FICER Technology Co., Ltd.
明虹科技股份有限公司

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SKU: 03GFC05

1.25G SFF 2X5 1000BASE-LX Transceiver
Duplex LC, 1310nm FP, SMF 10km, C-Temp
AC/AC I/O, LVTTL Signal Detection

Part Number: FSF1-C7-S13-10T



Overview

FSF1-C7-S13-10T is a 2X5 SFF package transceiver with duplex LC connector, compliant with the industrial standard specification. The high performance uncooled 1310nm FP transmitter and high sensitivity PIN receiver provide superior performance for Gigabit Ethernet 1000BASE-LX and Fiber Channel 1GFC applications up to SMF 10km optical links.

Applications

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

Features

- Compliant with IEEE802.3z Gigabit Ethernet
- Compliant with Fiber Channel 100-SM-LC-L
- Compliant with SFF MSA-2000
- Industry Standard SFF 2X5 Footprint
- 1310nm FP transmitter & PIN receiver
- Duplex LC connector
- AC-coupled LVPECL Differential inputs and outputs
- LVTTL Signal Detection output
- Single +3.3V power supply
- Link distance 10km over SM fiber
- Operating Temperature 0~+70°C
- Maximum Power consumption 0.8W
- 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	T_{ST}	-40	+85	°C
Relative Humidity	RH	5	85	%
Supply Voltage	V_{CC}	-0.5	+3.6	V

Recommended Operating Conditions

Parameters	Symbol	Min.	Typ.	Max.	Unit
Case Operating Temperature	T_{OP}	0	-	+70	°C
Supply Voltage	V_{CC}	+3.13	+3.3	+3.47	V
Supply Current	I_{CC}			240	mA
Power Consumption	P			0.8	W
Lead Soldering Limits	T_{Sold}			260/10	°C/Sec

Transmitter Electro-optical Characteristics

V_{CC} = 3.13V to 3.47V, T_{OP} = 0 °C to +70 °C

Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Line Rate		1.0625	1.25		Gb/s	
Optical Launch Power	Po	-9		-3	dBm	1
Optical Center Wavelength	λc	1260	1310	1360	nm	
Spectral Width (RMS)	Δλ			3	nm	
Optical Extinction Ratio	ER	9			dB	
Optical Eye Mask		IEEE 802.3z				
Relative Intensity Noise	RIN			-115	dB/Hz	
Differential Data Input Swing	V_{IN}	400		2000	mV	
Tx Disable Input Voltage-Low (Tx ON)	$TDISV_L$	0		0.8	V	
Tx Disable Input Voltage-High (Tx OFF)	$TDISV_H$	2.0		Vcc	V	

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} = 0 °C to +70 °C

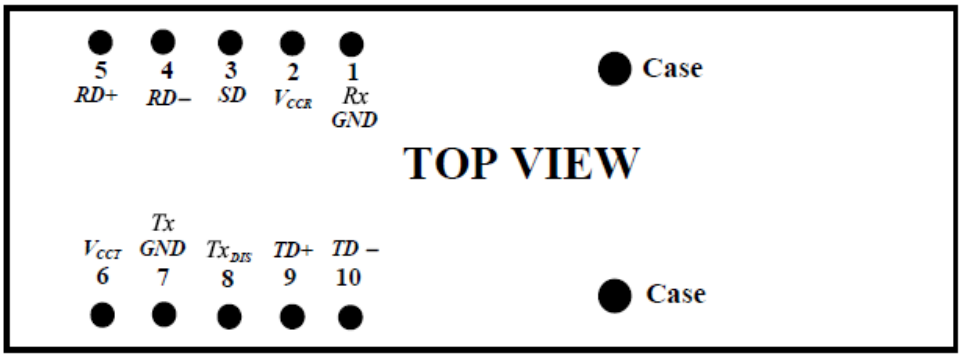
Parameters	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Line Rate		1.0625	1.25		Gb/s	
Receiver Sensitivity	SEN			-21	dBm	1
Maximum Receive Power	P_{RX-MAX}	-3			dBm	1
Optical Center Wavelength	λc	1260		1610	nm	
Signal Detect De-Assert	SD_D	-35			dBm	
Signal Detect Assert	SD_A			-21	dBm	
Signal Detect LOS Hysteresis	SD_{HY}	0.5		6	dB	
Differential Data Output Swing	V_{OUT}	500		1200	mV	
Signal Detect Output Voltage Low	SDV_L	0		0.4	V	
Signal Detect Output Voltage High	SDV_H	2.4		Vcc	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	VCCR	Receiver Power Supply
3	SD	Signal Detect Output. (High=Normal Operation; Low=Loss of Signal)
4	RD-	Receiver Data Out Bar
5	RD+	Receiver Data Out
6	VCCT	Transmitter Power Supply
7	Tx GND	Transmitter Signal Ground
8	TXDIS	Transmitter Disable Control. (High=Tx off; Low=Tx on)
9	TD+	Transmitter Data In
10	TD-	Transmitter Data In Bar

