

100BASE-ZX SFP 1550nm 80km DOM LC SMF Transceiver

SFP-100ZX-55



Application

- SONET OC-3/SDH STM-1
- Fast Ethernet
- Other Optical Links

Features

- Up to 155M b/s Data Links
- Hot-Pluggable
- 1550nm DFB Laser Transmitter
- Duplex LC Connector
- RoHS Compliant and Lead Free
- Up to 80km on 9/125μm SMF
- Single +3.3V Power Supply
- Monitoring Interface Compliant with SFF-8472
- Industrial /Extended/ Commercial Operating Temperature Range: -40°C to 85°C /-5°C to 85°C /0°C to 70°C Version Available

Description

The 100BASE SFP transceiver is a high performance, cost effective module with a duplex LC optical interface. It can be used for high-speed signals, LVTTTL control and monitoring of signals with standard AC-coupled CML.

The receiver section uses a PIN receiver and the transmitter uses 1550 nm DFB laser, and the 20dB link budge ensures this module SONET OC-3/SDH STM-1 80Km application.

Specification

I. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Storage Temperature Range		T _s	-40	85	°C
Supply Voltage		V _{CC} T, R	-0.5	4	°C
Relative Humidity		RH	0	85	%
Case Operating Temperature	Industrial	Top	-40	85	°C
	Extended		-5	85	
	Commercial		0	70	

II. Recommended Operating Environment

Parameter		Symbol	Min.	Max.	Unit
Case Operating Temperature	Industrial	T _C	-40	85	°C
	Extended		-5	85	°C
	Commercial		0	70	°C
Supply Voltage		V _{CC} T, R	3.0	3.6	V

III. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	V_{CC}	3.0	3.30	3.60	V	
Supply Current	I_{CC}		130	170	mA	
Inrush Current	I_{surge}			$I_{CC}+30$	mA	
Maximum Power	P_{max}			1.0	W	
Transmitter						
Input Differential Impedance	R_{in}	90	100	110	W	1
Single Ended Data InPut Swing	V_{inPP}	200		1200	mVp-p	
Transmit Disable Voltage	V_D	$V_{CC}-1.3$		V_{CC}	V	2
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	
Transmit Disable Assert Time	$T_{dessert}$			10	us	
Receiver						
Single Ended Data Output Swing	$V_{out,pp}$	300		1000	mv	3
Data Output Rise Time	t_r			1300	ps	4
Data Output Fall Time	t_f			1300	ps	4
LOS Fault	$V_{losfault}$	$V_{CC}-0.5$		V_{CC_host}	V	5
LOS Normal	$V_{los\ norm}$	V_{EE}		$V_{EE}+0.5$	V	5
Power Supply Rejection	PSR	100			mVpp	6

IV. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter						
Center Wavelength	λ_C	1480	1550	1580	nm	1
Spectral Width (-20dB)	σ			1	nm	
Optical Output Power	P_{out}	-5		0	dBm	2
Optical Rise / Fall Time	t_r/t_f			1300	ps	3
Extinction Ratio	ER	9.2			dB	
Eye Mask for Optical Output	Compliant with Eye Mask Defined in IEEE802.3 Standard					
Receiver						
Optical Input Wavelength	λ	1100		1670	nm	
Optical Input Power	P_{in}	-36		-3	dBm	4.5
Receiver Reflectance		12			dB	
Receiver Overload	P_{ol}			-3	dBm	4.5
RX Sensitivity	Sen			-34	dBm	4.5
RX_LOS Assert	LOS_A	-44			dBm	
RX_LOS Deassert	LOS_D			-35	dBm	
RX_LOS Hysteresis	LOS_H		2	2.5	dB	

