

SFP-1G-BXD53-40-SC-C

MSA and TAA 1000Base-BX SFP Transceiver (SMF, 1550nmTx/1310nmRx, 40km, SC, DOM)

Features:

- Simplex SC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 1000Base-BX Ethernet
- 1x Fibre Channel
- Access (FTTx) and Enterprise

Product Description

This MSA compliant SFP transceiver provides 1000Base-BX throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1550nmTx/1310nmRx via an SC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. It can operate at temperatures between 0 and 70C. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products."



Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Maximum Supply Voltage	V _{cc}	-0.5		4.0	V	
Storage Temperature	T _{stg}	-40		85	°C	
Operating Case Temperature	T _c	0		70	°C	
Operating Relative Humidity	RH			95	%	
Power Supply Current	I _{cc}			300	mA	
Data Rate				1.25	Gbps	
				1.063	Gbps	
				100	Mbps	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V _{cc}	3.1	3.3	3.45	V	
9µm Core Diameter SMF	L		40		km	
Transmitter						
LVPECL Differential Inputs	V _{IN}	400		2000	mVp-p	1
Input Differential Impedance	Z _{IN}	85	100	115	Ω	2
Tx_Disable	Disable	2		V _{cc} +0.3	V	
	Enable	0		0.8	V	
Tx_Fault	Fault	2		V _{cc} +0.3	V	
	Normal	0		0.5	V	
Receiver						
LVPECL Differential Outputs	V _{OUT}	400		2000	mVp-p	3
Output Differential Impedance	Z _{OUT}	85	100	115	Ω	
Rx_LOS	LOS	2		V _{cc} +0.3		
	Normal	0		0.8		
MOD_DEF(0:2)	VOH	2.5			V	4
	VOL	0		0.5	V	4

Notes:

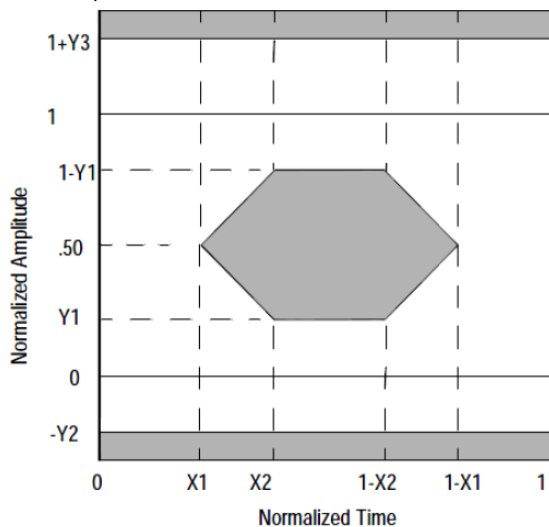
1. AC coupled inputs. LVPECL logic. Internally AC coupled.
2. R_{IN}>100kΩ @ DC.
3. AC coupled outputs. LVPECL logic. Internally AC coupled.
4. With serial ID.

Optical Characteristics

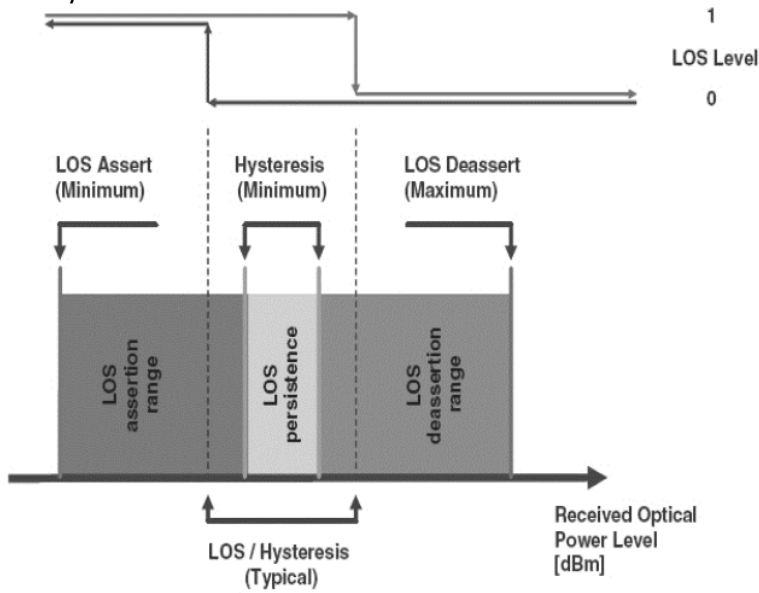
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Center Wavelength	λ_C	1480	1550	1580	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	POUT	-5		0	dBm	1
Extinction Ratio	ER	8.2			dB	
Rise/Fall Time (20-80%)	T_r/T_f			0.26	ns	
Tx_Disable Assert Time	t_{off}			10	us	
POUT @ Tx_Disable Asserted	POUT			-45	dBm	
Output Optical Eye	Compliant with IEEE 802.3ah-2004					3
Receiver						
Wavelength Range		1290	1310	1330	nm	
Receiver Sensitivity	S			-23	dBm	2
Receiver Overload	Pol	-3			dBm	
Return Loss	ORL	12			dB	
Optical Path Penalty				1		
LOS De-Assert	LOSD			-24	dBm	
LOS Assert	LOSA	-35			dBm	
LOS Hysteresis		0.5			dB	4

