

C-13-1250-F-SLC • C-13-1250C-F- SLC



Features

- Duplex LC Singlemode Transceiver
- Small Form Factor Multi-sourced 2 x 5 Pin Package
- Complies with IEEE 802.3z Gigabit Ethernet
- Single +3.3 V Power Supply
- LVPECL Differential Inputs and Outputs
- LVTTTL Signal Detection Output (C-13-1250C-F-SLC)
- LVPECL Signal Detection Output (C-13-1250-F-SLC)
- Temperature Range: 0 to +70° C
- Class 1 Laser International Safety Standard IEC 825 Compliant
- Solderability to MIL-STD-883, Method 2003
- Pin coating is Sn/Pb with minimum 2% Pb content
- Flammability to UL94V0
- Humidity RH 5-85% (5-95% short term) to IEC 68-2-3
- Complies with Bellcore TA-NWT-000983
- Uncooled laser diode with MQW structure

Application

- 1.25 Gbps Ethernet Links
- 1.06 Gbps Fiber Channel

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Note
Power Supply Voltage	V _{cc}	0	3.6	V	
Data Input Voltage	-	GND	V _{cc}	V	
Output Current	I _{out}	0	30	mA	
Soldering Temperature	-	-	260	° C	10 seconds on leads only
Operating Temperature	T _{opr}	0	70	° C	
Storage Temperature	T _{stg}	-40	85	° C	

Recommended Operating Conditions

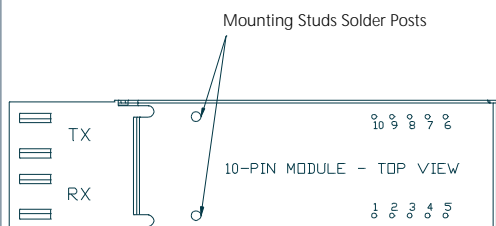
Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	V _{cc}	3.1	3.3	3.5	V
Operating Temperature	T _{opr}	0	-	70	° C
Data Rate		-	1250	-	Mbps

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Transmitter Specifications (0°C < T _{opr} < 70°C, 3.1 V < V _{cc} < 3.5 V)						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Optical						
Optical Transmit Power	P _O	-11	-	-6	dBm	Output power is coupled into a 9/125μm single mode fiber
Output Center Wavelength	λ _c	1290	1310	1330	nm	25°C
Output Spectrum Width	Δλ _{rms}	-	-	4	nm	RMS / 25°C
Extinction Ratio	E _R	8.2	-	-	dB	
Output Pulse Mask	Compliant with FDDI SMF-PMD1					
Output Eye	Compliant with Bellcore TR-NWT-000253 and ITU recommendation G.957					
Optical Rise Time	t _r	-	-	260	ps	10%-90% Values
Optical Fall Time	t _f	-	-	260	ps	10%-90% Values
Relative Intensity Noise	RIN	-	-	-120	dB/Hz	
Total Jitter	TJ	-	-	0.55	ns	Measured with 2 ²³ -1 PRBS with 72 ones and 72 zeros.
Electrical						
Power Supply Current	I _{cc}	-	-	150	mA	Maximum current is specified at V _{cc} =Maximum @maximum temperature.
Transmit Enable Voltage	V _{EN}	0	-	0.8	V	
Transmitter Disable Voltage	V _D	V _{cc} -1.3	-	V _{cc}	V	
Data Input Current-Low	I _{IL}	-200	-	-	μA	
Data Input Current-High	I _{IH}	-	-	200	μA	
Data Input Voltage-Low	V _{IL} -V _{CC}	-1.98	-	-1.71	V	These inputs are compatible with 10K, 10KH and 100K ECL and LVPECL inputs.
Data Input Voltage-High	V _{IH} -V _{CC}	-1.1	-	-0.91	V	

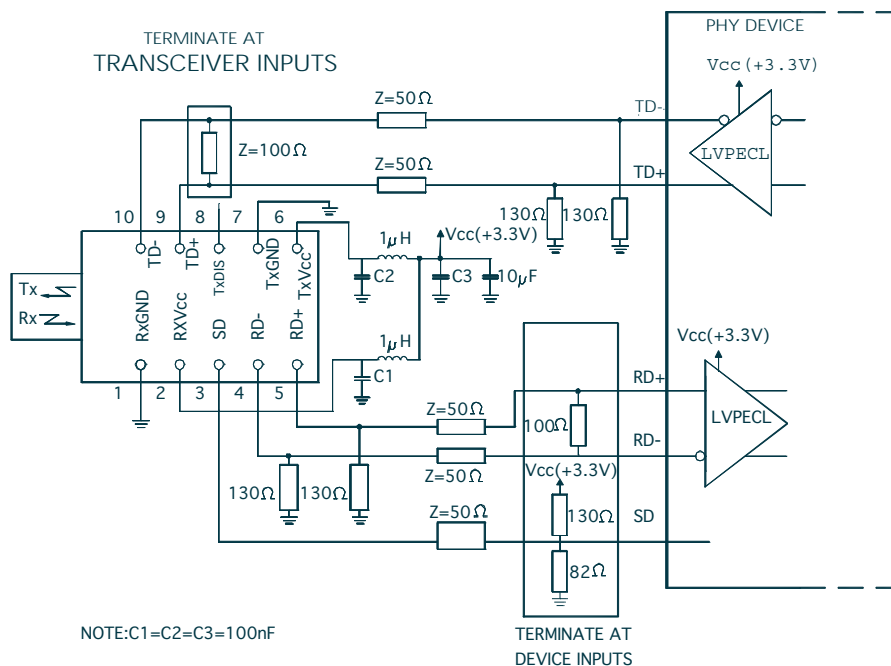
Receiver Specifications (0°C < T _{opr} < 70°C, 3.1 V < V _{cc} < 3.5V)						
Parameter	Symbol	Min	Typ	Max	Unit	Note
Optical						
Sensitivity	-	-	-22	-20	dBm	Measured with 2 ⁷ -1 PRBS
Maximum Input Power	P _{In}	-3	-	-	dBm	
Signal Detect – Asserted	P _a	-	-	-20	dBm	Measured on transition: low to high
Signal Detect –Deasserted	P _d	-35	-	-	dBm	Measured on transition: high to low
Signal detect –Hysteresis		1	-	4	dB	
Wavelength of Operation		1100	-	1600	nm	
Electrical						
Power Supply Current	I _{cc}		-	100	mA	The current excludes the output load current.
Data output Voltage—Low	V _{OL} -V _{CC}	-1.98	-	-1.71	V	These outputs are compatible with 10K, 10KH and 100K ECL and LVPECL outputs.
Data output Voltage—High	V _{OH} -V _{CC}	-1.1	-	-0.91	V	
Signal Detect Output Voltage—Low	V _{SDL} -V _{CC}	-1.98	-	-1.71	V	C-13-1250-F-SLC
Signal Detect Output Voltage—High	V _{SDH} -V _{CC}	-1.1	-	-0.91	V	
Signal Detect Output Voltage—Low	V _{SDL}	-	-	0.5	V	C-13-1250C-F-SLC
Signal Detect Output Voltage—High	V _{SDH}	2	-	-	V	