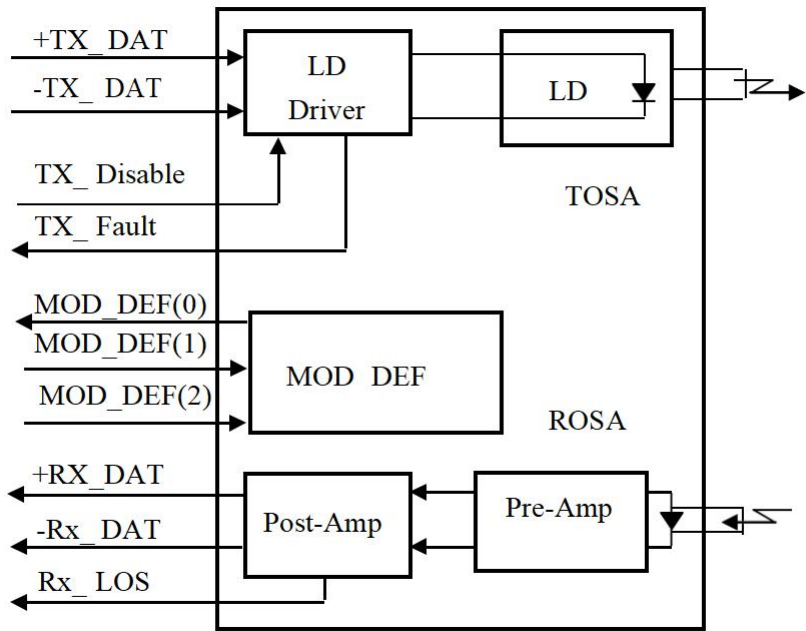
Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
General Specifications						
Data Rate	BR		155		Mb/s	
Bit Error Rate	BER			10 ⁻¹²		
Max. Supported Link Length on 9/125μm SMF@155Mb/s	L _{MAX}		80		Km	6
Total System Budget	LB	20			dB	7

- Notes:
- 1. Also specified to meet curves in FC-PI 13.0 Figures 18 and 19, which allow trade-off between wavelength spectral width.
 - 2. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
 - 3. Unfiltered, 20-80%. Complies with IEEE 802.3 (Gig. E), FC 1x and 2x eye masks when filtered.
 - 4. Measured with conformance signals defined in FC-PI 13.0 specifications.
 - 5. Measured with PRBS 231 -1at 10-12 BER.
 - 6. Dispersion limited per FC-PI Rev. 13.
 - 7. Attenuation of 0.25 dB/km is used for the link length calculations. Distances are indicative only. Please refer to the Optical Specifications in Table IV to calculate a more accurate link budget based on specific conditions in your application.

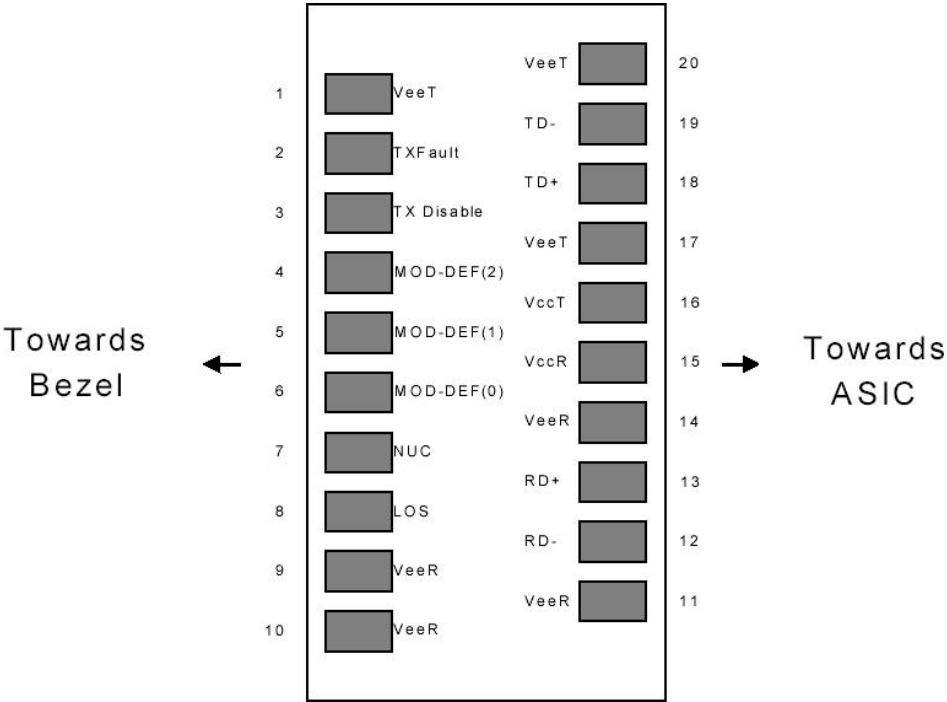
V. Digital Diagnostic Monitor Characteristics

Parameter	Symbol	Min.	Max.	Unit
Temperature Monitor Absolute Error	DMI_Temp	-3	3	degC
Laser Power Monitor Absolute Error	DMI_TX	-3	3	dB
RX Power Monitor Absolute Error	DMI_RX	-3	3	dB
Supply Voltage Monitor Absolute Error	DMI_V _{CC}	-0.08	0.08	V
Bias Current Monitor	DMI_Ibias	-10%	10%	mA

