Finisar

Product Specification

Pluggable SFP Loopback Module

FTRJ-0019-7-BS2

PRODUCT FEATURES

- Hot-pluggable SFP footprint
- Metal enclosure
- Serial ID

APPLICATIONS

- Loopback testing of SFP host ports.

Finisar's FTRJ-0019-7-BS2 Small Form Factor Pluggable (SFP) loopback modules comply with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA)[1]. They provide an effective way of testing the SFP ports in the host system by looping back the electrical signal (no optics are included). The units provide basic Serial ID information, and are provided with Part Number FTRJ-8519-7D-2.5 in the EEPROM, to simulate that specific Finisar SFP transceiver.

PRODUCT SELECTION

FTRJ-0019-7-BS2

I. Pin Descriptions

Pin	Symbol	Name/Description	Ref.
1	V_{EET}	Transmitter Ground (Common with Receiver Ground).	
2	T_{FAULT}	Transmitter Fault. Pulled low.	
3	T_{DIS}	Transmitter Disable. Not connected (module has no optical transmiteter).	
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	1
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	1
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	1
7	Rate Select	No connection required.	
8	LOS	Loss of Signal indication. Pulled low.	2
9	V_{EER}	Receiver Ground (Common with Transmitter Ground).	
10	V_{EER}	Receiver Ground (Common with Transmitter Ground).	
11	V_{EER}	Receiver Ground (Common with Transmitter Ground).	
12	RD-	Receiver Inverted DATA out. Connected to pin 19.	
13	RD+	Receiver Non-inverted DATA out. Connected to pin 18.	
14	V_{EER}	Receiver Ground (Common with Transmitter Ground).	
15	V_{CCR}	Receiver Power Supply..	
16	V_{CCT}	Transmitter Power Supply..	
17	V_{EET}	Transmitter Ground (Common with Receiver Ground).	
18	TD+	Transmitter Non-Inverted DATA in. 100 ohm termination between TD+ and TD-. Connected to pin 13.	
19	TD-	Transmitter Inverted DATA in. 100 ohm termination between TD+ and TD-. Connected to pin 12.	
20	V_{EET}	Transmitter Ground (Common with Receiver Ground).	

Notes:
1. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 5.5V. MOD_DEF(0) pulls line low to indicate module is plugged in.
2. LOS is pulled low within the module and therefore will always indicate a received signal.

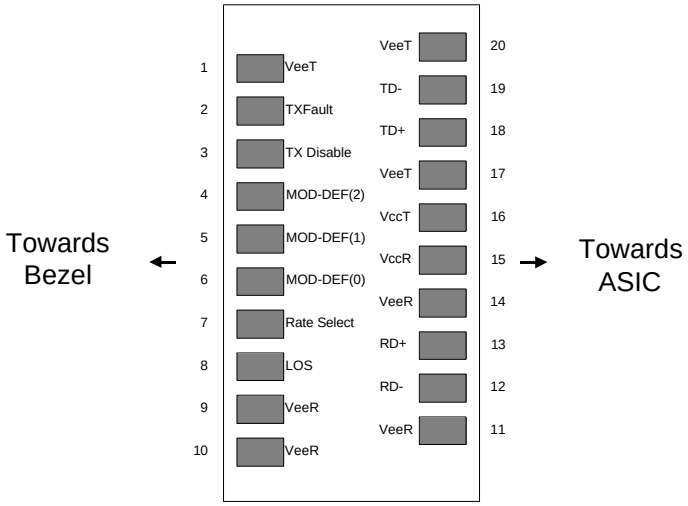


Diagram of Host Board Connector Block Pin Numbers and Names

II. Absolute Maximum Ratings

Finisar SFP transceivers have a power supply voltage range of 3.15V to 3.60V and an extended operating temperature range from –10°C to 85°C.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		5.0	V	
Storage Temperature	T_S	-40		85	°C	
Case Operating Temperature	T_{OP}	-10		85	°C	

