operating Mode
- Single Power Supply 3.3V
- Compliant with SFP MSA
- Support 100BASE-T Operation in Host Systems
- RoHS Compliant
- Hot-pluggable SFP Footprint
- Auto-sense MDI/MDIX

Description

The SFP-FB-GE-T Copper Small Form Pluggable (SFP) transceivers are based on the SFP Multi Source Agreement (MSA). They are compatible with the Fast Ethernet IEEE 802.3 standard and 100BASE-T standard and provide a quick and reliable interface for the FE application.

Product Specifications

I. General Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remarks
Data Rate	DR		100		Mb/sec	
Cable Length	CL			100	m	1
Bit Error Rate	BER			10 ⁻¹²		
Operating Temperature	T _C	0		70	°C	2
Storage Temperature	T _{STO}	-40		85	°C	3
Supply Current	I _{CC}		190	300	mA	4
Input Voltage	V _{CC}	3.14	3.30	3.46	V	5
Maximum Voltage	V _{MAX}			4	V	4
Surge Current	V _{surge}			30	V	6

- Notes:
- 1. Category 5 UTP
 - 2. Case temperature, commercial temperature
 - 3. Ambient temperature
 - 4. For electrical power interface
 - 5. Referenced to GND. For electrical power interface
 - 6. Hot Plug above steady state current. For electrical power interface

II. I²C Memory Map

Address A0					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
0	1	Identifier	SFP or SFP+	03	
1	1	Ext. Identifier	GBIC/SFP function is defined by two-wire interface ID only	04	
2	1	Connector	RJ45 (Registered Jack)	22	
3-10	8	Transceiver	Code for electronic or optical compatibility	00 00 00 20 00 00 00 00	
11	1	Encoding	4B/5B	02	
12	1	BR, Nominal	Nominal bit rate 100Mb/s	01	
13	1	Rate Identifier	Type of rate select functionality	00	
14	1	Length (SMF,km)	Link length supported for single mode fiber, units of km	00	
15	1	Length (SMF)	Link length supported for single mode fiber,units of 100m	00	
16	1	Length (50um)	Link length supported for 50um OM2 fiber,units of 10m	00	
17	1	Length (62.5um)	Link length supported for 62.5um OM1 fiber, units of 10m	00	
18	1	Length (OM4 or copper cable)	100m	64	
19	1	Length (OM3)	Link length supported for 50um OM3 fiber,units of 10m	00	
20-35	16	Vendor name	MODULETEK	4D 4F 44 55 4C 45 54 45 4B 20 20 20 20 20 20 20	

Address A0					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
36	1	Transceiver	Code for electronic or optical compatibility	00	
37-39	3	Vendor OUI	SFP vendor IEEE company ID	000000	
40-55	16	Vendor PN	Part number in Order information	-	
56-59	4	Vendor rev	Revision level for part number provided by vendor (ASCII)	-	
60-61	2	Wavelength	Laser wavelength (Passive/Active Cable Specification Compliance)	0000	
62	1	Unallocated		00	
63	1	CCBASE	Check code for Base ID Fields (addresses0to62)	-	
64-65	2	Options	Indicates which optional transceiver signals are implemented	0000	
66	1	BR, max	Upper bit rate margin	00	
67	1	BR, min	Lower bit rate margin	00	
68-83	16	Vendor SN	Serial number provided by vendor	Programmed by Factory	
84-91	8	Date code	Year, Month, Day	Programmed by Factory	
92	1	Diagnostic Monitoring Type	Indicates which type of diagnostic monitoring is implemented(if any)in the transceiver	00	
93	1	Enhanced Options	Indicates which optional enhanced features are implemented(if any)in the transceiver	00	

