

The GigaTech Products **DS-SFP-FC16G-LW-GT** is programmed to be fully compatible and functional with all intended CISCO switching devices. This SFP module is based on the 16G Fiber Channel standard and is designed to be compliant with the SFF-8431 SFP Multi-source Agreement (MSA). This module is designed for singlemode fiber and operates at a nominal wavelength of 1310nm up to 10km.

Features:

- Up to 16GBd bi-directional data links
- Hot-pluggable SFP+ footprint
- Uncooled 1310nm DFB laser transmitter
- Duplex LC connector
- Up to 10km over 9/125 um singlemode fiber
- Single power supply 3.3V
- Operating temperature range
C-Temp: 0°C to 70°C



Compliance:

- SFP FC
- MSA SFF8431
- RoHS Compliant

Applications:

- 16GB/8GB/4GB Fiber Channel

Warranty:

GigaTech Branded Optical Transceivers- Lifetime Warranty

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR		14.025		GBd	FC-PI-4
Bit Error Rate	BER			10 ⁻¹²		
Input Voltage	V _{CC3}	3.135	3.3	3.465	V	
Maximum Voltage	V _{MAX}	-0.5		4	V	Electric Power Interface
Supply Current	I _S			550	mA	Electric Power Interface
Storage Temperature	T _{STO}	-40		85	°C	Ambient Temperature

Link Distances

Parameter	Fiber Type	Distance Range (km)
14.025 / 8.5 / 4.25 GBd	9/125 SMF	10km

Optical Characteristics - Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Center Wavelength	λ	1295	1310	1325	nm	
Output Optical Power 14.025	P _{TX}	-5		2	dBm	Class 1 Product
Output Optical Power 8.5, 4.25	P _{TX}	-5		-1	dBm	Class 1 Product
Optical Modulation Amp @ 14.025	OMA	631			uW	
Optical Modulation Amp @ 8.5, 4.25	OMA	290			uW	
Spectral Width (-20 dB) @ 14.025	$\Delta\lambda$			1	nm	
Transmitter Dispersion Penalty 14.025	TDP			4.4	dB	
Transmitter Dispersion Penalty 8.5	TDP			3.2	dB	
Launch Power of OFF Transmitter	P _{OUT_OFF}			-30	dBm	Average
Optical Return Loss Tolerance	ORLT			12	dB	
Optical Rise/Fall Time @ 4.25	TR/TF			90	ps	

Optical Characteristics - Receiver

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Center Wavelength	λ_C	1260	1310	1370	nm	
Receiver OMA Sensitivity @ 14.025	RX _{SENS}			-12.0	dBm	Worst ER: BER<10 ⁻¹² 2 ³¹ -1 PRBS
Receiver OMA Sensitivity @ 8.5	RX _{SENS}			-13.7	dBm	Worst ER: BER<10 ⁻¹² 2 ³¹ -1 PRBS
Receiver OMA Sensitivity @ 4.25	RX _{SENS}			-15.4	dBm	Worst ER: BER<10 ⁻¹² 2 ³¹ -1 PRBS
Receiver Overload	P _{OL}	2			dBm	
Optical Return Loss	ORL	12			dB	
LOS Assert	LOS _A	-30			dBm	
LOS De-Assert	LOS _D			-16	dBm	
LOS Hysteresis		0.5			dB	

