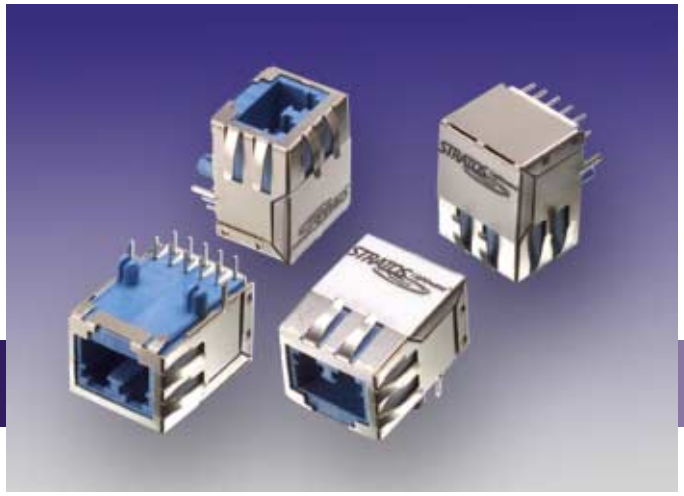

RJG-Lx12x RJ Series
Sonet / SDH Compliant RJ Format Optical Transceivers
3.3 Volt, 1310nm Laser, Single Mode, Intermediate Reach, up to 200 MBaud

FEATURES

- Compliant with Telcordia GR-253 and ITU-T G.957
- Single mode optical transceiver in the shell of an RJ-45
- Overall metal shield with enhanced spring tabs
- Smallest printed circuit board footprint in the industry
- Solder reflow and aqueous wash compatible
- Extended temperature range option available
- LVPECL or LVTTL signal detect options
- Duplex LC single mode receptacle
- IEC 825 / CDRH Class 1 compliant
- Sonet / SDH Intermediate Reach
- Single +3.3 V power supply

ORDERING INFORMATION

Application	Description	Temp. Range ° C	Signal Detect	Part Number
Fast Ethernet ESCON OC-3/STM-1	100Base-FX X3.296 G.957 S-1.1	0 to +70˚ C	LVPECL	RJG-LP12
Fast Ethernet ESCON OC-3/STM-1	100Base-FX X3.296 G.957 S-1.1	-40 to +85˚ C	LVPECL	RJG-LP12H
Fast Ethernet ESCON OC-3/STM-1	100Base-FX X3.296 G.957 S-1.1	0 to +70˚ C	LVTTL	RJG-LT12
Fast Ethernet ESCON OC-3/STM-1	100Base-FX X3.296 G.957 S-1.1	-40 to +85˚ C	LVTTL	RJG-LT12H

APPLICATIONS

The RJG-Lx12x single mode glass optical fiber transceivers provide low profile, cost effective solutions for Fast Ethernet, STM-1, OC-3 or ESCON (up to 200 Megabaud, up to 15 Km) single mode glass optical fiber data links.

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

DESCRIPTION

The RJG-Lx12x fiber optic transceivers consist of transmitter and receiver functions combined in an RJ Format optical transceiver module. The optical transmitter is a 1310nm Fabry-Perot laser. The transmitter input lines are driven with LVPECL signals applied to the Transmit (TD+ and TD-) pins. The optical transmitter can be disabled by applying an LVTTL signal to the Transmit Disable (TDIS) pin.

The optical receiver consists of a PIN + preamplifier assembly and a limiting post-amplifier integrated circuit. Outputs from the receiver consist of LVPECL data signals on the Receive (RD+ and RD-) pins and a single ended LVPECL or LVTTL signal detect function on the Signal Detect (SD) pin.