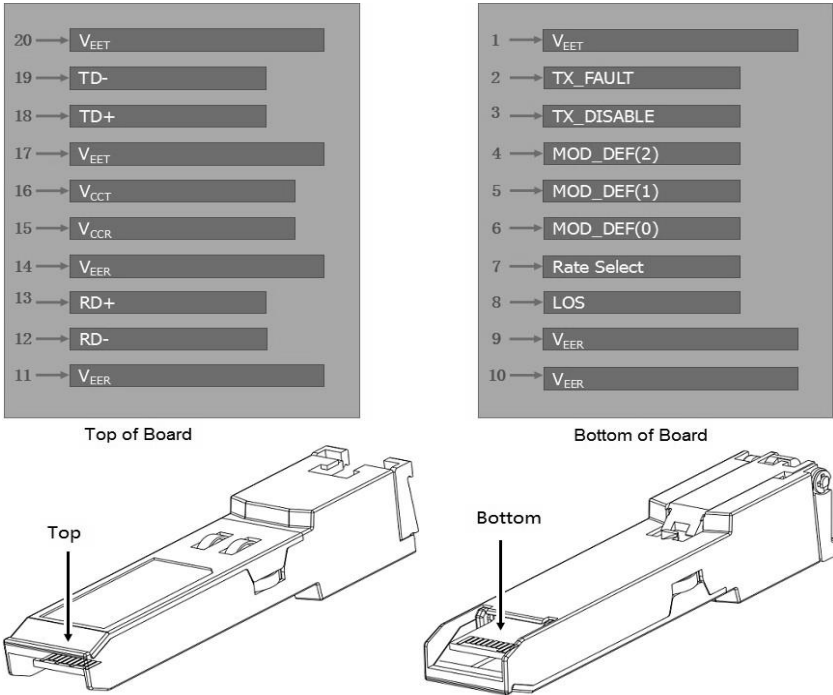
Address A0					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
94	1	SFF-8472 Compliance	Indicates which revision of SFF-8472 the transceiver complies with.	00	
95	1	CCEXT	Check code for the Extended ID Fields (addresses 64 to94)	-	
96-127	32	Vendor Specific	Vendor Specific EEPROM	-	
128-255	128	Vendor Specific	Vendor Specific EEPROM	-	
Address A2 Low					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
0-1	2	Temp High Alarm	75°C	4B 00	
2-3	2	Temp Low Alarm	-5°C	FB 00	
4-5	2	Temp High Warning	70°C	46 00	
6-7	2	Temp Low Warning	0°C	00 00	
8-9	2	Vcc High Alarm	3.63V	8D CC	
10-11	2	Vcc Low Alarm	2.97V	74 04	
12-13	2	Vcc High Warning	3.46V	87 28	
14-15	2	Vcc Low Warning	3.13V	7A 44	
16-17	2	Bias High Alarm	Bias High Alarm	00 00	

Address A2 Low					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
18-19	2	Bias Low Alarm	Bias Low Alarm	0000	
20-21	2	Bias High Warning	Bias High Warning	0000	
22-23	2	Bias Low Warning	Bias Low Warning	0000	
24-25	2	Tx Power High Alarm	Tx Power High Alarm	0000	
26-27	2	Tx Power Low Alarm	Tx Power Low Alarm	0000	
28-29	2	Tx Power High Warning	Tx Power High Warning	0000	28-29
30-31	2	Tx Power Low Warning	Tx Power Low Warning	0000	30-31
32-33	2	Rx Power High Alarm	Rx Power High Alarm	0000	32-33
34-35	2	Rx Power Low Alarm	Rx Power Low Alarm	0000	34-35
36-37	2	Rx Power High Warning	Rx Power High Warning	0000	36-37
38-39	2	Rx Power Low Warning	Rx Power Low Warning	0000	38-39
40-55	16	Reserved	Reserved	00	
56-59	4	Ext RxPwr 4	Ext RxPwr 4	00000000	
60-63	4	Ext RxPwr 3	Ext RxPwr 3	00000000	