VI. Block Diagram of Transceiver



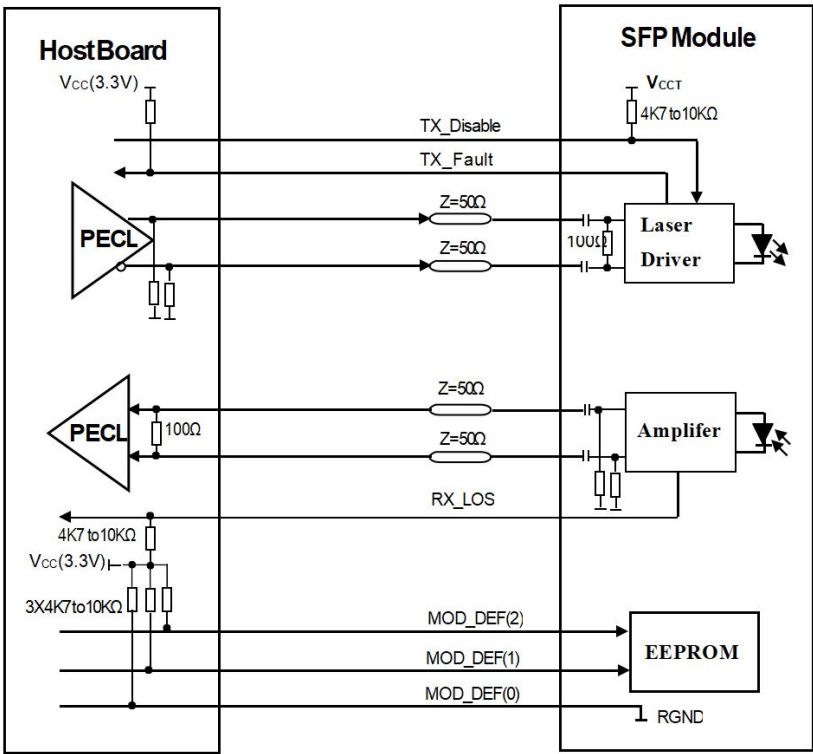
VII. Pin Configuration



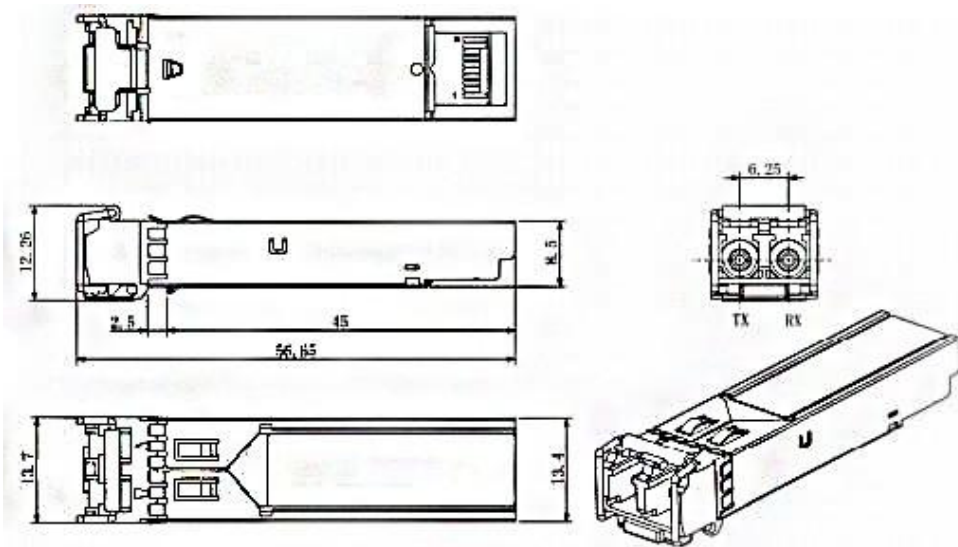
VIII. Transceiver Pin Descriptions

Pin No.	Name	Function	PlugSeq	Notes
1	V _{EE} T	Transmitter Ground	1	1
2	TX Fault	Transmitter Fault Indication	3	
3	TX Disable	Transmitter Disable	3	2
4	MOD-DEF2	Module Definition	2	3
5	MOD-DEF1	Module Definition1	3	3
6	MOD-DEF0	Module Definition0	3	3
7	Rate Select	Not Connected	3	4
8	LOS	Loss of Signal	3	5
9	V _{EE} R	Receiver Ground	1	1
10	V _{EE} R	Receiver Ground	1	1
11	V _{EE} R	Receiver Ground		1
12	RD-	Inv. Received Data Out	3	6
13	RD+	Received Data Out	3	6
14	V _{EE} R	Receiver Ground	3	1
15	V _{CC} R	Receiver Power	2	1
16	V _{CC} T	Transmitter Power	2	
17	V _{EE} T	Transmitter Ground	1	
18	TD+	Transmit Data In	3	6
19	TD-	Inv. Transmit In	3	6
20	V _{EE} T	Transmitter Ground	1	

