



R14G-LP11x Four Port RJ Format Optical Transceiver

3.3 Volt, LVPECL, 1300nm LED for Multimode Optical Fiber at up to 200 Mbaud

FEATURES

- Four RJ style optical transceivers in a single component
- Optimized for 62.5 or 50/125μ multimode optical fiber
- Compatible with solder and aqueous wash processes
- Enables reuse of existing RJ-45 UTP equipment cabinets
- Overall metal shield with enhanced grounding tabs
- Full compliance to the IEEE, ANSI and ATM requirements
- Duplex multimode LC receptacle at each port
- Differential LVPECL inputs and outputs
- Single +3.3 V power supply per port

APPLICATIONS

The R14G-LP11x multimode glass optical fiber transceivers provide low profile, cost effective solutions for high data rate multimode (up to 200 Megabaud, up to 2 Km) optical fiber data links with four duplex LC connector interfaces.

These transceivers are fully compliant with the IEEE, ATM and ANSI standards but can be used for any other data communications purpose within their operating parameters.

DESCRIPTION

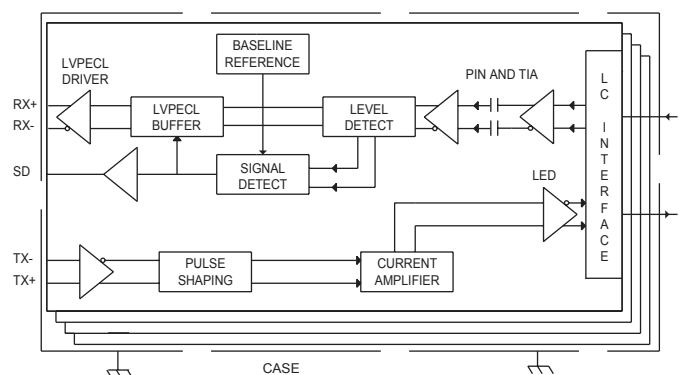
The R14G-LP11x fiber optic transceivers consist of transmitter and receiver functions combined in a four port RJ Format "harmonica" module. The optical transmitters are high output 1300nm LED's. The transmitter input lines are driven with differential LVPECL signals applied to the Transmit (TX+ and TX-) pins. These signals are internally converted to a suitable modulation current by a CMOS integrated circuit.

The optical receivers consist of PIN and Preamplifier assemblies and CMOS limiting post-amplifier integrated circuits. Outputs from the receivers consist of differential LVPECL data signals on the Receive (RX+ and RX-) pins and single ended LVPECL signal detect functions on the Signal Detect (SD) pins.

ORDERING INFORMATION

Application	Description	Temp. Range	Part Number
Fast Ethernet ESCON ATM	100Base-FX X3.296-1997 OC-3	0 to +70° C	R14G-LP11
Fast Ethernet ESCON ATM	100Base-FX X3.296-1997 OC-3	-40 to +85° C	R14G-LP11H

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Storage Temperature	T_s	-55		+100	$^{\circ}\text{C}$
Lead Soldering Temperature	T_{SOLD}			+260	$^{\circ}\text{C}$
Lead Soldering Time	t_{SOLD}			10	Seconds
Supply Voltage	V_{CC}	-0.5		6.0	V
Data Input Voltage	V_i	-0.5		V_{CC}	V
Differential Input Voltage (p-p)	V_D			2.0	V
Output Current	I_O			50	mA

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temp. Limit - xxx-xxxx	T_A	0		+70	$^{\circ}\text{C}$
Operating Temp. Limit - xxx-xxxxH	T_A	-40		+85	$^{\circ}\text{C}$
Supply Voltage	V_{CC}	3.135		3.465	V
Data Input Voltage - Low	$V_{\text{IL}} - V_{\text{CC}}$	-1.810		-1.475	V
Data Input Voltage - High	$V_{\text{IH}} - V_{\text{CC}}$	-1.165		-0.880	V
Data Output Voltage - Low	$V_{\text{OL}} - V_{\text{CC}}$	-1.810		-1.475	V
Data Output Voltage - High	$V_{\text{OH}} - V_{\text{CC}}$	-1.165		-0.880	V
Data Output Load	R_L		50		Ohms
Differential Input Voltage (p-p)	V_D	0.350	0.800	1.250	V