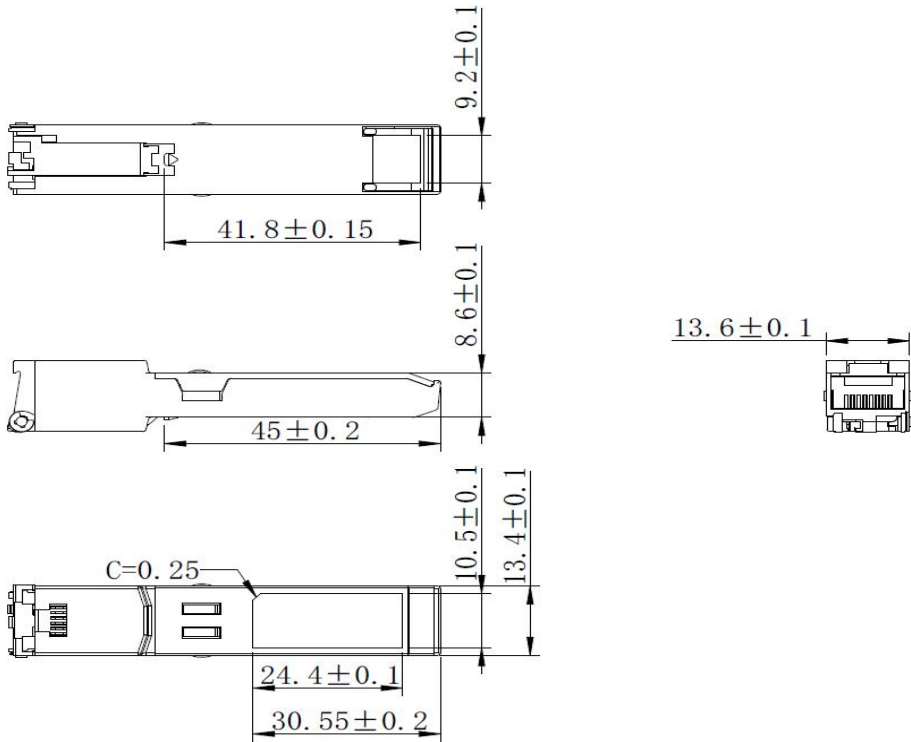
Address A2 Low					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
64-67	4	Ext RxPwr 2	Ext RxPwr 2	00 00 00 00	
68-71	4	Ext RxPwr 1	Ext RxPwr 1	00 00 00 00	
72-75	4	Ext RxPwr 0	Ext RxPwr 0	00 00 00 00	
76-77	2	Ext Bias Slope	Ext Bias Slope	00 00	
78-79	2	Ext Bias Offset	Ext Bias Offset	00 00	
80-81	2	Ext Tx Power Slope	Ext Tx Power Slope	00 00	
82-83	2	Ext Tx Power Offset	Ext Tx Power Offset	00 00	
84-85	2	Ext Temp Slope	Ext Temp Slope	01 00	
86-87	2	Ext Temp Offset	Ext Temp Offset	00 00	
88-89	2	Ext V _{cc} Slope	Ext V _{cc} Slope	01 00	
90-91	2	Ext V _{cc} Offset	Ext V _{cc} Offset	00 00	
92-94	3	Reserved	Reserved	00	
95	1	Checksum	0-94 Byte Checksum	30	
96-97	2	Temperature	Temperature	-	

Address A2 Low					
IICAddr	Size	Name	Description	Values (HEX)	Remarks
98-99	2	V _{cc}	V _{cc}		
100-101	2	Bias Current	Bias Current	00 00	
102-103	2	Tx Power	Tx Power	00 00	
104-105	2	Rx Power	Rx Power	00 00	
106-109	4	Reserved	Reserved	00 00 00 00	
110	1	Optional Status/ Control Bits	02		
111	1	Reserved	Reserved	00	
112-113	2	Alarm Flags	Alarm Flags	00 00	
114-115	2	Reserved	Reserved	00 00	
116-117	2	Warning Flags	Warning Flags	00 00	
118-121	4	Reserved	Reserved	00 00 00 00	
122	1	Security Level	Security Level: 00=NormalMode; 01=UserMode (Level1) ; 02=FactoryMode (Level2) ;	00	
123-126	4	Password Entry	Password Entry Area	00 00 00 00	
127	1	Table Selection	Page Select Byte	00	

III. Pin Description



IV. Mechanical Outline



ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

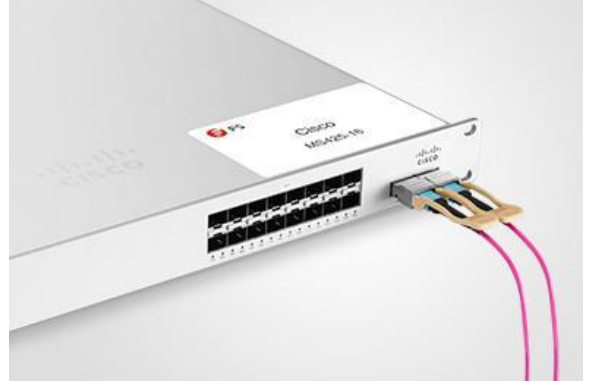
Test Center

I. Compatibility Testing

Each fiber optical transceiver has been tested in host device on site in FS Assured Program to ensure full compatibility with over 200 vendors.