Notes:

1. Output is coupled into a 9/125 μ m single-mode fiber.
2. Measured at all data rates specified in data rate with ER=9dB, 2^7 -1 PRBS data pattern, and BER<1E⁻¹².
3. Filtered, measured with a PRBS 2^7 -1.



4. LOS Hysteresis:



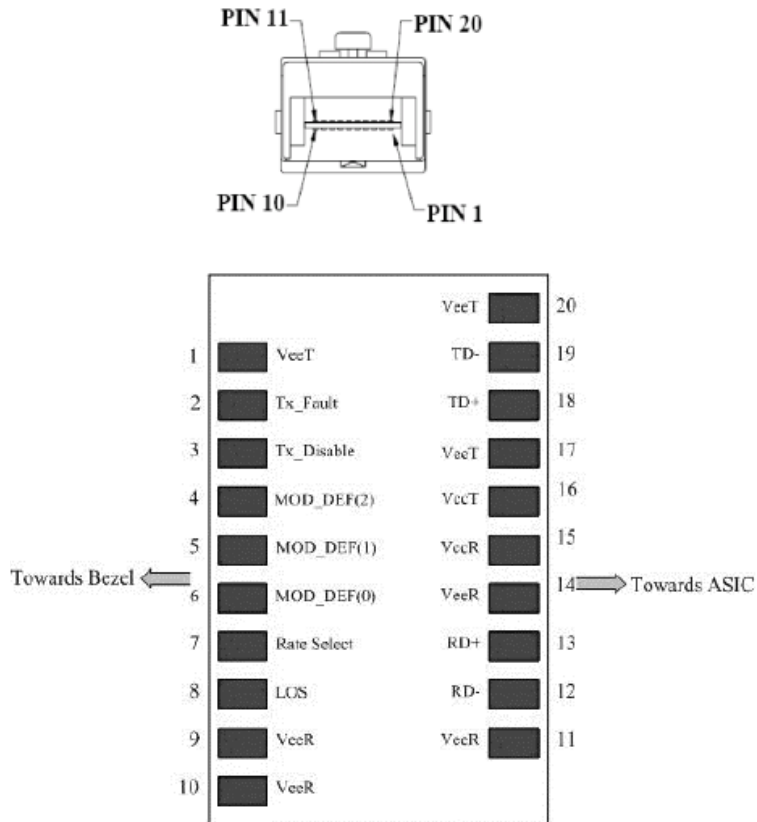
Pin Descriptions

Pin	Symbol	Name/Description	Plug Seq.	Notes
1	VeeT	Transmitter Ground.	1	5
2	Tx_Fault	Transmitter Fault Indication.	3	1
3	Tx_Disable	Transmitter Disable. Module disables on "high" or "open."	3	2
4	MOD_DEF2	Module Definition 2. Data Line for Serial ID.	3	3
5	MOD_DEF1	Module Definition 1. Clock Line for Serial ID.	3	3
6	MOD_DEF0	Module Definition 0. Grounded within the module.	3	3
7	Rate Select	Not Connected. Function Not Available.	3	
8	LOS	Loss of Signal.	3	4
9	VeeR	Receiver Ground.	1	5
10	VeeR	Receiver Ground.	1	5
11	VeeR	Receiver Ground.	1	5
12	RD-	Inverse Received Data Out.	3	6
13	RD+	Received Data Out.	3	6
14	VeeR	Receiver Ground.	1	5
15	VccR	3.3 ± 5% Receiver Power.	2	7
16	VccT	3.3 ± 5% Transmitter Power.	2	7
17	VeeT	Transmitter Ground.	1	5
18	TD+	Transmitter Data In.	3	8
19	TD-	Inverse Transmitter Data In.	3	8
20	VeeT	Transmitter Ground.	1	5

