

RJK-LT12x RJ Format Optical Transceiver for Gigabit Ethernet / Fibre Channel

3.3 Volt, 1310nm FP Laser, Single Mode, at up to 1.5 Gbaud, up to 10 Km

FEATURES

- Optimized for single mode optical fiber
- RJ Format optical transceiver - duplex LC receptacle
- 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 IEEE and ANSI requirements
- Differential LVPECL inputs and outputs
- Single +3.3 V power supply

APPLICATIONS

The RJK-LT12x single mode glass optical fiber transceivers provide low profile, cost effective solutions for high data rate, multimode or single mode (up to 1.5 Gigabaud, up to 10 kilometers) optical fiber data links with a single mode duplex LC connector interface.

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

DESCRIPTION

The RJK-LT12x fiber optic transceivers consist of transmitter and receiver functions combined in an RJ Format module. The optical transmitter is a high output 1310 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 transmitter can be disabled by applying an LVTTTL signal to the Transmit Disable (TD[IS] pin).

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 LVTTTL signal detect function on the Signal Detect (SD) pin.

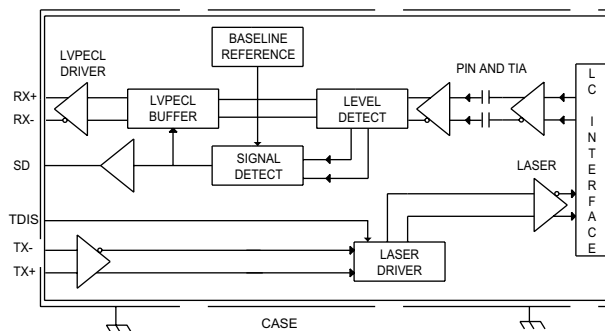
ORDERING INFORMATION

Application	Description	Temp. Range	Part Number
Gigabit Ethernet Fibre Channel	1000Base-LX ANSI X3.297	0 to +70° C	RJK-LT12
Gigabit Ethernet Fibre Channel	1000Base-LX ANSI X3.297	-40 to +85° C	RJK-LT12H

TRANSMISSION DISTANCES

Application	Description	Distance
Gigabit Ethernet IEEE-802.3z	62.5/125µm MMF Cables	550M
	50/125µm MMF Cables	550M
	9/125µm SMF Cables	10Km
Fibre Channel ANSI X3.297	62.5/125µm MMF Cables	500M
	50/125µm MMF Cables	500M
	9/125µm SMF Cables	10Km

BLOCK DIAGRAM



RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

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

RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

TRANSMITTERS

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

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		0.25		1.5	GBaud
Optical Output Power ¹ 9 μ m SMF 62.5/125 μ m MMF 50/125 μ m MMF	P_o	-9.5 -11.5 -11.5		-3 -3 -3	dBm
Optical Output Wavelength	λ_{OUT}	1285		1343	nm
Spectral Width	λ_{RMS}		2	4	nm
Extinction Ratio	ER	9	10		dB
Optical Rise / Fall Time (20%-80%)	t_R, t_F			0.26	nS
Transmit Disable Voltage	V_D	$V_{CC}-1.3$		V_{CC}	V
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V
Relative Intensity Noise	RIN			-117	dB / Hz
Total Jitter	TJ			227	pS
Coupled Power Ratio	CPR	9			dB

1. BER=10⁻¹² @ 1.25GBAUD, PRBS 2⁷-1, NRZ, Compliant with IEEE 802.3z and ANSI X3.297

RECEIVERS

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

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		0.25		1.5	GBaud
Optical Wavelength	λ_{IN}	1270		1355	nm
Optical Sensitivity ¹	P_i	-20		0	dBm
Optical Return Loss	ORL	12	30		dB
Signal Detect Asserted	P_a			-17	dBm
Signal Detect Deasserted	P_d	-29			dBm
Signal Detect Hysteresis	$P_a - P_d$	1.5			dB
Signal Detect Assert Time	t_{Assert}		<10	100	μ S
Signal Detect Deassert Time	$t_{Deassert}$		<10	350	μ S