Cisco Catalyst C9500-24Y4C



Cisco MS425-16



Brocade VDX 6940-144S



Dell EMC Networking Z9100-ON



Force@tm S60-44T

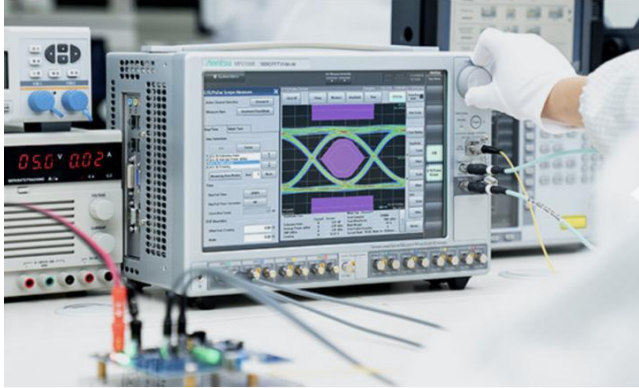


HUAWEI S6720-30L-HI-24S

Above is part of our test bed network equipment. For more information, please click the Test Bed PDF. It will be updated in real time as we expand our portfolio.

II. Performance Testing

Each fiber optical transceiver has been fully tested in FS Assured Program equipped with world's most advanced analytical equipment to ensure that our transceivers work perfectly on your device.



1. TX/RX Signal Quality Testing

Equipped with the all-in-one tester integrated 4ch BERT & sampling oscilloscope, and variable optical attenuator to ensure the input and output signal quality.

- Eye Pattern Measurements: jitter, Mask Margin, etc
- Average Output Power
- OMA
- Extinction Ratio
- Receiver Sensitivity
- BER Curve

2. Reliability and Stability Testing

Subject the transceivers to dramatic changes in temperature on the thermal shock chamber to ensure reliability and stability of the transceivers.

- Commercial: 0 °C to 70 °C
- Extended: -5 °C to 85 °C
- Industrial: -40 °C to 85 °C



3. Transfer Rate and Protocol Testing

Test the actual transfer data rate and the transmission ability under different protocols with Network Master Pro.

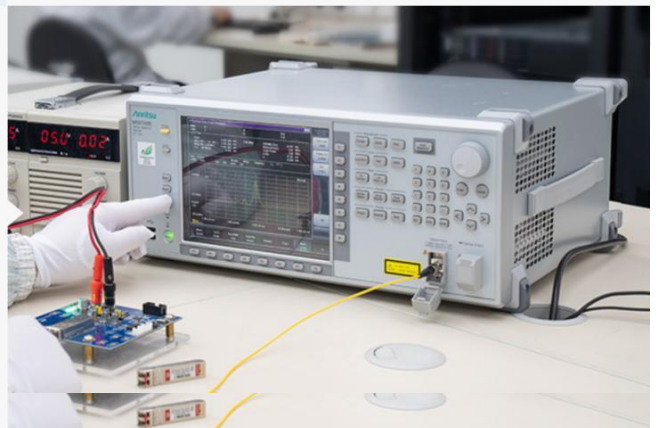
- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI



4. Optical Spectrum Evaluation

Evaluate various important parameters with the Optical Spectrum Analyzer to meet the industry standards.

