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SKU: E2H0C42

1.25G 1X9-1000BASE-BX-D Transceiver
BiDi FC, Tx1550nm DFB / Rx1310nm, SMF 20KM, I-Temp
LVTTL Signal Detection

Part Number: F1X9-C4-S53-20Ti

Overview

F1X9-C4-S53-20Ti 1X9 SIP package style transceivers are compliant with the industrial standard specification. The high performance uncooled 1550nm DFB transmitter and high sensitivity PIN receiver provide superior performance for Gigabit Ethernet 1000BASE-BX and Fiber Channel 1GFC applications up to SMF 20km optical links in Industrial Temperature range.

Applications

- Gigabit Ethernet 1000BASE-BX10 @1.25G
- Fiber Channel 1GFC @1.0625G

Features

- Compliant with IEEE802.3ah 1000BASE-BX10-D
- Compliant with Fiber Channel 100-SM-LL-V
- Industry Standard 1X9 Footprint
- 1550nm DFB transmitter & 1310nm PIN receiver
- Simplex BiDi FC connector
- Single 3.3V Power Supply
- AC-coupled Differential LVPECL inputs and outputs
- LVTTL Signal Detection Output
- Wave Solderable and Aqueous Washable
- Link distance 20km over SM fiber
- Operating Temperature -40~+85°C
- Maximum Power consumption 1W
- 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.

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Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Storage Temperature	TST	-40	+85	°C
Relative Humidity	RH	5	85	%
Supply Voltage	VCC	0	+3.6	V

Recommended Operating Conditions

Parameters	Symbol	Min.	Typ.	Max.	Unit
Case Operating Temperature	TOP	-40		+85	°C
Supply Voltage	VCC	+3.13	+3.3	+3.47	V
Supply Current	ICC			300	mA
Power Consumption	P			1	W
Lead Soldering Limits	Tsold			260/10	°C/Sec

Transmitter Electro-optical Characteristics

VCC = 3.13V to 3.47V, TOP = -40 °C to +85 °C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate	DR	1.0625	1.25		Gb/s	
Optical Launch Power	Po	-8		-2	dBm	1
Optical Center Wavelength	λc	1530	1550	1570	nm	
Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Extinction Ratio	ER	9			dB	
Optical Eye Mask		IEEE802.3z				
Rise / Fall Time (20%~80%)	Tr / Tf			0.26	ns	
Differential Data Input Swing	VIN	400	800	1800	mV	

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

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Receiver Electro-optical Characteristics

V_{CC} = 3.13V to 3.47V, T_{OP} = -40 °C to +85 °C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Data Rate	DR	1.0625	1.25		Gb/s	
Receiver Sensitivity	SEN			-23	dBm	1
Maximum Receive Power	P_{Rx-MAX}	-3			dBm	1
Optical Center Wavelength	λc	1260		1360	nm	
Signal Detect Assert	SD_A			-24	dBm	
Signal Detect De-Assert	SD_D	-35			dBm	
Signal Detect Hysteresis	SD_{HY}	0.5		5	dB	
Differential Data Output Swing	V_{OUT}	500		1200	mV	
Signal Detect O/P Voltage Low	V_{SDL}-V_{CC}	-2.0		-1.58	V	
Signal Detect O/P Voltage High	V_{SDH}-V_{CC}	-1.1		-0.74	V	

Note1: Measured with a PRBS 2^7-1 test pattern @1.25Gbps BER<10^{-12}.

