Luminent
Bringing Communications to Light™

155 Mbps Singlemode SFF LC Transceiver (IR and LR)

C-13-155-F-SLCXA

Features

- Duplex LC Singlemode Transceiver
- Small Form Factor Multi-sourced 2 x 5 Pin Package
- Intermediate and Long reach SONET OC-3/ SDH STM-1 Compliant
- Single +3.3 V Power Supply
- LVPECL Differential Inputs and Outputs
- Temperature Range: -40 to +85°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

- ATM 155 Mbps Links
- SONET/SDH Equipment Interconnect

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
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}	-40	85	°C	
Storage Temperature	Tstg	-40	85	°C	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{cc}	3.1	3.3	3.5	V
Operating Temperature	T_{opr}	-40	-	85	C
Data Rate			155	-	Mbps

Transmitter Specifications (-40°C < T_{opr} < 85°C, 3.1 V < V_{cc} < 3.5 V)

Parameter	Symbol	Min	Typ	Max	Unit	Note
Optical						
Optical Transmit Power						
C-13-155-F-SLC3A	P_o	-15	-	-8	dBm	Output power is coupled into a 9/125 □m singlemode fiber
C-13-155-F-SLC5A	P_o	-5	-	0	dBm	Output power is coupled into a 9/125 □m singlemode fiber
Output Center Wavelength						
C-13-155-F-SLC3A	□	1261		1360	nm	
C-13-155-F-SLC5A	□	1280		1335	nm	
Output Spectrum Width						
C-13-155-F-SLC3A	□□rms	-	-	7.7	nm	RMS
C-13-155-F-SLC5A	□□rms	-	-	4	nm	RMS
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			2	ns	10%-90% Values
Optical Fall Time	t_f			2	ns	10%-90% Values
Relative Intensity Noise	RIN			-116	dB/Hz	
Total Jitter	TJ			1.2	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			□A	
Data Input Current-High	I_{IH}			200	□A	
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	

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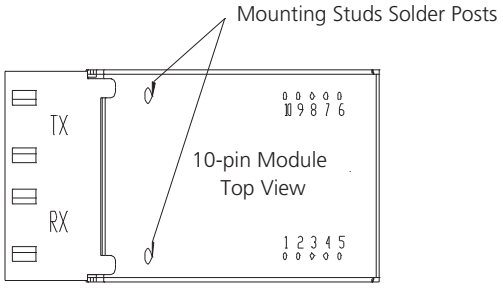
Receiver Specifications (-40°C < T_{opr} < 85°C, 3.1V < V_{cc} < 3.5 V)

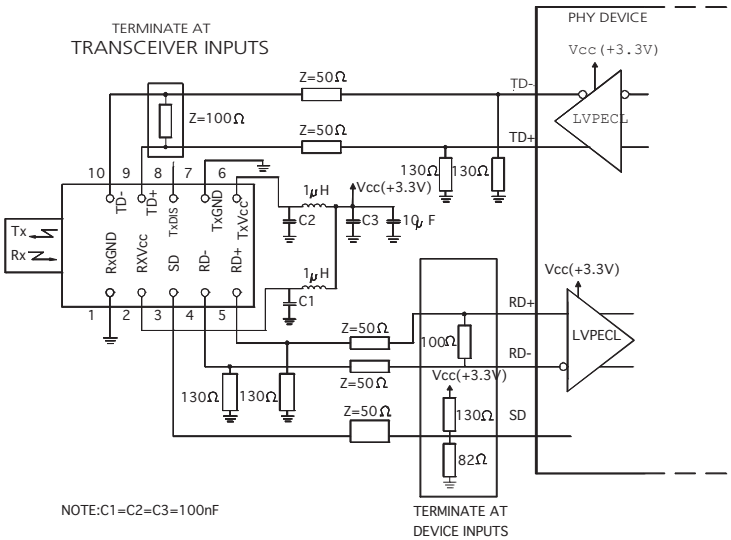
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Optical						
Sensitivity	-	-	-	-30	dBm	Measured with 2^{23}-1 PRBS with 72 ones and 72 zeros. (CCITT recommendation G.958)
Maximum Input Power	P_{in}	-7	-	-	dBm	
Signal Detect – Asserted	P_a	-	-	-30	dBm	Measured on transition: low to high
Signal Detect –Deasserted	P_d	-47	-	-	dBm	Measured on transition: high to low
Signal detect –Hysteresis		1.0	-	4.0	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	
Signal Detect Output Voltage—High	V_{SDL}-V_{CC}	-1.1	-	-0.91	V	

Pin	Symbol	Unit
1	RxGND	Directly connect this pin to the receiver ground plane
2	R_xV_{cc}	+3.3V dc power for the receiver section
3	SD	Active high on this indicates a received optical signal (LVPECL)
4	RD-	Receiver Data Out Bar (LVPECL)
5	RD+	Receiver Data Out (LVPECL)
6	T_xV_{cc}	+3.3V dc power for the transmitter section
7	T_xGND	Directly connect this pin to the transmitter ground plane
8	T_xDIS	Transmitter disable (LVTTL)
9	TD+	Transmitter Data In (LVPECL)
10	TD-	Transmitter Data In Bar (LVPECL)

Connection Diagram



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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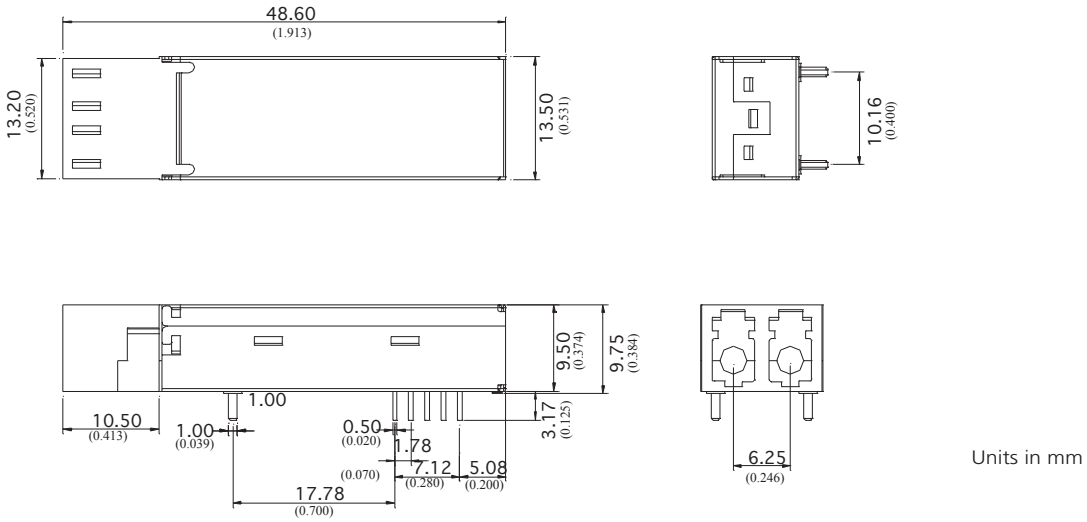
Package Diagram



Units in mm

Ordering Information

C-13-155-F-SLC-X-A

- 1310nm wavelength
- Communication Protocol
- SFF package
- Singlemode Fiber
- LC connector
- 3= intermediate reach
- 5= long reach
- -40 to +85°C temp range

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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