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).

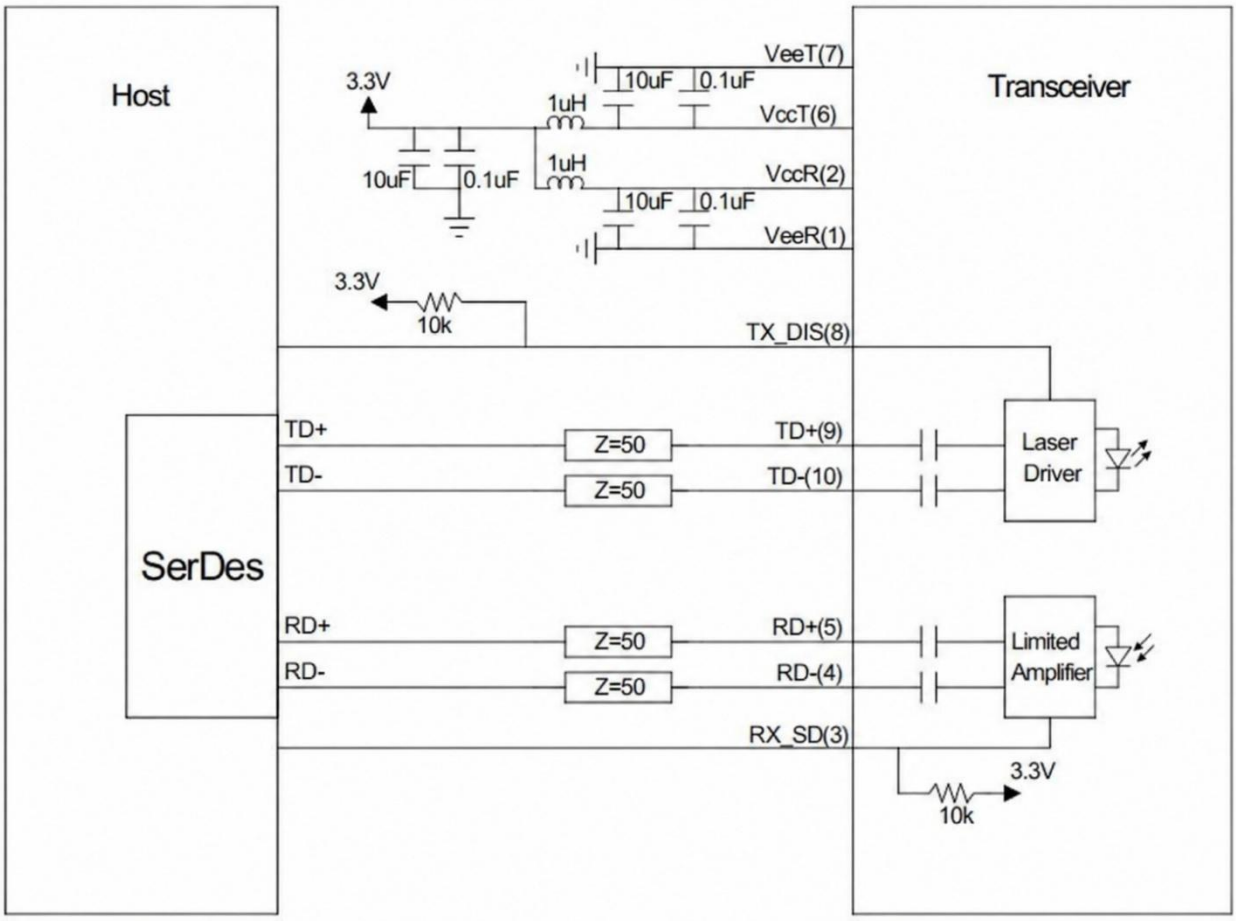
Note2: Transmitter Disabled: (VccT-1.3V)<V<VccT ; Transmitter Enabled: TX GND<V<(TX GND+0.8V) or open circuit.