1. BER=10⁻¹² @ 1.25GBAUD, PRBS 2⁷-1, NRZ, Compliant with IEEE 802.3z and ANSI X3.297



RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

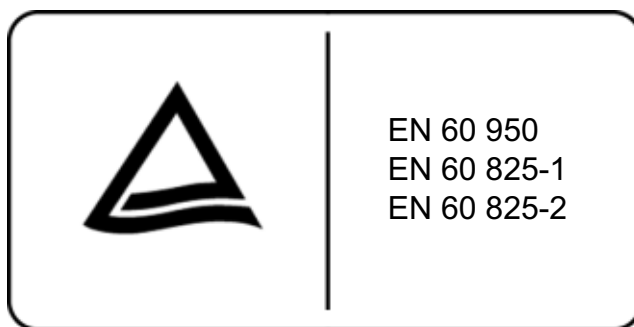
3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

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

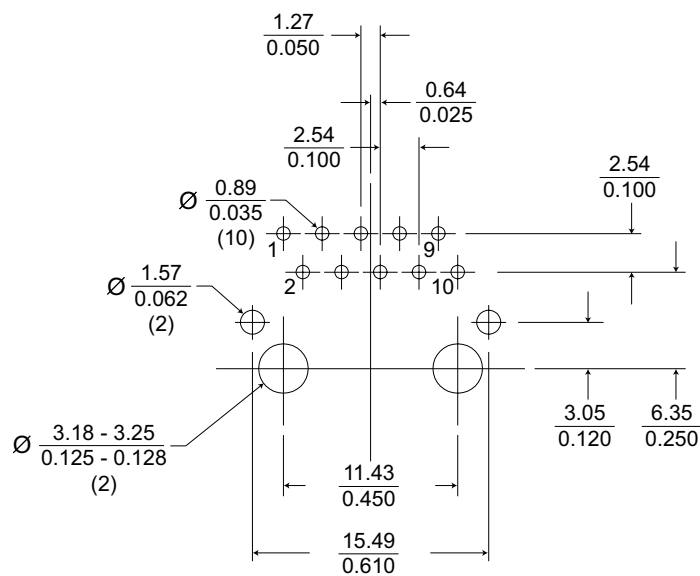
RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

RJ FORMAT OPTICAL TRANSCEIVER PCB FOOTPRINT

Top Side Shown

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



RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

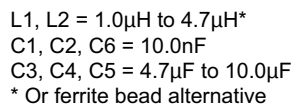
3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
GP	GP	Grouonding Post <i>Connect to Chassis Ground</i>	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 <i>Satisfactory Optical Input: Logic "1" Output</i> <i>Fault Condition: Logic "0" Output</i>	LVTTL
6	TDIS	Transmitter Disable	LVTTL
7	RD+	Receiver DATA Out	LVPECL
8	VCCR _X	Receiver Power Supply	N/A
9	RD-	Receiver DATA Out	LVPECL
10	VEER _X	Receiver Signal Ground	N/A