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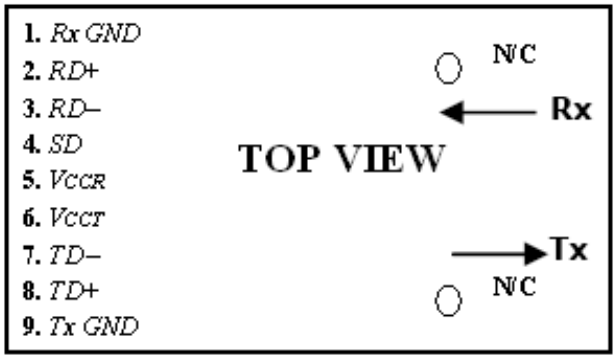
Pin Assignment



Pin Description

Pin	Name	Function / Description
1	Rx GND	Receiver Signal Ground
2	RD+	Receiver Data Out
3	RD-	Receiver Data Out Bar
4	SD	Signal Detect (1)
5	VccR	Receiver Power Supply
6	VccT	Transmitter Power Supply
7	TD-	Transmitter Data In Bar
8	TD+	Transmitter Data In
9	Tx GND	Transmitter Signal Ground

Note1: Signal Detect is a basic fiber failure indicator. This is a single-ended LVTTL output. As the input optical power is decreased, Signal Detect will switch from high to low (de-assert point) somewhere between sensitivity and the no light input level. As the input optical power is increased from very low levels, Signal Detect will switch back from low to high (assert point).

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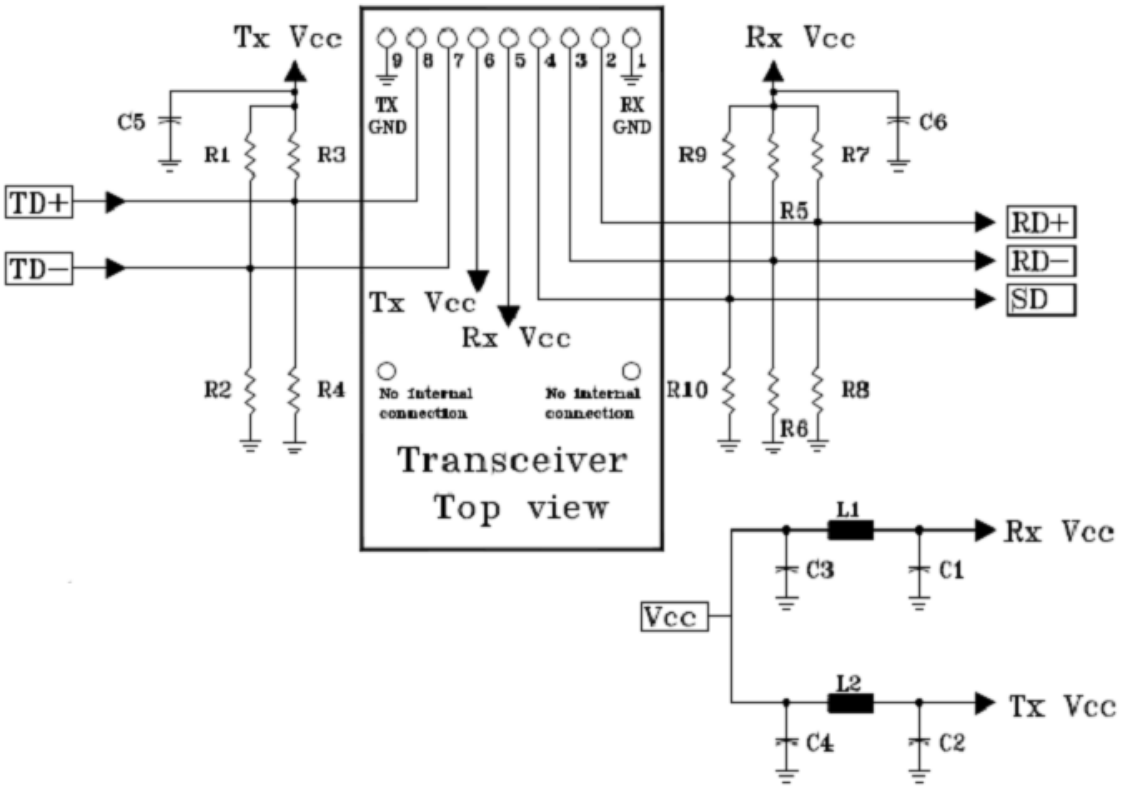
Recommended Circuit