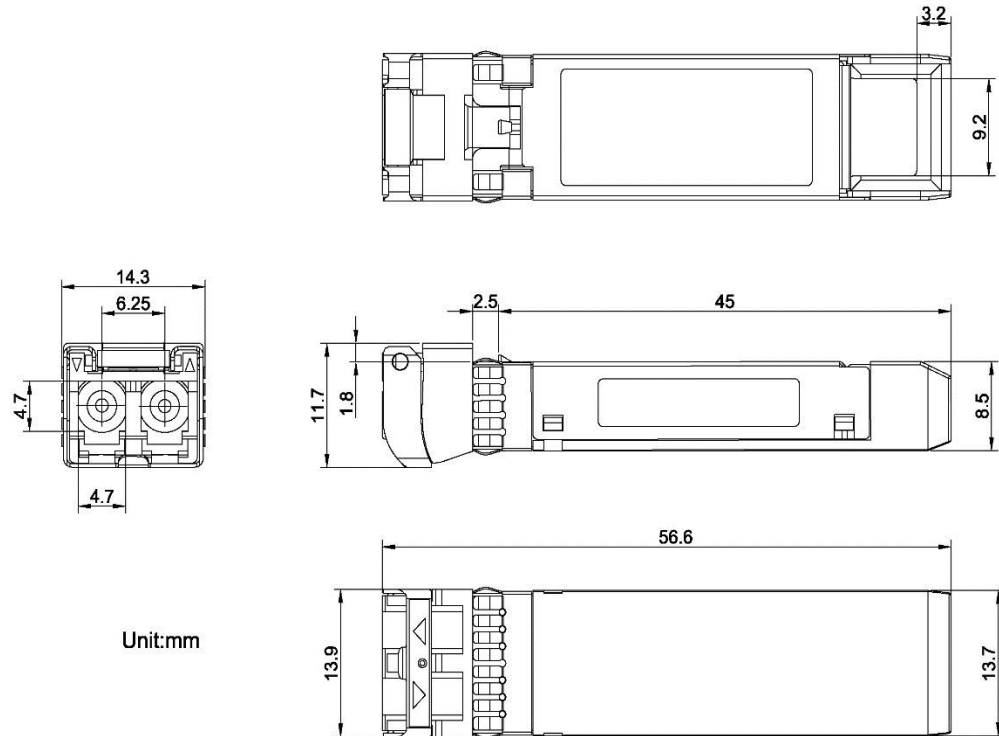
Electrical Characteristics – Transmitter

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	R_{IN}		100		Ω	Non Condensing
Single ended data input swing	V_{IN_PP}	180		700	mV	
Transmit Disable Voltage	V_D	2		V_{CC}	V	
Transmit Enable Voltage	V_{EN}	0		0.8	V	

Electrical Characteristics – Receiver

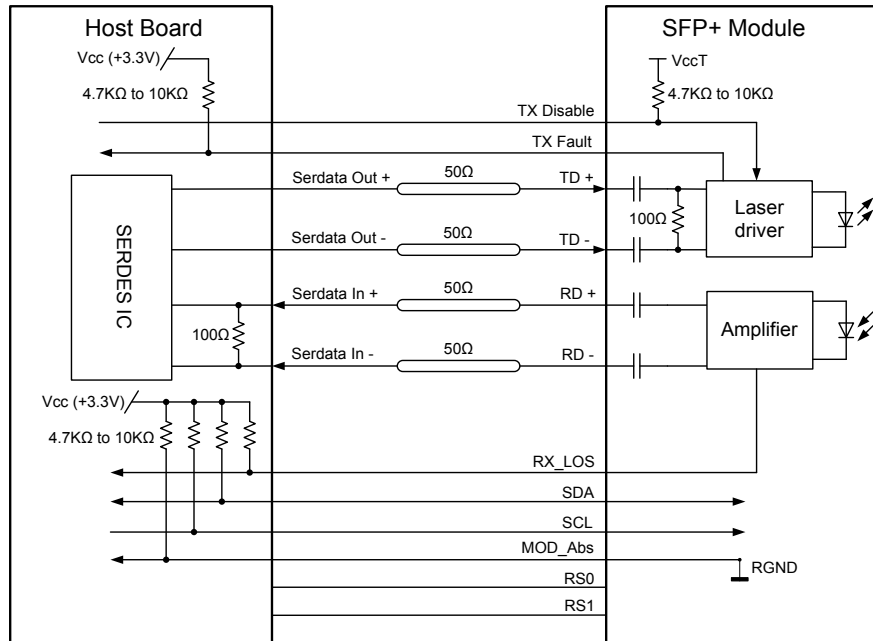
Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended data output swing	V_{OUT_PP}	300		850	mV	
Data output rise time	T_R		28		ps	20%-80%
Data output fall time	T_F		28		ps	20%-80%
LOS Fault	V_{LOS_F}	2		V_{CC_HOST}	V	
LOS Normal	V_{LOS_N}	0		0.8	V	