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TRANSMITTERS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		10		200	MBaud
Optical Output Power	P_O	-19		-14	dBm
Optical Output Wavelength	λ_{OUT}	1270	1320	1380	nm
Extinction Ratio	ER		-47	-40	dB
Supply Current	I_{CC}		120	160	mA
Optical Rise Time (10%-90%)	t_R	0.6	1.5	3.0	nS
Optical Fall Time (10%-90%)	t_F	0.6	2.0	3.0	nS
Duty Cycle Distortion	t_{DCD}		<0.1	0.6	nS
Data Dependent Jitter	t_{DDJ}		<0.1	0.7	nS

RECEIVERS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		10		200	MBaud
Optical Wavelength	λ_{IN}	1270		1380	nm
Optical Sensitivity	P_I	32	-35	-8	dBm
Supply Current	I_{CC}		70	120	mA
Input Duty Cycle Distortion	t_{DCD}			1.0	nS
Input Data Dependent Jitter	t_{DDJ}			0.76	nS
Signal Detect Assert Time			<10	100	∞ S
Signal Detect Deassert Time			<10	350	∞ S

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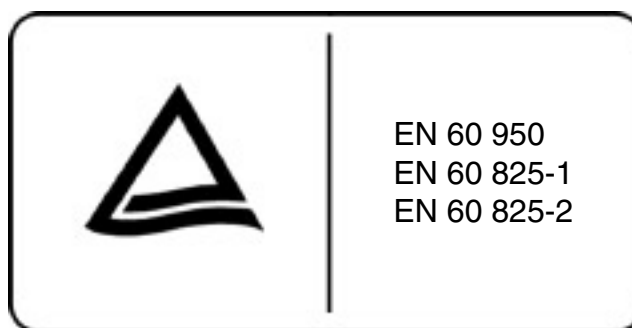
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REGULATORY COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883-3015.7	ESD	Class II	2200V
IEC-801-2	ESD	Human Body Model	25KV
IEC-801-3	EMI	Immunity	>20dB
FCC	EMI	Class B	10V / M
EN 55022 (CISPR 22A)	EMI	Class B	>20dB
IEC-825 issue 1993-11	Eye Safety	Class 1	



UL / CSA File Number: E209124



TUV File Number: R2071012

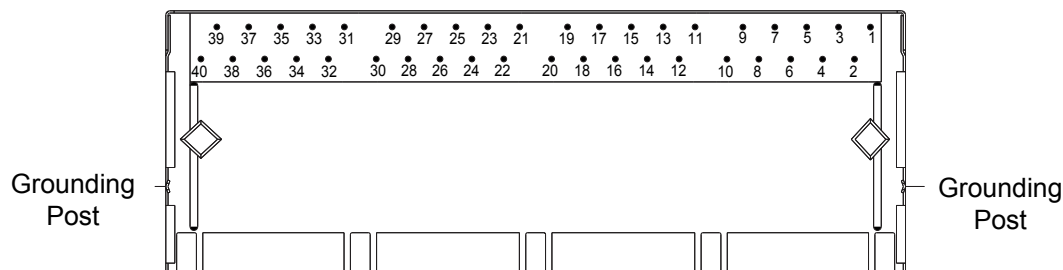
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PIN NUMBER ASSIGNMENTS