Connection Diagram



Pin	Symbol	Notes
1	RxGND	Directly connect this pin to the receiver ground plane
2	RxVcc	+3.3V dc power for the receiver section
3	SD	Active high on this indicates a received optical signal (LVPECL / LVTTTL)
4	RD-	Receiver Data Out Bar (LVPECL)
5	RD+	Receiver Data Out (LVPECL)
6	TxVcc	+3.3V dc power for the transmitter section
7	TxGND	Directly connect this pin to the transmitter ground plane
8	TxDIS	Transmitter disable (LVTTTL)
9	TD+	Transmitter Data In (LVPECL)
10	TD-	Transmitter Data In Bar (LVPECL)

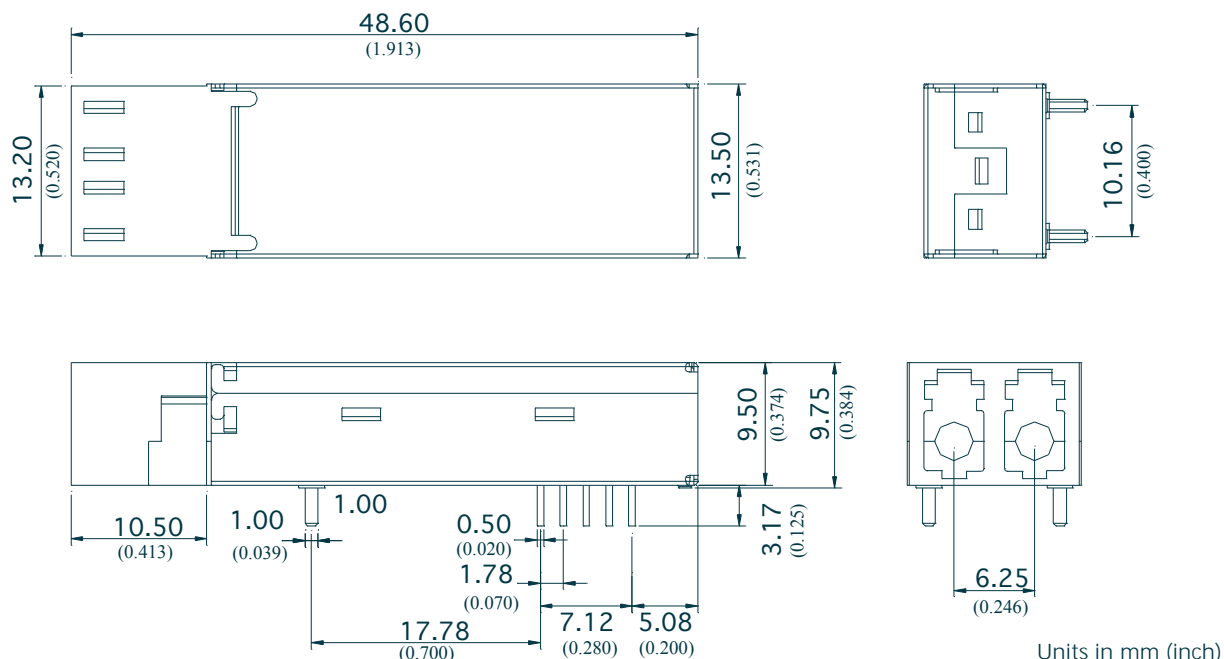
Recommended Circuit Schematic



The split-load terminations for ECL signals need to be located at the input of devices receiving those ECL signals. The power supply filtering is required for good EMI performance. Use short tracks from the inductor L1/L2 to the module $R_X V_{CC}$ and $T_X V_{CC}$. A GND plane under the module is required for good EMI and sensitivity performance.

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Package Diagram



This singlemode transceiver is a Class 1 laser product. It complies with IEC 825 and FDA 21 CFR 1040.10 and 1040.11. The transceiver must be operated within the specified temperature and voltage limits. The optical ports of the module will terminate with an optical connector or with a dust plug.

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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