III. Electrical Characteristics (T_{OP} = -10 to 85 °C, V_{CC} = 3.15 to 3.60 Volts)

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc	3.15		3.60	V	1
Supply Current	Icc			TBD	mA	
Transmitter						
Input differential impedance	R_{in}		100		Ω	2
Single ended data input swing	Vin,pp	200		1200	mV	3
Receiver						
Single ended data output swing	Vout,pp				mV	4
Data output rise time	t_r				ps	4
Data output fall time	t_f				ps	4
LOS Fault	$V_{LOS\ fault}$				V	5
LOS Normal	$V_{LOS\ norm}$				V	5

Notes:
1. Supply voltage is necessary only for Serial ID connection. See Section IV.
2. Connected directly to TX data input pins.
3. We recommend <600mV for best EMI performance.
4. Into 100 ohms differential termination. Receiver output is approximately one half of the Transmitter input.
5. LOS is pulled low internally, and will therefore always indicate a received signal.

IV. Serial Communications Protocol

Finisar SFP transceivers support the 2-wire serial communications protocol as defined in the draft SFP MSA[1]. It is very closely related to the E^2PROM defined in the GBIC standard, with the same electrical specifications.

The SFP serial ID provides access to sophisticated identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information. The serial interface uses the 2-wire serial CMOS E^2PROM protocol defined for the ATMEL AT24C01A/02/04 family of components.

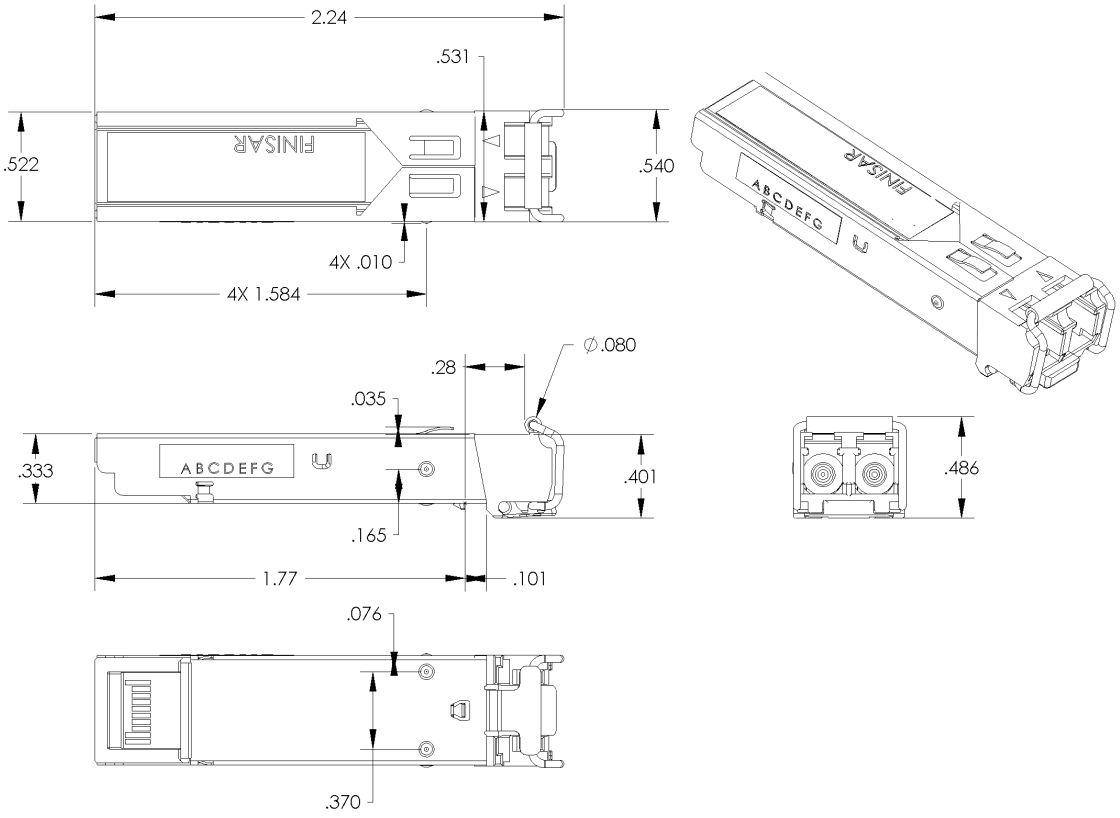
When the serial protocol is activated, the serial clock signal (SCL, Mod Def 1) is generated by the host. The positive edge clocks data into the SFP transceiver into those segments of the E^2PROM that are not write-protected. The negative edge clocks data from the SFP transceiver.