3.3 Volt, 1310nm FP Laser, Single Mode, at up to 1.5 Gbaud, up to 10 Kilometers

For Interface To +3.3V LVPECL Circuits

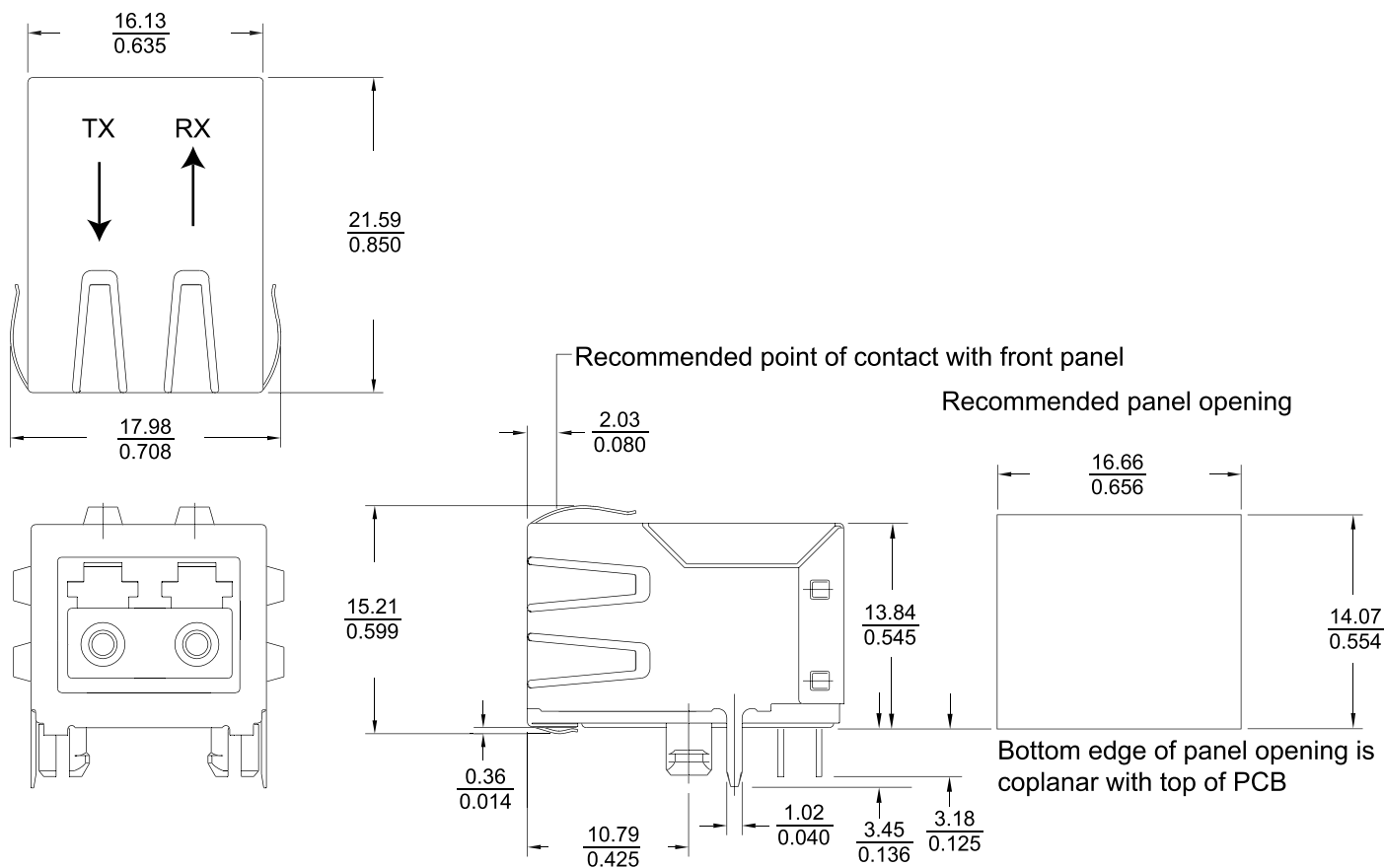


RJK-LT12x Optical Transceiver for Gigabit Ethernet / Fibre Channel

3.3 Volt, 1310nm FP Laser, Single Mode,
at up to 1.5 Gbaud, up to 10 Kilometers

RJ FORMAT TRANSCEIVER OUTLINE DRAWING

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



IMPORTANT NOTICE

Stratos Lightwave reserves the right to make changes to or discontinue any optical link product or service identified in this publication, without notice. Stratos Lightwave recommends that its customers to obtain the latest version of the publications to verify, before placing orders, that the information being relied on is current. Stratos Lightwave warrants performance of its optical link products to current specifications in accordance with the Stratos Lightwave standard warranty. Testing and other quality control techniques are utilized to the extent that Stratos Lightwave has determined it to be necessary to support this warranty. Specific testing of all parameters of each optical link product is not necessarily performed on all optical link products. Stratos Lightwave products are not designed for use in life support appliances, devices, or systems where malfunction of a Stratos Lightwave product can reasonably be expected to result in a personal injury. Stratos Lightwave customers using or selling optical link products for use in such applications do so at their own risk and agree to fully indemnify Stratos Lightwave for any damages resulting from such improper use or sale. Stratos Lightwave assumes no liability for Stratos Lightwave applications assistance, customer product design, software performance, or infringement of patents or services described herein. Nor does Stratos Lightwave warrant or represent that a license, either expressed or implied is granted under any patent right, copyright, or intellectual property right, and makes no representations or warranties that these products are free from patent, copyright, or intellectual property rights. Applications that are described herein for any of the optical link products are for illustrative purposes only. Stratos Lightwave makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.



1450 Treeland Blvd., S.E., Palm Bay, FL 32909-2211 USA
Telephone: 321-308-4100 Fax: 321-308-0434
Web Page: www.stratoslightwave.com