



1.25G 1X9-1000BASE-SX Transceiver

Duplex SC/FC/ST, 850nm VCSEL, MMF 550M, LVTTTL Signal Detection

Part Number: F1X9-Cx-M85-X5T



Overview

F1X9-Cx-M85-X5T 1X9 SIP package style transceivers are compliant with the industrial standard specification. The high performance uncooled 850nm VCSEL transmitter and high sensitivity PIN receiver provide superior performance for Gigabit Ethernet 1000BASE-SX and Fiber Channel 1GFC applications up to MMF OM2 550m optical links.

Applications

- Gigabit Ethernet 1000BASE-SX @1.25G
- Fiber Channel 1GFC @1.0625G

Features

- Compliant with IEEE802.3z Gigabit Ethernet
- Compliant with Fiber Channel 100-M5-SN-I
- Industry Standard 1x9 Footprint
- 850nm VCSEL laser transmitter
- Duplex SC / Metal FC / Metal ST optical connector
- Single 3.3V Power Supply
- AC-coupled Differential LVPECL inputs and outputs
- LVTTTL Signal Detection Output
- Wave Solderable and Aqueous Washable
- Link distance 275m over MM OM1 fiber and 550m over MM OM2 fiber
- RoHS Compliant

Laser Safety

- This is a Class 1 Laser Product complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- Caution: Use of control or adjustments or performance of procedure other than those specified herein may result in hazardous radiation exposure.



Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Storage Temperature	T _{ST}	-40	+85	°C
Storage Relative Humidity	RH	0	85	%
Supply Voltage	V _{CC}	0	+3.6	V

Recommended Operating Conditions

Parameters	Symbol	Min.	Typ.	Max.	Unit
Case Operating Temp. (F1X9-Cx-M85-X5T)	T _{OP}	0	-	+70	°C
Case Operating Temp. (F1X9-Cx-M85-X5Ti)	T _{OP}	-40	-	+85	°C
Supply Voltage	V _{CC}	+3.13	+3.3	+3.47	V
Supply Current (F1X9-Cx-M85-X5T)	I _{CC}			270	mA
Supply Current (F1X9-Cx-M85-X5Ti)	I _{CC}			300	mA
Lead Soldering Limits	T _{sold}			260/10	°C/Sec

Transmitter Electro-optical Characteristics

T_{OP} = 0 °C to 70 °C (F1X9-Cx-M85-X5T); T_{OP} = -40 °C to 85 °C (F1X9-Cx-M85-X5Ti)

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate	DR	1.0625	1.25		Gb/s	
Optical Launch Power	P _o	-9		-3	dBm	1
Optical Center Wavelength	λ _c	830	850	870	nm	
Spectral Width (-20dB)	Δλ			0.85	nm	
Optical Extinction Ratio	ER	9			dB	
Optical Eye Mask		IEEE802.3z				
Relative Intensity Noise	RIN			-116	dB/Hz	
Differential Data Input Swing	V _{IN}	400	800	1800	mV	

Note1: The optical power is launched into a 9/125μm single mode fiber.



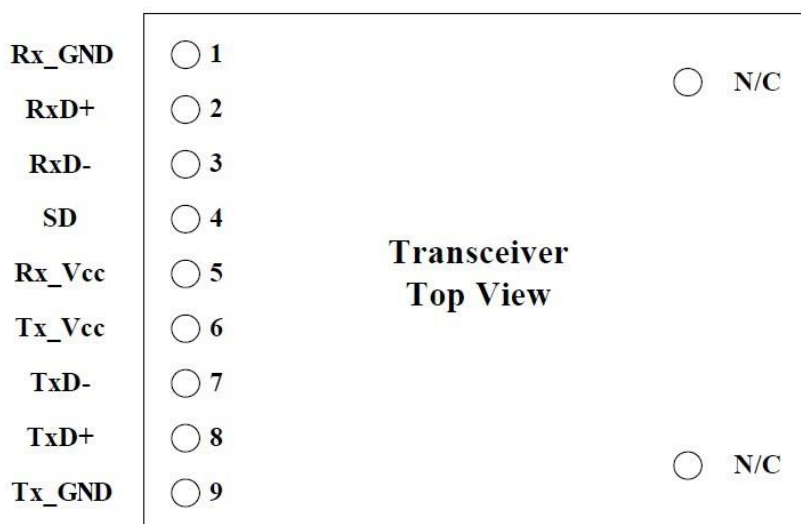
Receiver Electro-optical Characteristics

$T_{OP} = 0^{\circ}\text{C to } 70^{\circ}\text{C}$ (F1X9-Cx-M85-X5T); $T_{OP} = -40^{\circ}\text{C to } 85^{\circ}\text{C}$ (F1X9-Cx-M85-X5Ti)

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate	DR	1.0625	1.25		Gb/s	
Receiver Sensitivity	SEN			-18	dBm	1
Maximum Receive Power	P_{RX-MAX}	-3			dBm	1
Optical Center Wavelength	λ_C	830	850	870	nm	
Signal Detect Assert	SDA			-22	dBm	
Signal Detect De-Assert	SD _D	-35			dBm	
Signal Detect Hysteresis	SD _{HY}	0.5		6	dB	
Differential Data Output Swing	V _{OUT}	400	800	1800	mV	

Note1: Measured with a PRBS 2⁷-1 test pattern @1.25Gbps BER<10⁻¹².