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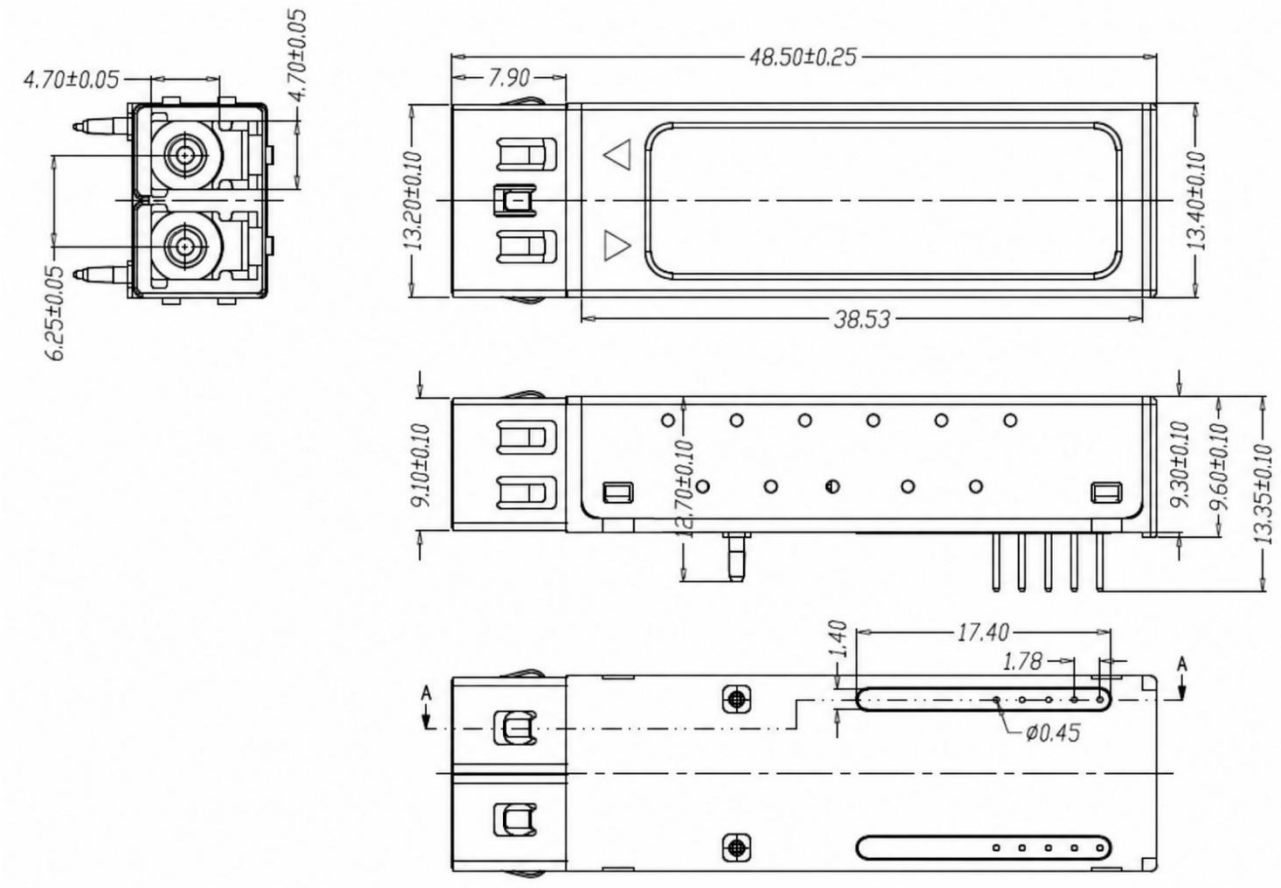
Recommended Circuit



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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.
FSF1-C7-S13-10T	1310nm	1260nm ~ 1610nm	Duplex LC	AC/AC	LVTTL	SMF 10km	3.3V	0~+70°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.

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