R1=R3=R5=R7=R9=130Ω
R2=R4=R6=R8=R10=82Ω
C1=C2=C3=C5=C6=0.1uF
C4=10uF L1=L2=1uH

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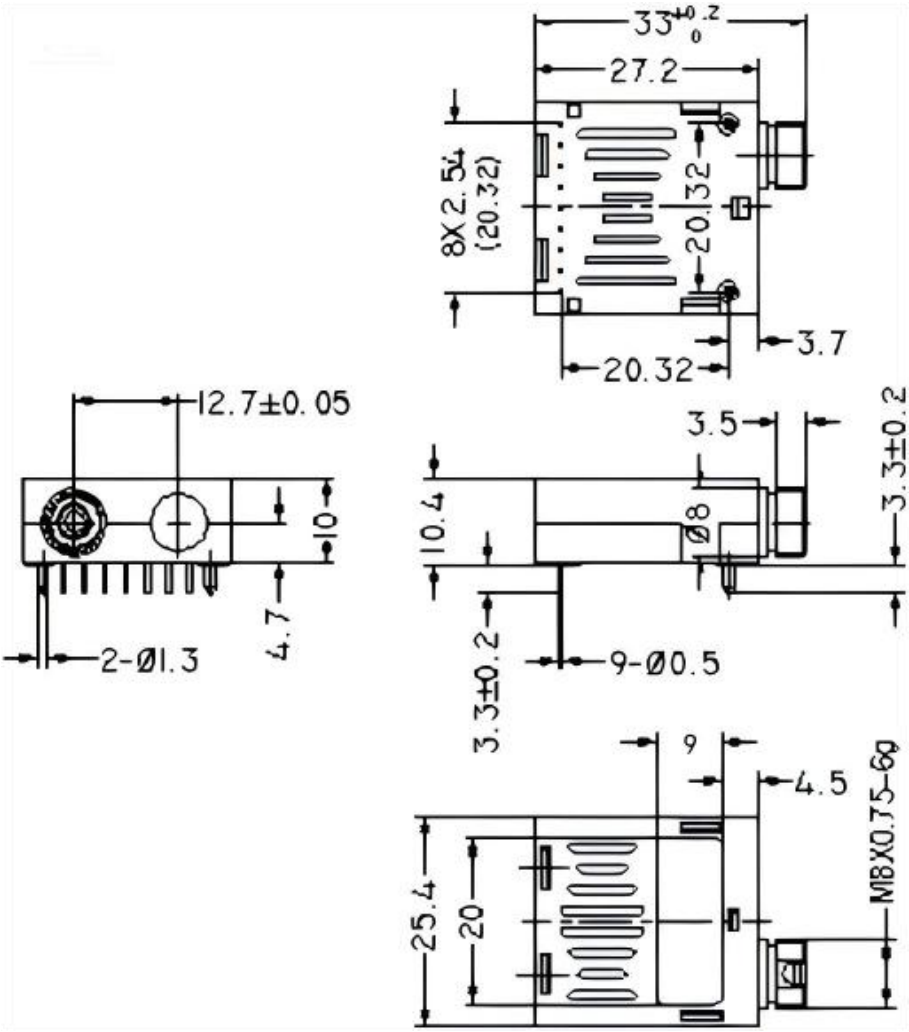
Mechanical Dimensions



(All Dimensions are ±0.20mm Unless Otherwise Specified, Unit: mm)

Ordering Information

Part No.	Tx	Rx	Conn.	I/O	SD	Link	Voltage	Temp.
F1X9-C4-S53-20Ti	1550nm	1260nm ~ 1360nm	BiDi FC	AC/CC	LVTTL	SMF 20km	3.3V	-40~+85°C

Note: Distances are indicative only. To calculate a more precise link budget based on specific conditions in your application, please refer to the optical characteristics.