- Center Wavelength, Level
- OSNR
- SMSR
- Spectrum Width

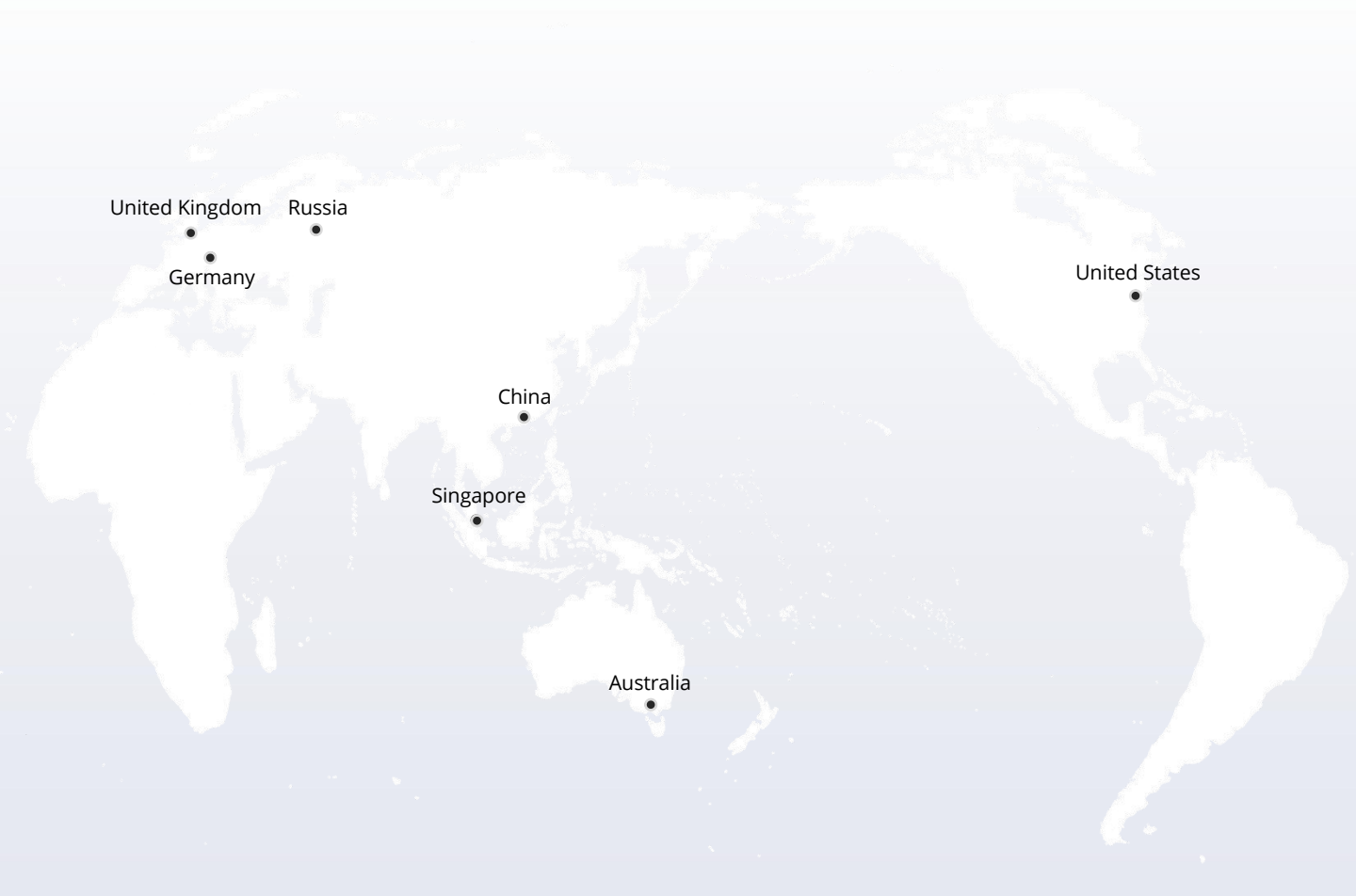


Order Information

Part Number	Description
SFP-FE-GB-T	SFP, 100Base-T, 0 to70°C(COM), SGMII Interface
SFP-GB-T	SFP, 1000Base-T, 0 to70°C(COM), SERDES Interface
SFP-GB-T	SFP, 10/100/1000Base-T, 0 to70°C(COM), SERDES/SGMII Interface
SFP-2.5G-T	SFP, 2.5GBase-T, 0 to70°C(COM), XGMII Interface
SFP-10G-T	SFP+, 10GBase-T, 0 to70°C(COM), SERDES Interface

Note:

-T transceiver module is individually tested on corresponding equipment such as Cisco, Arista, Juniper, Dell, Brocade and other brands, and passes the monitoring of FS.COM intelligent quality control system.



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