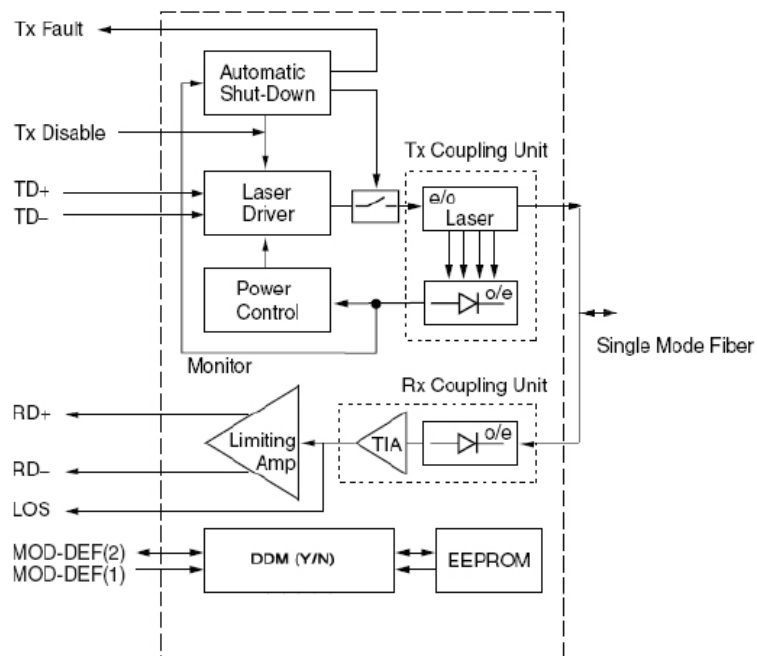
Notes:

1. Tx_Fault is an open collector/drain output that should be pulled up with a 4.7k Ω to 10k Ω resistor on the host board. Pull-up voltage between 2.0V and VccT/R+0.3V. When "high," output indicates a laser fault of some kind. "Low" indicates normal operation. In the low state, the output will be pulled to <0.8V.
2. Tx_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k Ω to 10k Ω resistor. Its states are:
 - Low (0V – 0.8V): Transmitter On.
 - Between (0.8V and 2.0V): Undefined.
 - High (2.0V – 3.465V): Transmitter Disabled.
 - Open: Transmitter Disabled.
3. MOD_DEF0, 1, & 2. These are the module definition pins. They should be pulled up with a 4.7k Ω to 10k Ω resistor on the host board. The pull-up voltage shall be VccT or VccR.
 - MOD_DEF0 is grounded by the module to indicate that the module is present.
 - MOD_DEF1 is the clock line of the 2-wire serial interface for optional serial ID.
 - MOD_DEF2 is the data line of the 2-wire serial interface for optional serial ID.
4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up with a 4.7k Ω to 10k Ω resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When "high," this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use). "Low" indicates normal operation. In the low state, the output will be pulled to <0.8V.
5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC-coupled, 100 Ω differential lines which should be terminated with 100 Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V \pm 5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1 Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply filtering network is used, hot-plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential terminations inside the module. The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 400mV-2000mV (200mV-1000mV single-ended).