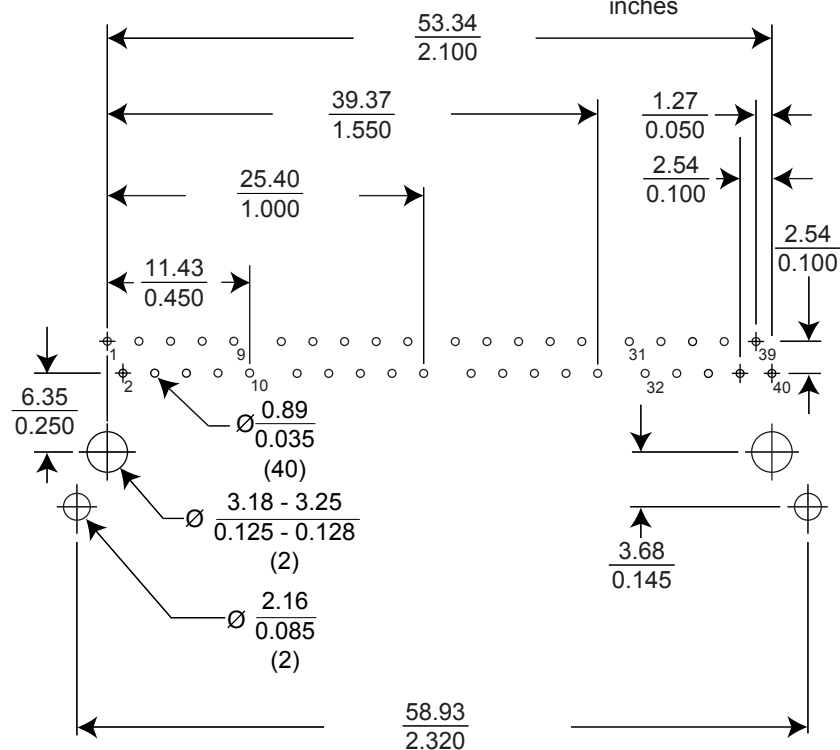
Bottom View of Component



RECOMMENDED PCB HOLE LAYOUT

PCB Component Side View

Dimensions Are Shown As: $\frac{\text{mm}}{\text{inches}}$



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PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
GP	GP	Grounding Post <i>Connect to Chassis Ground</i>	N/A
1, 11, 21, 31	TD+	Transmitter DATA In	LVPECL
2, 12, 22, 32	VEETX	Transmitter Signal Ground	N/A
3, 13, 23, 33	TD-	Transmitter DATA In	LVPECL
4, 14, 24, 34	VCCTX	Transmitter Power Supply	N/A
5, 15, 25, 35	SD	Signal Detect <i>Satisfactory Optical Output: Logic "1" Output</i> <i>Fault Condition: Logic "0" Output</i>	LVPECL
6, 16, 26, 36	N/C	No Connection	N/A
7, 17, 27, 37	RD-	Receiver DATA Out	LVPECL
8, 18, 28, 38	VCCR _X	Receiver Power Supply	N/A
9, 19, 29, 39	RD+	Receiver DATA Out	LVPECL
10, 20, 30, 40	VEER _X	Receiver Signal Ground	N/A

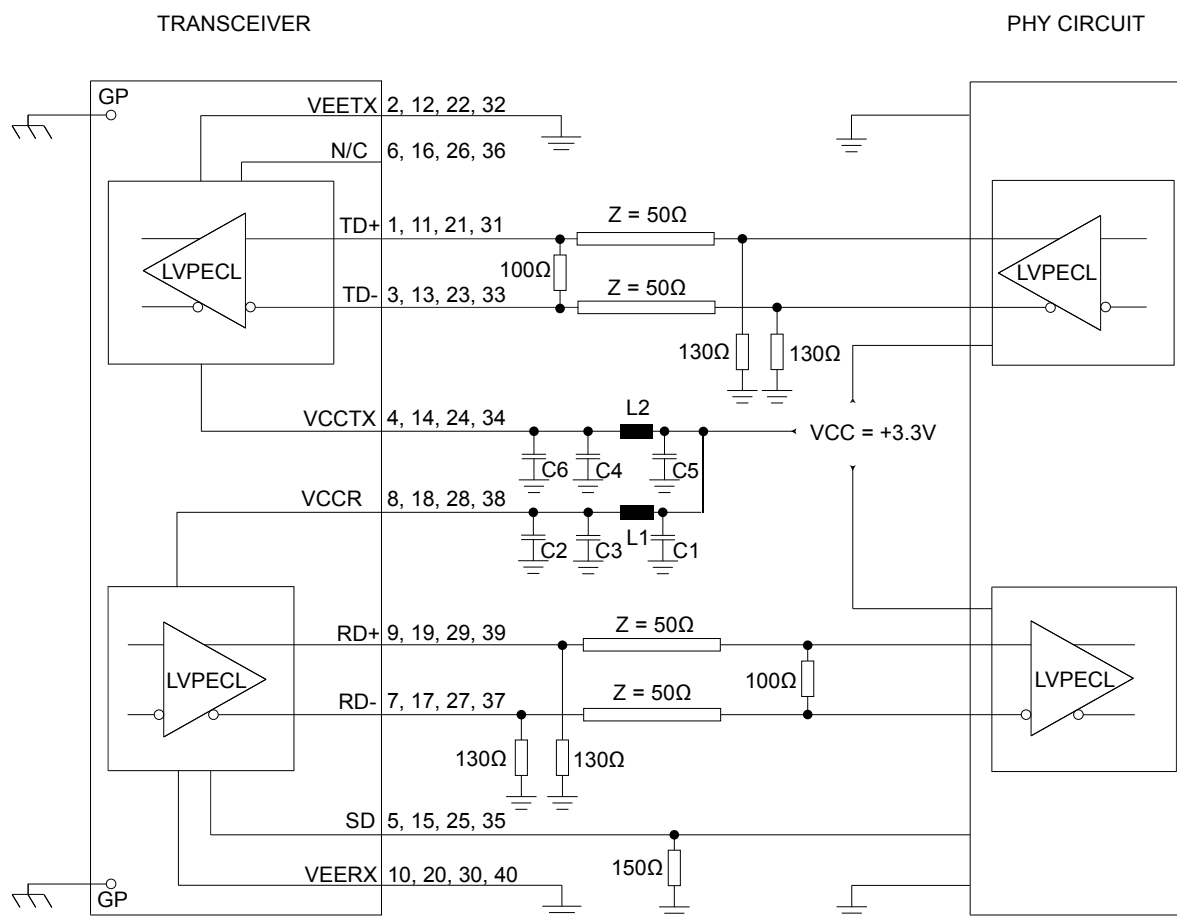
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TRANSCEIVER APPLICATION SCHEMATIC