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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	° C
Lead Soldering Temperature	T_{SOLD}			+260	° 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 Temperature Limit Part Number xxx-xxxx Part Number xxx-xxxxH	T_A	 0 -40		 +70 +85	° C
Supply Voltage	V_{CC}	+3.135		+3.465	V
TX Differential Input Voltage (p-p)	V_D	0.350	0.800	1.250	V
Transmit Disable Voltage	V_{TD}	V_{CC} - 1.3		V_{CC}	V
Transmit Enable Voltage	V_{TEN}	V_{EE}		V_{EE} + 0.8	V
RX Data Output Load	R_L		50		Ohms

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TRANSMITTERS

VCCTX = 3.15V to 3.45V, T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		10		200	MBaud
Optical Output Power[1]	P_O	-15		-8	dBm
Optical Output Wavelength	λ_{OUT}	1280	1310	1340	nm
Spectral Width	$\Delta\lambda_{RMS}$		2	5	nm
Extinction Ratio	ER	8.2			dB
Supply Current	I_{CC}		120	160	mA
Optical Rise Time	t_R			2	ns
Optical Fall Time	t_F			2	ns

1. BER=10^{-10} @ 155.52Mbps, PRBS 2^{23}-1, NRZ, Compliant with Telcordia GR-253 and ITU recommendations G.957 and G.958

RECEIVERS

VCCTX = 3.15V to 3.45V, T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		10		200	MBaud
Optical Sensitivity[1]	P_I	-28		-8	dBm
Optical Wavelength	λ_{IN}	1261		1380	nm
Supply Current	I_{CC}		70	120	mA
Signal Detect Assert Time	t_{SDAS}		<10	100	µS
Signal Detect Deassert Time	t_{SDDA}		<10	350	µS
Signal Detect Threshold Decreasing Light Increasing Light	 LSTD LSTI	 -45.0 -45.0		 -32.5 -32.0	 dBm dBm
Signal Detect Hysteresis	HYS	0.5	2.25	3.5	dB
RX Data Output - Low	V_{OL} - V_{CC}	-1.810		-1.475	V
RX Data Output - High	V_{OH} - V_{CC}	-1.165		-0.880	V

1. BER=10^{-10} @ 155.52Mbps, PRBS 2^{23}-1, NRZ, Compliant with Telcordia GR-253 and ITU recommendations G.957 and G.958

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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	10V/M
FCC	EMI	Class B	>20dB
EN 55022 (CISPR 22A)	EMI	Class B	10V/M
IEC-825 issue 1993-11	Eye Safety	Class 1	TUV Certificate Number R 2171007
FDA CDRH 21-CFR 1040	Eye Safety	Class 1	CDRH Accession Number 9930009

c R US

File Number: E209124

EN 60 950
EN 60 825-1
EN 60 825-2

File Number: R 2071007

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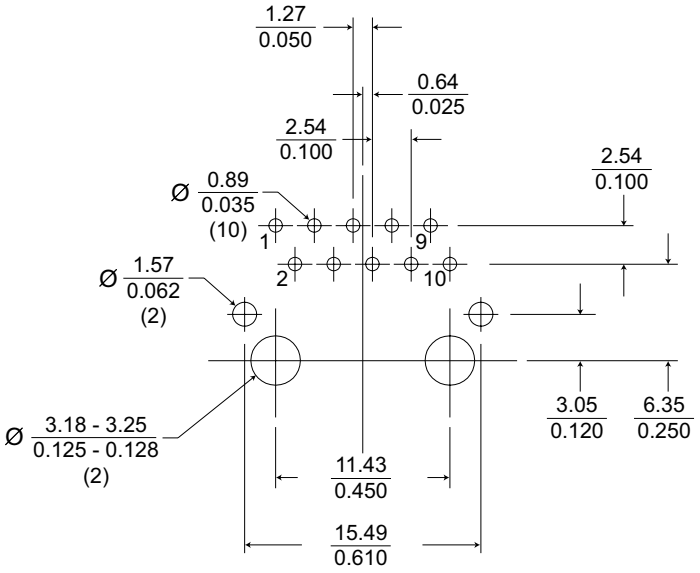
RJ FORMAT OPTICAL TRANSCEIVER PCB FOOTPRINT

Top Side Shown

Dimensions Are Shown As: mm / inches



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PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
GP	GP	Grouonding Post *Connect to Chassis Ground*	N/A
1	TD+	Transmitter DATA In	LVPECL
2	VEETX	Transmitter Signal Ground	N/A
3	TD-	Transmitter DATA In	LVPECL
4	VCCTX	Transmitter Power Supply	N/A
5	SD	Signal Detect *Satisfactory Optical Input: Logic "1" Output* *Fault Condition: Logic "0" Output*	RJx-xP1xx LVPECL RJx-xT1xx LVTTL
6	TDIS	Transmitter Disable	LVTTL
7	RD+	Receiver DATA Out	LVPECL
8	VCCRX	Receiver Power Supply	N/A
9	RD-	Receiver DATA Out	LVPECL
10	VEERX	Receiver Signal Ground	N/A