Pin Assignment



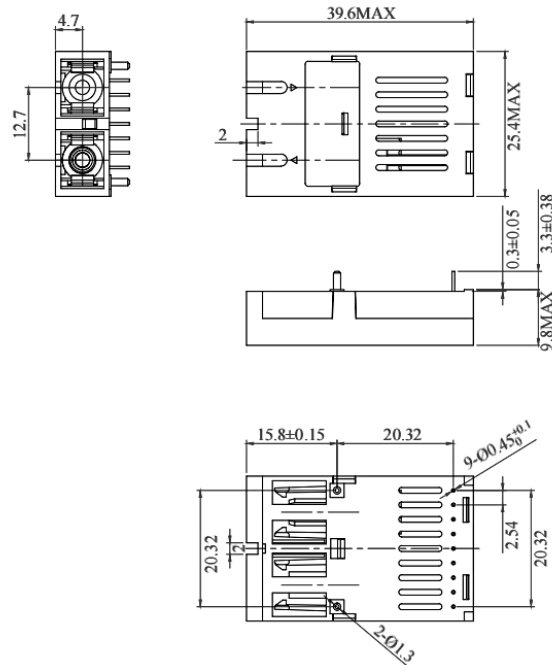
Pin Description

Pin	Name	Function / Description
1	Rx_GND	Receiver Signal Ground
2	RxD+	Receiver Non-inverted Data Out
3	RxD-	Receiver Inverted Data Out
4	SD	Signal Detect is used to open collector output with LVTTTL level Normal optical input levels to the receiver result in a logic "1" output
5	Rx_Vcc	Receiver Power Supply
6	Tx_Vcc	Transmitter Power Supply
7	TxD-	Transmitter Inverted Data In
8	TxD+	Transmitter Non-inverted Data In
9	Tx_GND	Transmitter Signal Ground

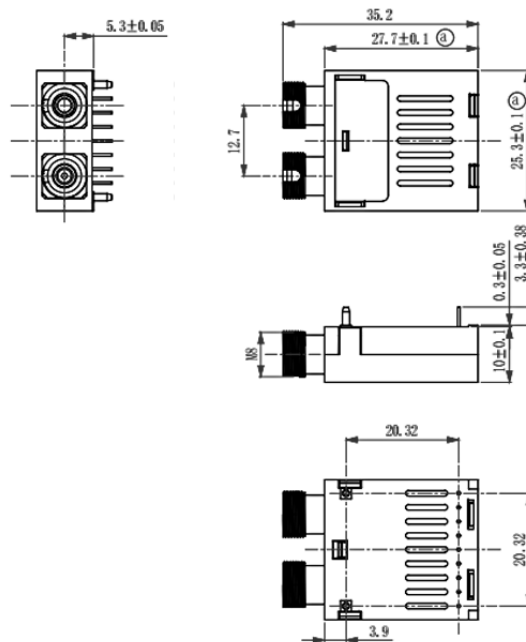


Mechanical Dimensions

(1) SC Connector Type

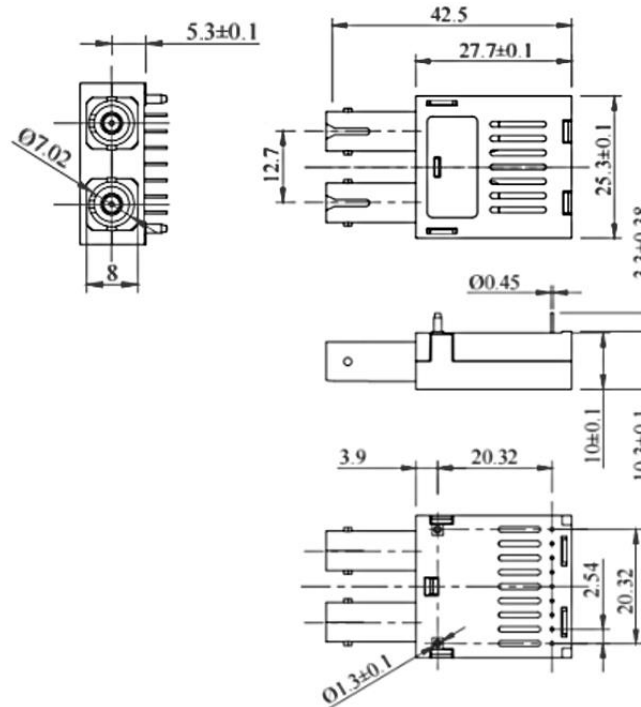


(2) FC Connector Type





(3) ST Connector Type



Ordering Information

Part No.	Tx	Conn.	I/O	SD	Link	Voltage	Temp.
F1X9-C1-M85-X5T	850nm	SC	AC/AC	LVTTTL	MM OM2: 550m	3.3V	0~70℃
F1X9-C1-M85-X5Ti		SC					-40~85℃
F1X9-C3-M85-X5T		Metal FC					0~70℃
F1X9-C3-M85-X5Ti		Metal FC			-40~85℃		
F1X9-CM-M85-X5T		Metal ST			0~70℃		
F1X9-CM-M85-X5Ti		Metal ST			-40~85℃		