



Fast Ethernet, OC-3, STM-1, Escon, SBCON Applications

Rxx-Lx12x Series

Sonet / SDH Compliant RJ FORMAT

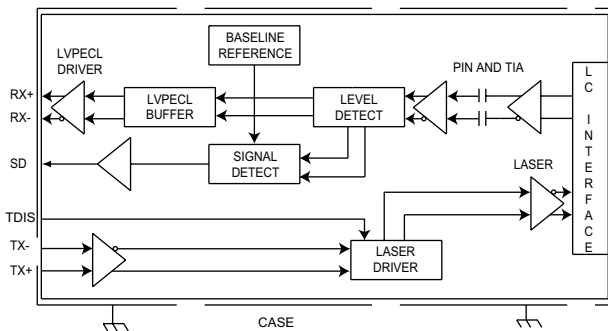
OPTICAL TRANSCEIVERS

3.3V, 1310nm Laser, Single Mode, up to 15.0Km

FEATURES

- Compatible with wave solder and aqueous wash processes
- Enables reuse of existing RJ-45 UTP equipment cabinets
- Overall metal shield with enhanced grounding tabs
- Compliant with ITU-T Recommendations G.957 / 8
- Compliant with Bellcore / Telcordia GR - 253
- LVPECL or LVTTTL Signal Detect options
- Differential LVPECL inputs and outputs
- Single +3.3 V power supply per port
- IEC 825 / CDRH Class 1 compliant
- Duplex single mode LC receptacle

BLOCK DIAGRAM



APPLICATIONS

The Rxx-Lx12x single mode glass optical fiber transceivers provide low profile, cost effective solutions for Fast Ethernet Escon, SBCON or OC-3 / STM-1 (up to 15.0 Km) optical fiber data links with a duplex LC connector interface.

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

DESCRIPTION

The Rxx-Lx12x fiber optic transceivers consist of transmitter and receiver functions combined in an RJ Format module. The optical transmitter is a high output 1310nm Fabry-Perot Laser. 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 a single ended LVPECL or LVTTTL signal detect function on the Signal Detect (SD) pin.

ORDERING INFORMATION

R	X	X	-	L	X	1	2	X
Form Factor	# of Ports	Protocol Type		Transmitter Wavelength	Signal Detect	Power Supply	Fiber Type	Operating Temperature
R= RJ Format	J= Single Port + Ground Tabs	E= Escon / SBCON		L= 1310nm	P= LVPECL	1= 3.3V	2= Single Mode IR-1	'blank' = 0° to +70°C
	F= Single Ports No Ground Tabs	F= Fast Ethernet			T= LVTTTL			H = -40° to +85°C
		G= OC-3 / STM-1						



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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		+4.5	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 (Standard Temp) Part Number xxx-xxxxH (Industrial Temp)	T_A	0 -40		+70 +85	°C
Supply Voltage	V_{CC}	+3.135		+3.465	V
TX Common Mode Voltage	V_{CM}		2.0		V
TX Differential Input Voltage (p-p)	V_D	0.35		1.25	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
Optical Output Power RXE-Lxx2xx ¹ RXF-Lxx2xx ² RXG-Lxx2xx ³	P _o	-8 -14 -15		-4 -20 -8	dBm
Optical Output Wavelength	λ _{OUT}	1263	1310	1360	nm
Spectral Width	Δλ _{RMS}			3	nm
Extinction Ratio	ER	10			dB
Supply Current	I _{CC}		120	160	mA
Optical Rise / Fall Time RXE-Lxx2xx ¹ RXF-Lxx2xx ² RXG-Lxx2xx ³	t _{R,F}			1.5 3.0 2.0	ns

1. Compliant with ANSI SBCON Specification X3.296-1996 and ESCON specification SA23-0394-01

2. Compliant with FDDI PMD ISO / IEC 9314-3

3. Compliant with Telcordia GR-253 and ITU recommendations G.957 and G.958

RECEIVERS

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

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity RXE-Lxx2xx ¹ RXF-Lxx2xx ² RXG-Lxx2xx ³	P _i	-28 -32 -28		-3 -12 -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	LSTD	-45.0		-35.5	dBm
Increasing Light	LSTI	-45.0		-35.0	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

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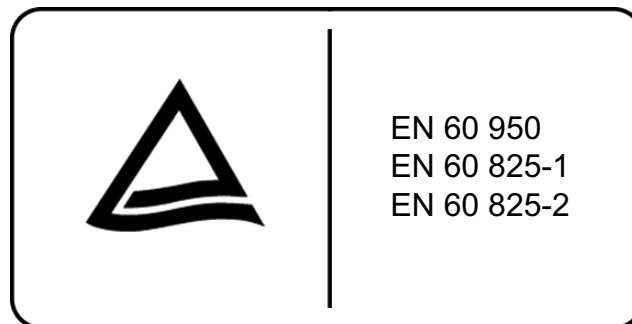
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REGULATORY COMPLIANCE