Dimensions

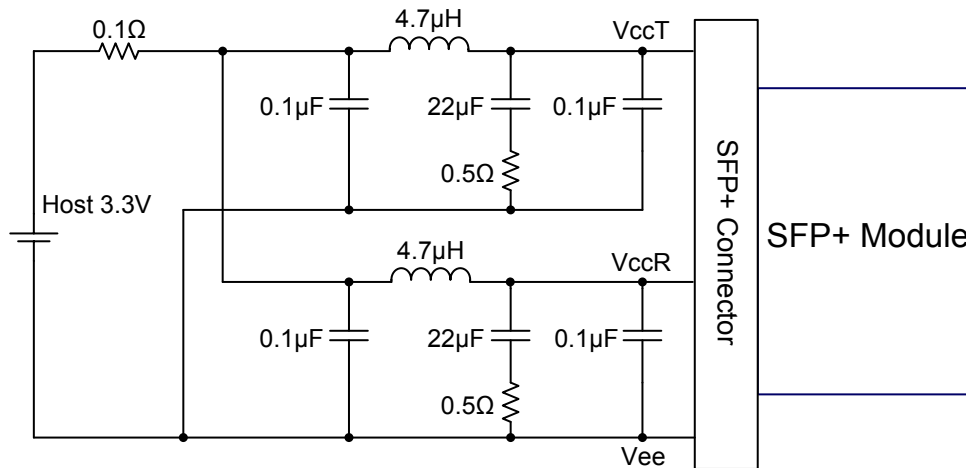


ALL DIMENSIONS ARE ± 0.2 mm UNLESS OTHERWISE SPECIFIED UNIT: mm

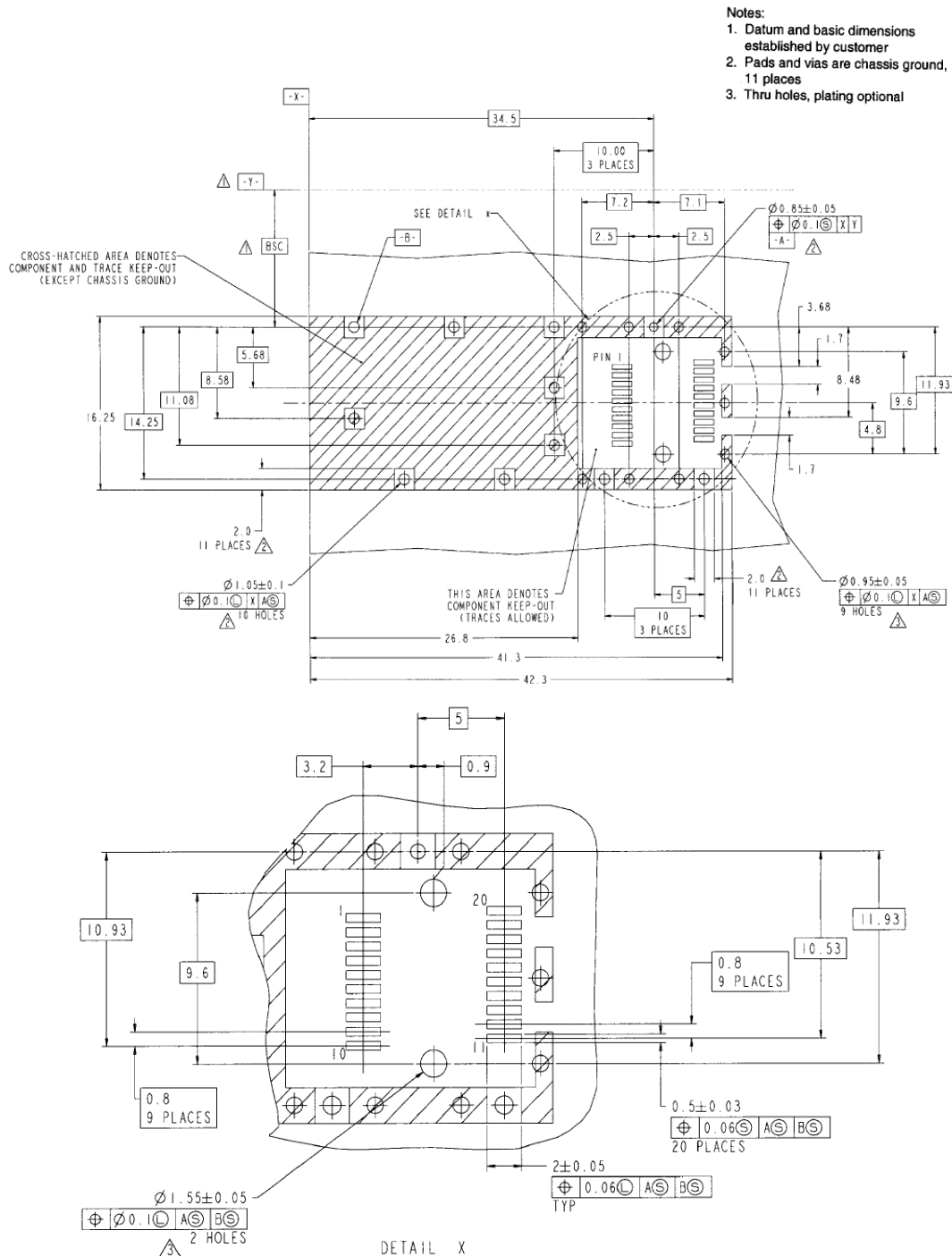
Block Diagram of Transceiver



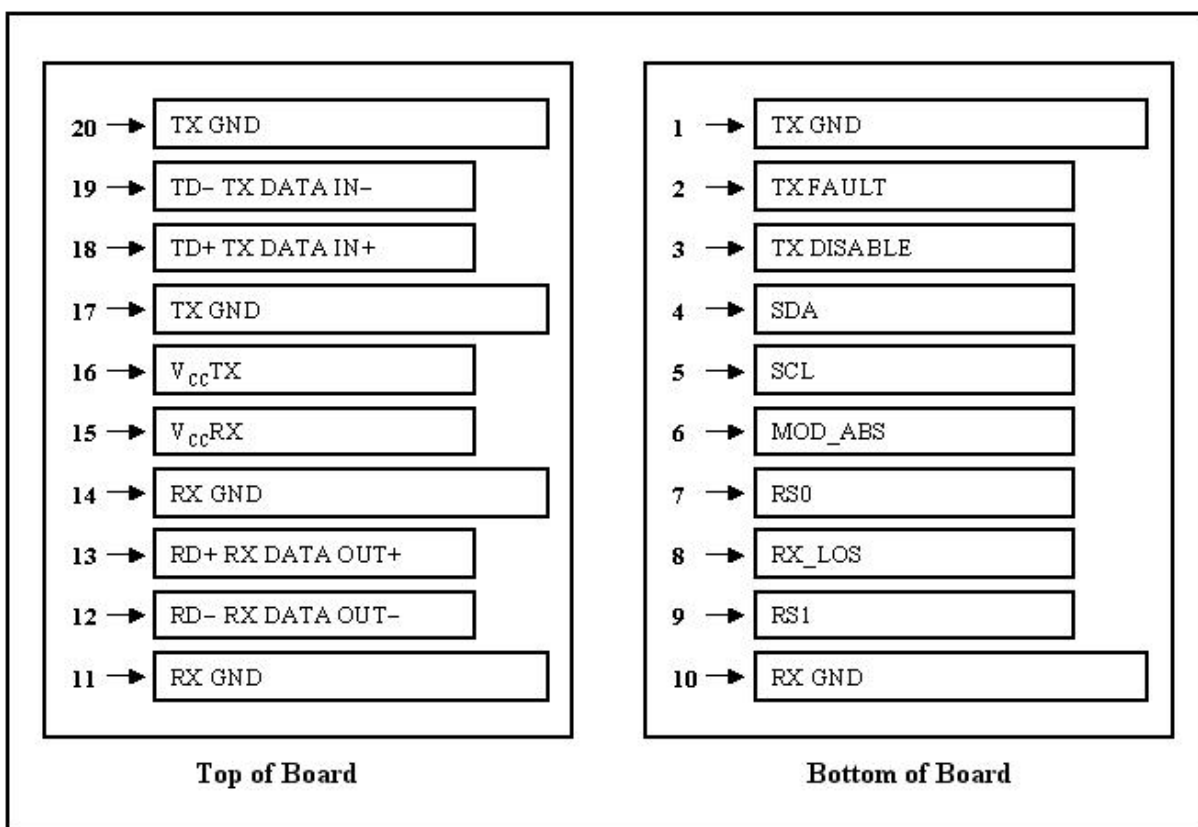
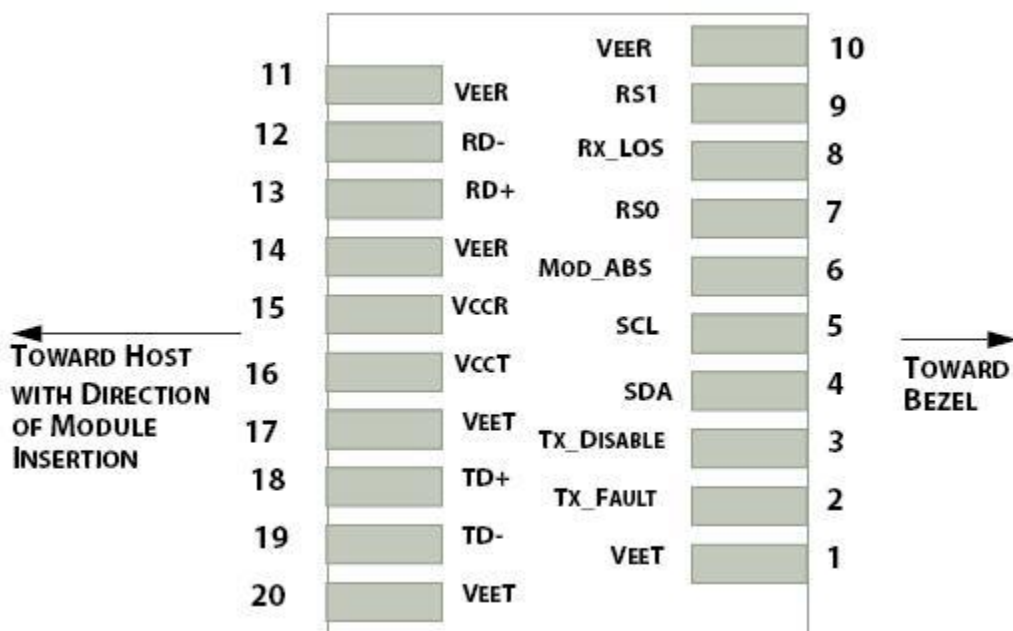
Host Board Power Supply Filter Network



PCB Layout Recommendation



Electrical Pad Layout



Pin Assignment

PIN #	Symbol	Description	Remarks
1	VEET	Transmitter ground (common with receiver ground)	Circuit ground is isolated from chassis ground
2	TFAULT	Transmitter Fault	
3	TDIS	Transmitter Disable. Laser output disable on high or open	Disabled: TDIS>2V or open Enabled: TDIS<0.8V
4	SDA	Data line for serial ID	Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V
5	SCL	Clock line for serial ID	
6	MOD_ABS	Module Absent. Ground within the module	
7	RS0	No Connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation	LOS is open collector output
9	RS1	+3.3V Power Supply	Circuit ground is isolated from chassis ground
10	VEER	Receiver ground (common with transmitter ground)	
11	VEER	Receiver ground (common with transmitter ground)	
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)	Circuit ground is isolated from chassis ground
15	VCCR	Receiver power supply	
16	VCCT	Transmitter power supply	Same as Pin# 1
17	VEET	Transmitter ground (common with receiver ground)	Circuit ground is connected to chassis ground
18	TD+	Transmitter Non-inverted DATA out. AC coupled	
19	TD-	Transmitter Inverted DATA out. AC coupled	
20	VEET	Transmitter ground (common with receiver ground)	Circuit ground is connected to chassis ground