The serial data signal (SDA, Mod Def 2) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

For more information, please see the SFP MSA documentation[1] or contact Finisar.

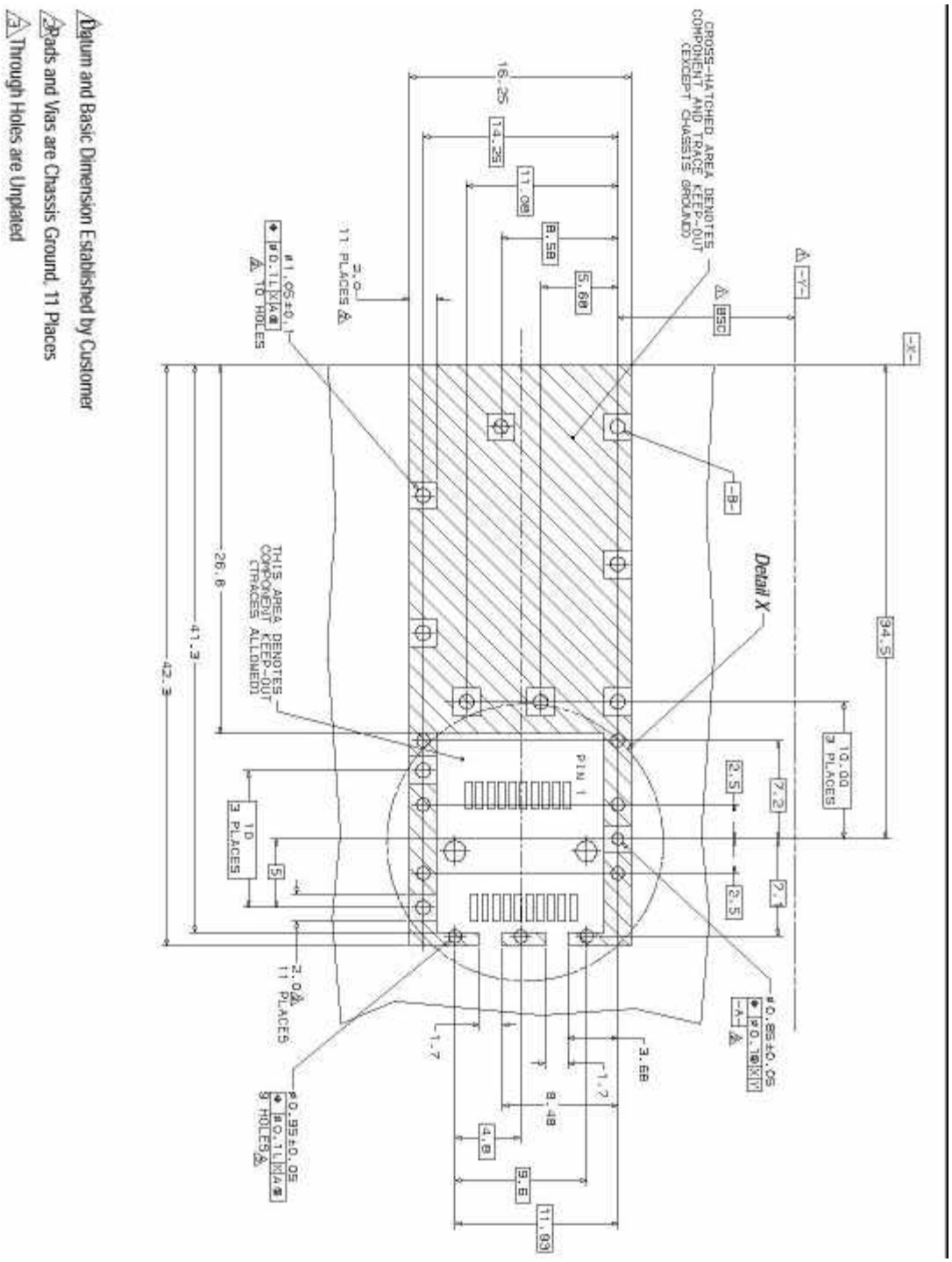