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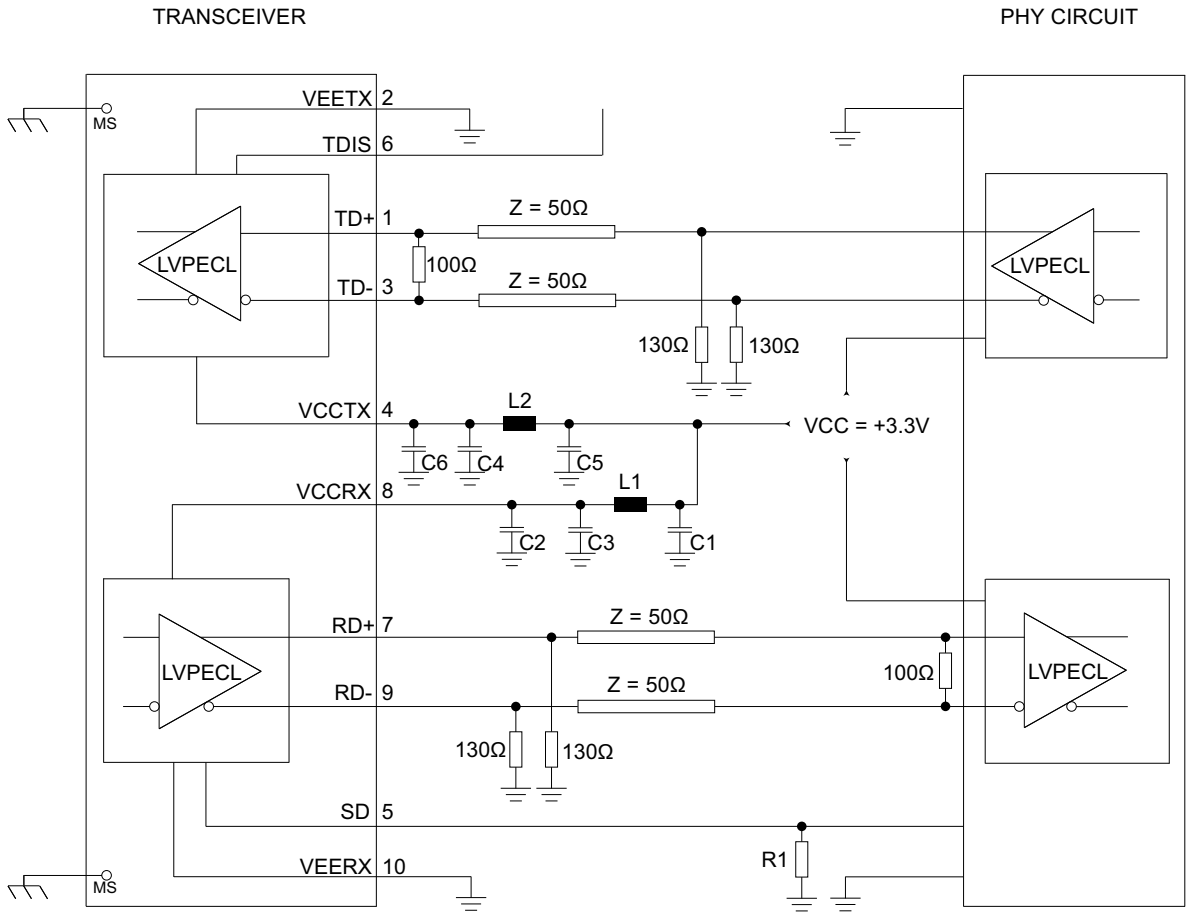
TRANSCEIVER APPLICATION SCHEMATIC

For Interface To +3.3V LVPECL Circuits



R1 = 150Ω for Rxx-LP12x / Remove for Rxx-LT12x
L1, L2 = 1.0µH to 4.7µH*
C1, C2, C6 = 10.0nF
C3, C4, C5 = 4.7µF to 10.0µF
* Or ferrite bead alternative