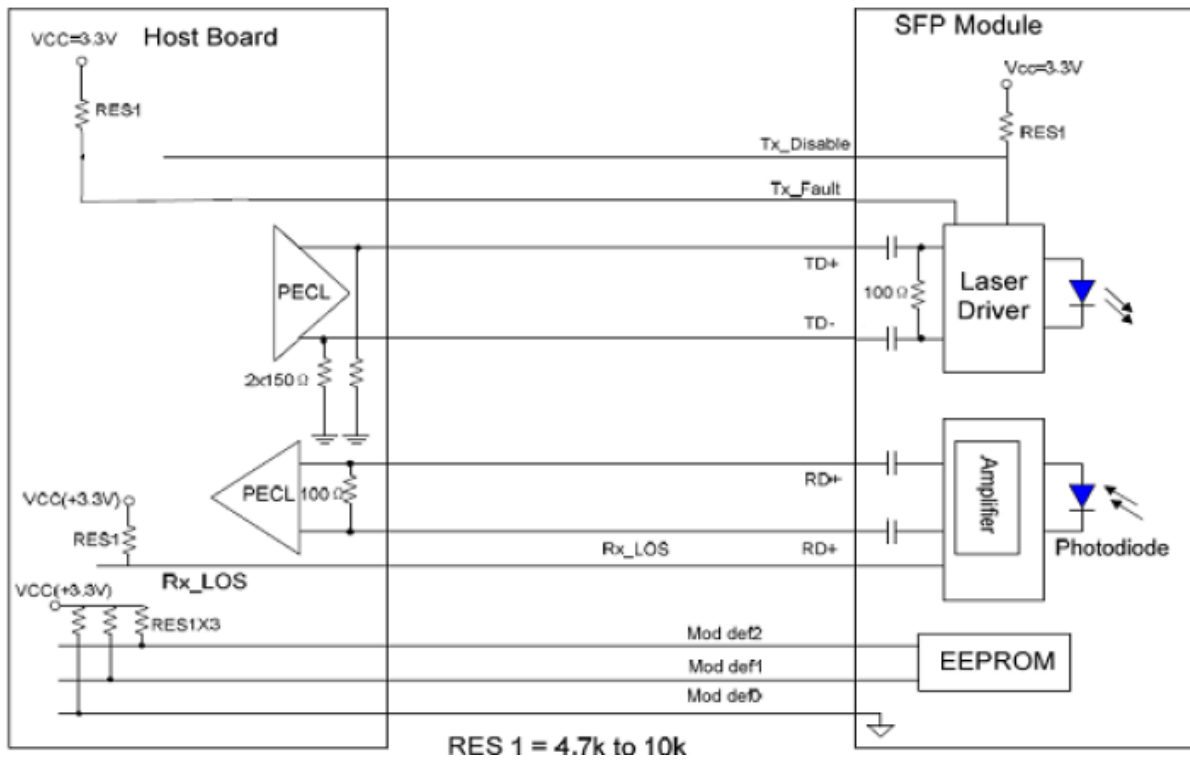
Pin Connectors



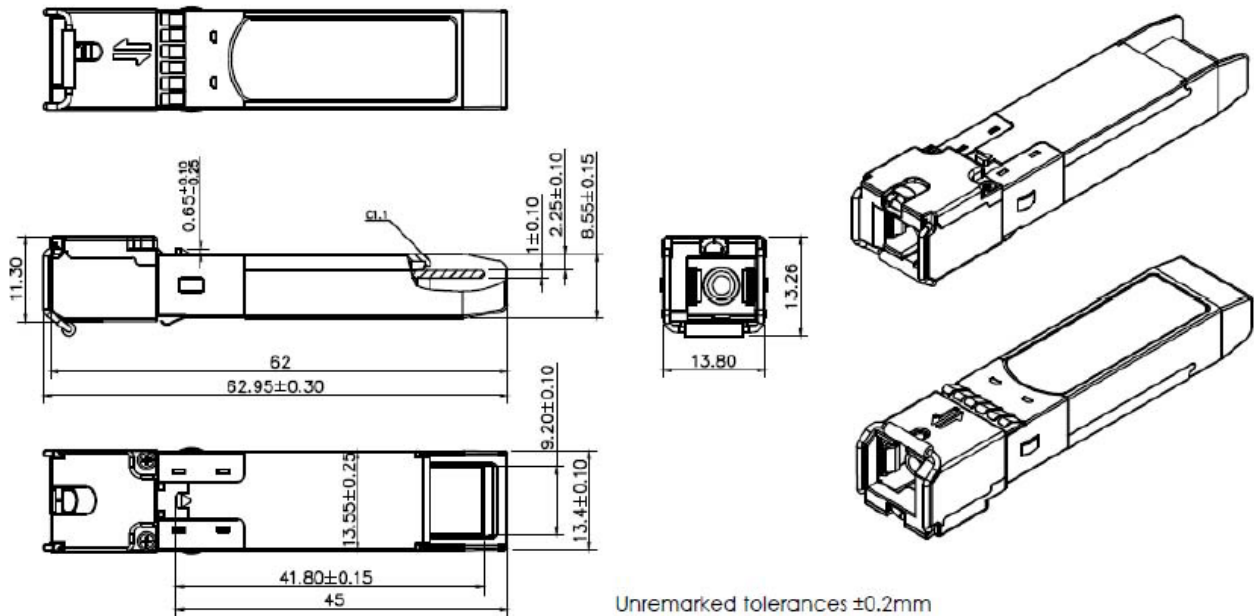
Description of Transceiver



Recommended Application Interface Circuit



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



Contact Information

ProLabs US

Email: sales@prolabs.com

Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com

Telephone: +44 1285 719 600