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	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



File Number: E209124



File Number: R 2071007

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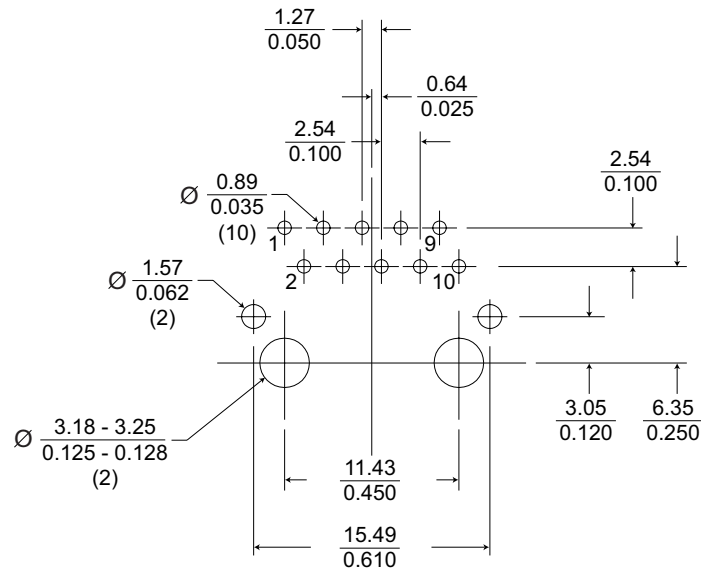
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RJ FORMAT OPTICAL TRANSCEIVER PCB FOOTPRINT

Top Side Shown

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



PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
GP	GP	Grounding Posts Connect to signal 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-LP1xxx LVPECL RJx-LT1xxx LVTTTL
6	TDIS	Transmit Disable	LVTTTL
7	RD+	Receiver DATA Out	LVPECL
8	VCCRXX	Receiver Power Supply	N/A
9	RD-	Receiver DATA Out	LVPECL
10	VEERX	Receiver Signal Ground	N/A

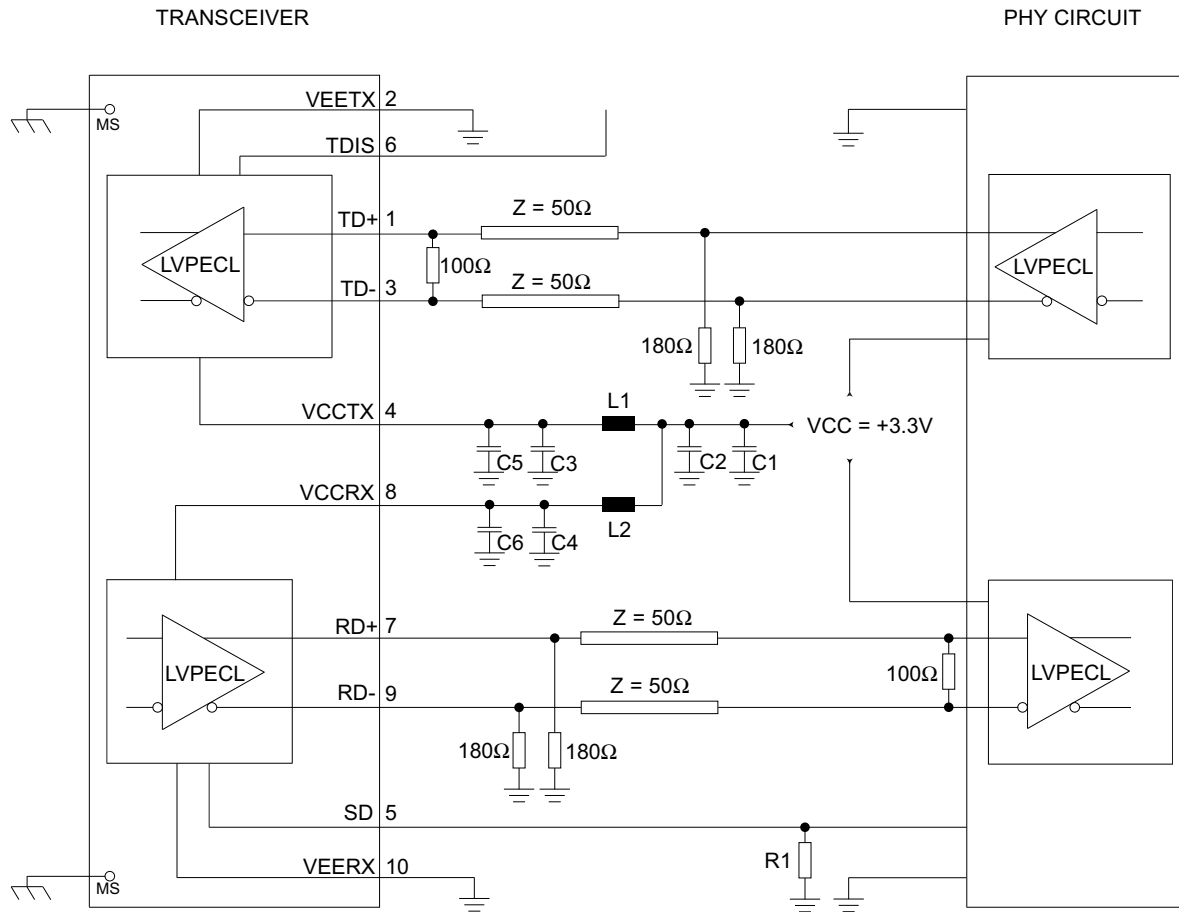
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TRANSCEIVER APPLICATION SCHEMATIC