V. Mechanical Specifications

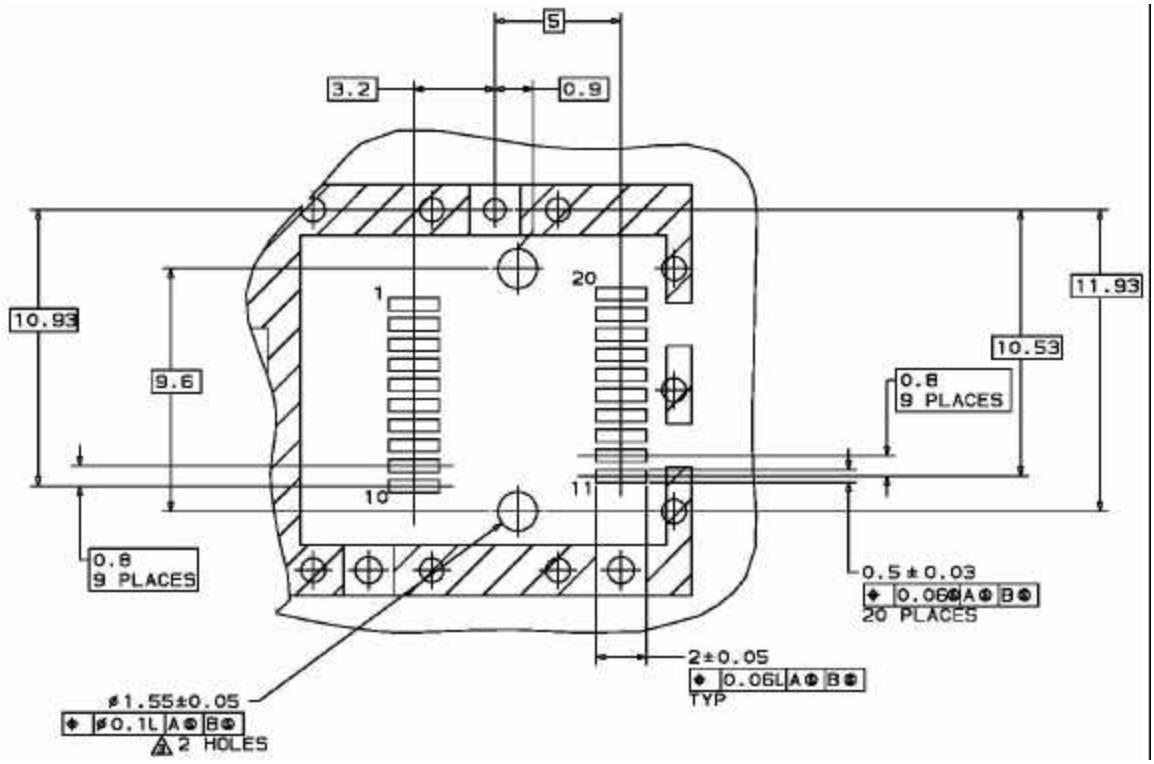
Finisar's Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the the SFP Multi-Sourcing Agreement (MSA)[1].

