

SF2-Lx12x Small Form Factor Optical Transceiver

3.3 Volt, 1310nm Laser, Single Mode, Intermediate Reach, up to 200 Mbaud

FEATURES

- Compiles with 2x5 SFF Multi Source Agreement
- Optimized for single mode glass optical fiber
- Metal Shield with integral chassis grounds
- Mounts on 0.55" front panel centerlines
- Multisourced 2x5 transceiver footprint
- PCI Mezzanine Card height compliant
- Solder and aqueous wash compatible
- LVPECL or LVTTTL 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 ATM	100Base-FX X3.296 OC-3	0 to +70° C	LVPECL	SF2-LP12
Fast Ethernet ESCON ATM	100Base-FX X3.296 OC-3	-40 to +85° C	LVPECL	SF2-LP12H
Fast Ethernet ESCON ATM	100Base-FX X3.296 OC-3	0 to +70° C	LVTTTL	SF2-LT12
Fast Ethernet ESCON ATM	100Base-FX X3.296 OC-3	-40 to +85° C	LVTTTL	SF2-LT12H

APPLICATIONS

The SF2-Lx12x single mode glass optical fiber transceivers provide low profile, cost effective solutions for Fast Ethernet, ATM 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 IEEE, ATM and ANSI standards but they can be used for any other data communications purpose within their operating parameters.

DESCRIPTION

The SF2-Lx12x fiber optic transceivers consist of transmitter and receiver functions combined in a multisourced 2x5 SFF 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 LVTTTL signal to the Transmit Disable (TDIS) pin.

The optical receivers consist of 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 LVTTTL 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 Temp. Limit - xxx-xxxx	T_A	0		+70	° C
Operating Temp. Limit - xxx-xxxxH	T_A	-40		+85	° C
Supply Voltage	V_{CC}	+3.135		+3.465	V
Data Input Voltage - Low	$V_{IL} - V_{CC}$	-1.810		-1.475	V
Data Input Voltage - High	$V_{IH} - V_{CC}$	-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	-15		-8	dBm
Optical Output Wavelength	λ_{OUT}	1280	1310	1340	nm
Spectral Width	λ_{RMS}		2	5	nm
Extinction Ratio	ER	8.2			dB
Supply Current	I_{CC}		120	160	mA

RECEIVERS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Baud Rate		10		200	MBaud
Optical Wavelength	λ_{IN}	1261		1380	nm
Optical Sensitivity	P_I	-28		0	dBm
Supply Current	I_{CC}		70	120	mA
Signal Detect Assert Time			<10	100	μ S
Signal Detect Deassert Time			<10	350	μ S

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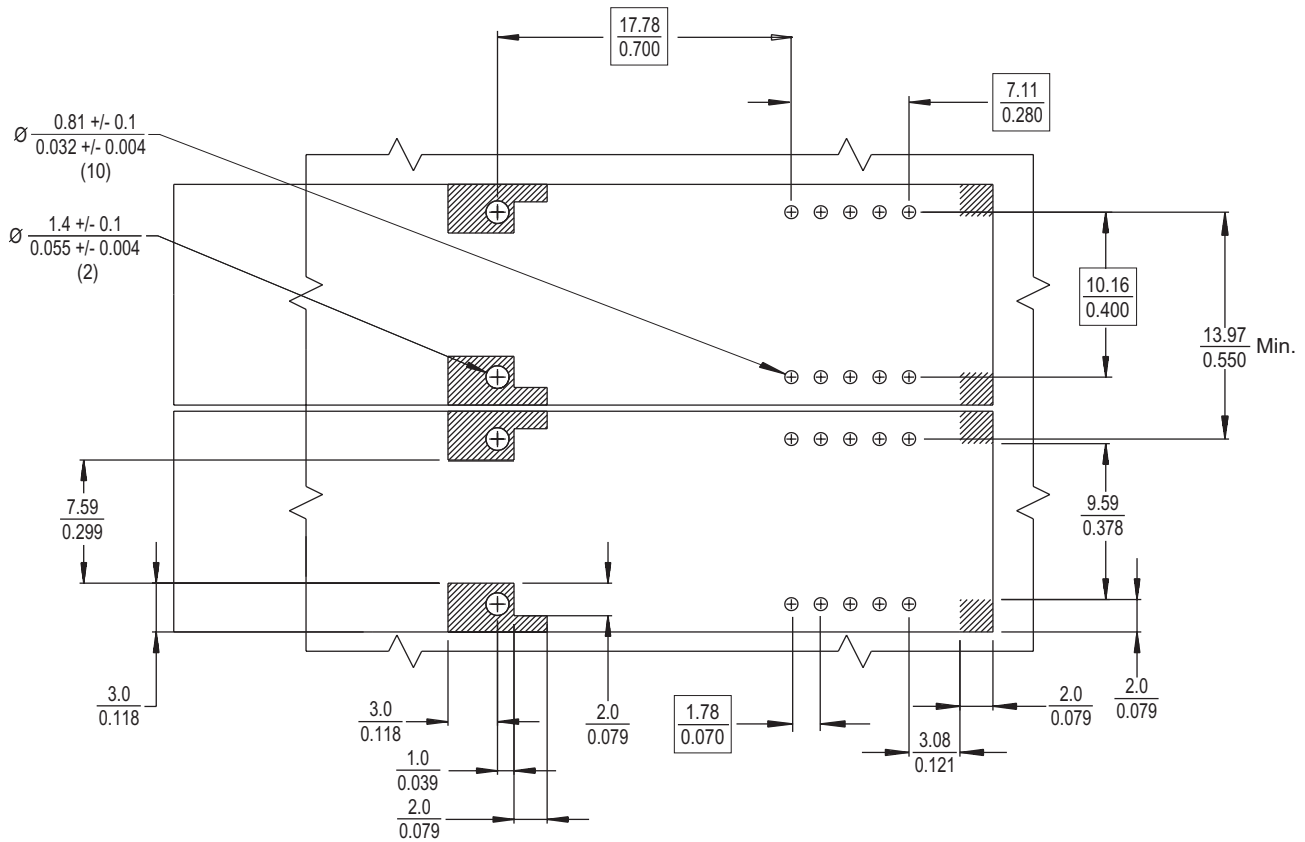
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TRANSCEIVER PRINTED CIRCUIT BOARD LAYOUT PER 1997 MULTISOURCE AGREEMENT