For Interface To +3.3V LVPECL Circuits



R1 = 150Ω for Rxx-xPxxxx / Remove for Rxx-xTxxxx
 L1, L2= MuRata BLM21A601S or equivalent (600Ω@100MHz or better)
 C1= 22.0μF to 47.0μF
 C3, C4= 10.0μF
 C2, C5, C6= 0.01μF

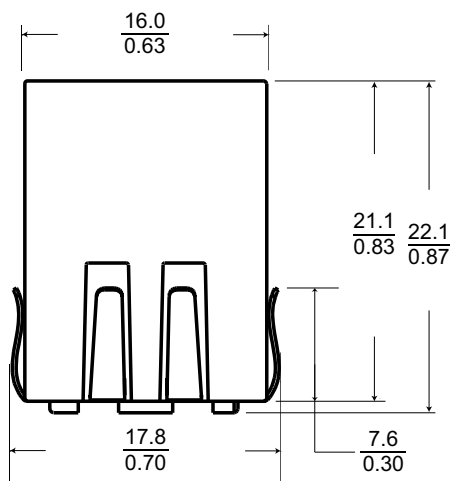
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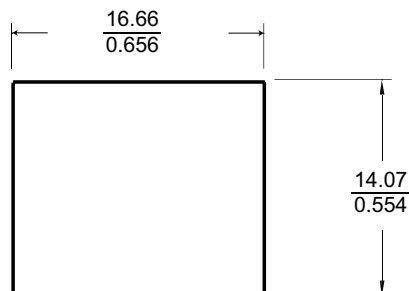
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RJ FORMAT TRANSCEIVER OUTLINE DRAWING

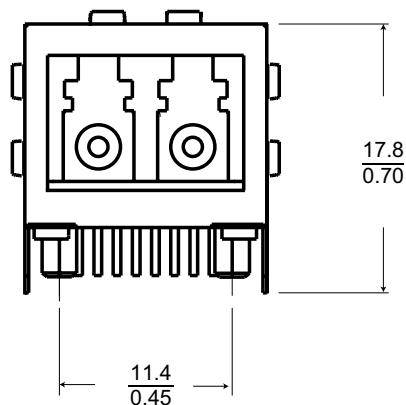
Dimensions are shown as: $\frac{\text{mm}}{\text{inches}}$



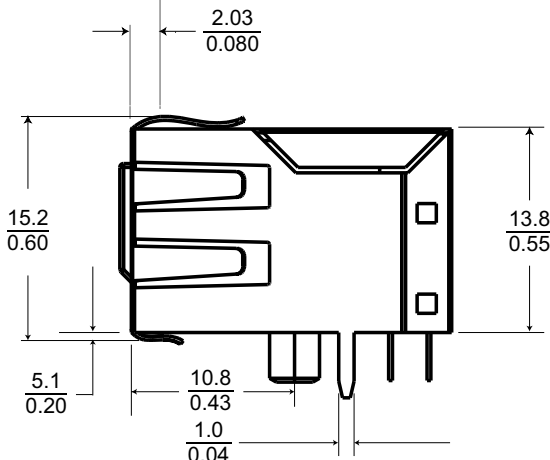
Recommended front panel opening



Bottom edge of panel opening is coplanar with top of PCB



Recommended point of contact with front panel



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