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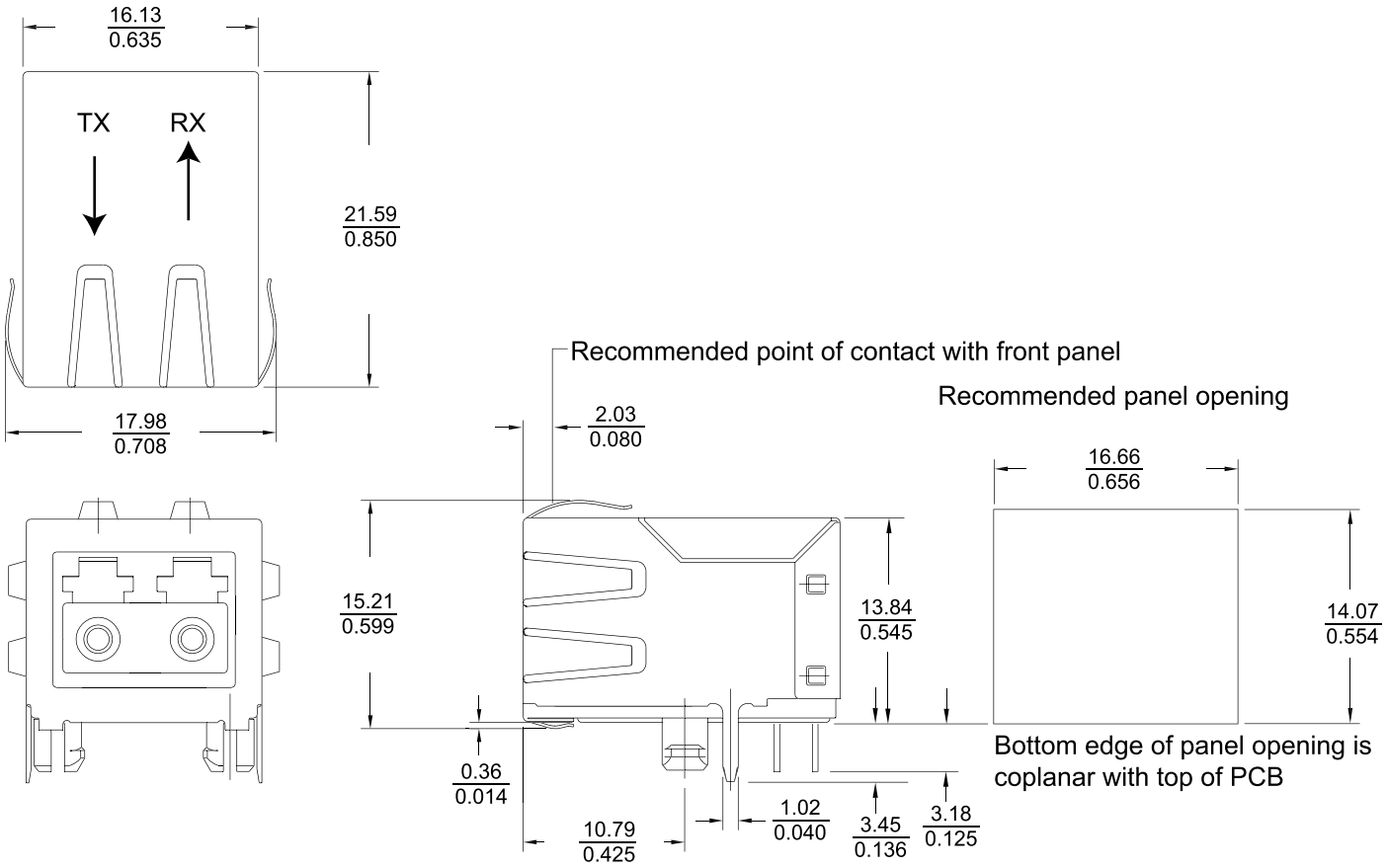
RJ FORMAT TRANSCEIVER OUTLINE DRAWING

Dimensions Are Shown As: mm / inches



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