For Interface To +3.3V LVPECL Circuits



L1, L2 = 1.0μH to 4.7μH*

C1, C2, C6 = 10nF

C3, C4, C5 = 4.7μF to 10μF

* Or ferrite bead alternative

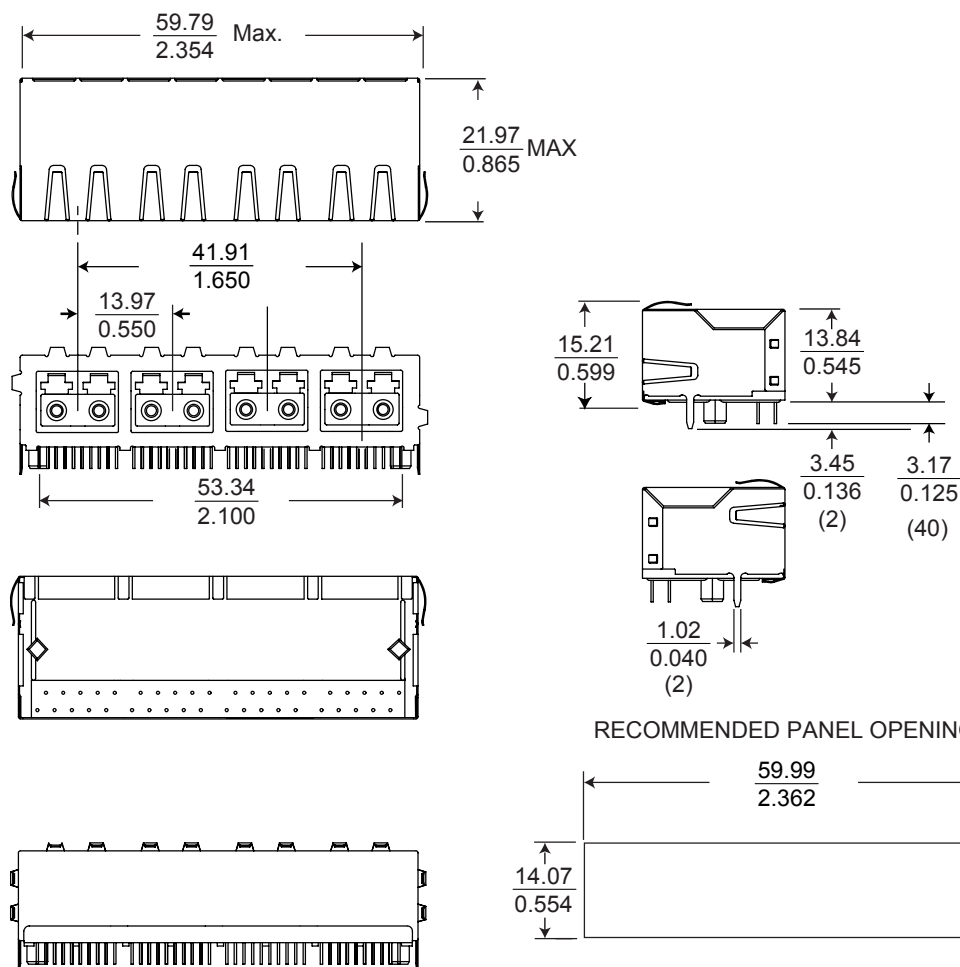
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TRANSCEIVER OUTLINE DRAWING

Dimensions Shown As: $\frac{\text{mm}}{\text{inches}}$



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