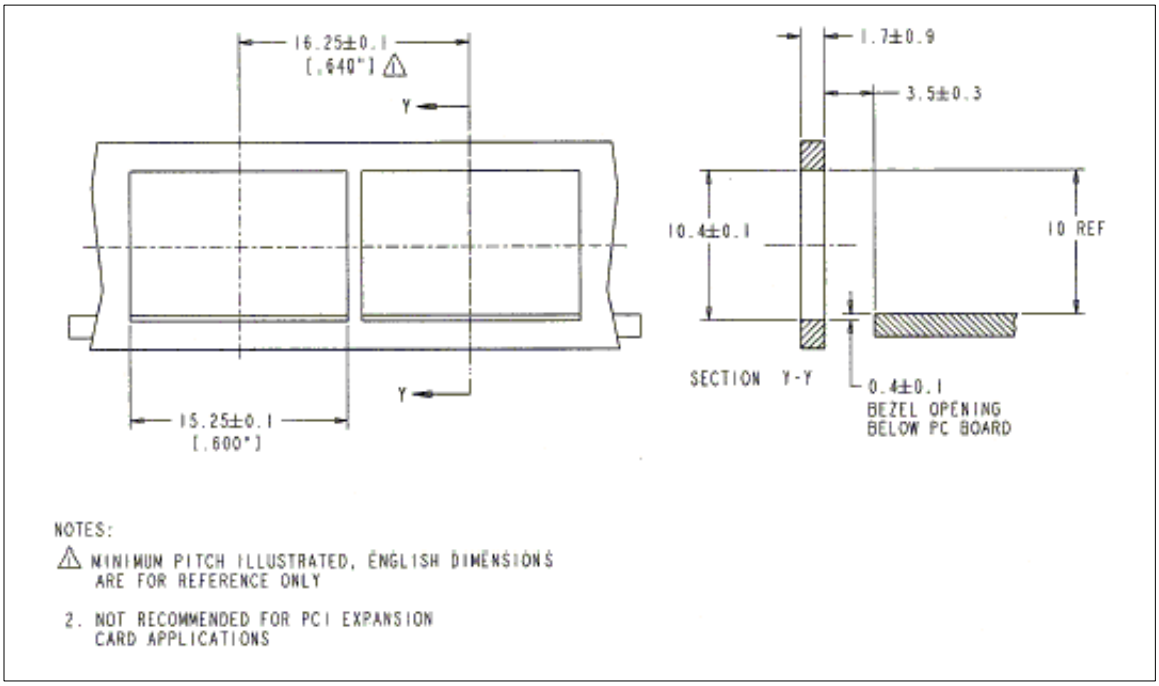


FTRJ-0019-7-BS2 Mechanical Dimensions (in inches)

VI. PCB Layout Recommendation




5
3.2
0.9
1
20
10
11
10.93
9.6
11.93
10.53
0.8
9 PLACES
0.8
9 PLACES
0.5±0.03
0.06 M A B
20 PLACES
2±0.05
0.06 L A B
TYP
ø1.55±0.05
ø0.1 L A B
2 HOLES


16.25±0.1
[.640"]
Y
Y
15.25±0.1
[.600"]
1.7±0.9
3.5±0.3
10.4±0.1
10 REF
SECTION Y-Y
0.4±0.1
BEZEL OPENING
BELOW PC BOARD
NOTES:
1. MINIMUM PITCH ILLUSTRATED, ENGLISH DIMENSIONS ARE FOR REFERENCE ONLY
2. NOT RECOMMENDED FOR PCI EXPANSION CARD APPLICATIONS

VII. References

1. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000. Documentation is available at Finisar upon request.

VIII. For More Information

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