IX. Principle Diagram



X. Mechanical Dimensions



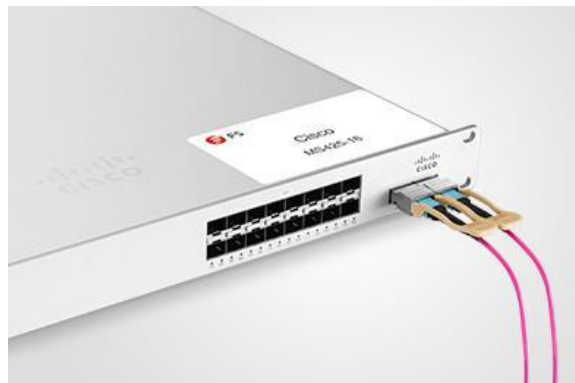
Test Center

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

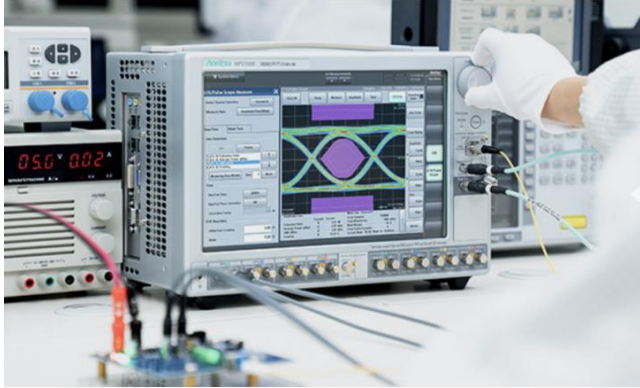


HUAWEI S6720-30L-HI-24S

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.

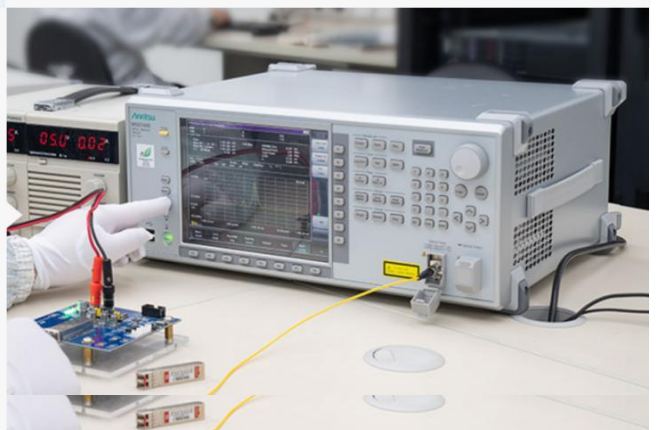
- Ethernet
- Fibre Channel
- SDH/SONET
- CPRI



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-FB-GE-T	SFP, 100BASE-T, 100m, RJ-45, 0 to70°C(COM), SGMII
SFP-100FX-31	SFP, 100BASE-FX,1310nm, MMF, 2km, LC, 0 to70°C(COM), DOM
SFP-GE-100FX	SFP, 100BASE-FX,1310nm, MMF, 2km, LC, 0 to70°C(COM), DOM, SGMII
SFP-100LX-31	SFP, 100BASE-LX,1310nm, SMF, 10km, LC, 0 to70°C(COM), DOM
SFP-FE-BX	SFP, 100BASE-BX, 1310nm-TX/1550nm-RX, SMF, 10km, LC, 0 to70°C(COM), DOM
SFP-FE-BX	SFP, 100BASE-BX, 1550nm-TX/1310nm-RX, SMF, 10km, LC, 0 to70°C(COM), DOM
SFP-100LX-31	SFP, 100BASE-LX,1310nm, SMF, 15km, LC, 0 to70°C(COM), DOM
SFP-FE-BX	SFP, 100BASE-BX, 1310nm-TX/1550nm-RX, SMF, 20km, LC, 0 to70°C(COM), DOM
SFP-FE-BX	SFP, 100BASE-BX, 1550nm-TX/1310nm-RX, SMF, 20km, LC, 0 to70°C(COM), DOM
SFP-100EX-31	SFP, 100BASE-EX, 1310nm, SMF, 40km, LC, 0 to70°C(COM), DOM
SFP-100ZX-55	SFP, 100BASE-ZX, 1550nm, SMF, 80km, LC, 0 to70°C(COM), DOM

Note:
100BASE SFP 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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