Top View Shown

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



CROSS-HATCHED AREAS SHOULD HAVE NO SIGNAL TRACES ON THE TOP LAYER

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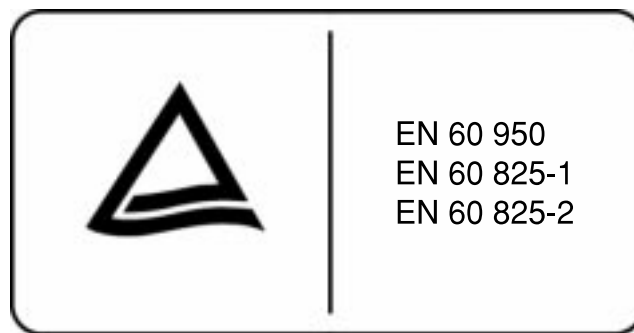
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REGULATORY COMPLIANCE

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



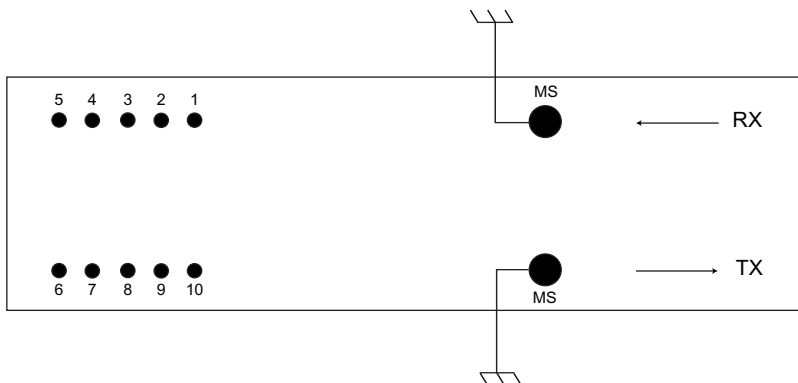
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2 x 5 MSA SMALL FORM FACTOR TRANSCEIVER PIN NUMBER ASSIGNMENTS TOP VIEW SHOWN



PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
MS	MS	Mounting Studs <i>Connect to Chassis Ground</i>	N/A
1	VEEREX	Receiver Signal Ground	N/A
2	VCCR _X	Receiver Power Supply	N/A
3	SD	Signal Detect <i>Satisfactory Optical Input: Logic "1" Output</i> <i>Fault Condition: Logic "0" Output</i>	SF2-LP12x LVPECL SF2-LT12x LVTTTL
4	RD ⁻	Receiver DATA Out	LVPECL
5	RD ⁺	Receiver DATA Out	LVPECL
6	VCCT _X	Transmitter Power Supply	N/A
7	VEET _X	Transmitter Signal Ground	N/A
8	TDIS	Transmitter Disable <i>Transmitter Enabled: $VEETX < V < - (VEETX + 8.0)$ or open circuit</i> <i>Transmitter Disabled: $VCCTX - 1.5V < V < VCCTX$</i>	LVTTTL
9	TD ⁺	Transmitter DATA In	LVPECL
10	TD ⁻	Transmitter DATA In	LVPECL

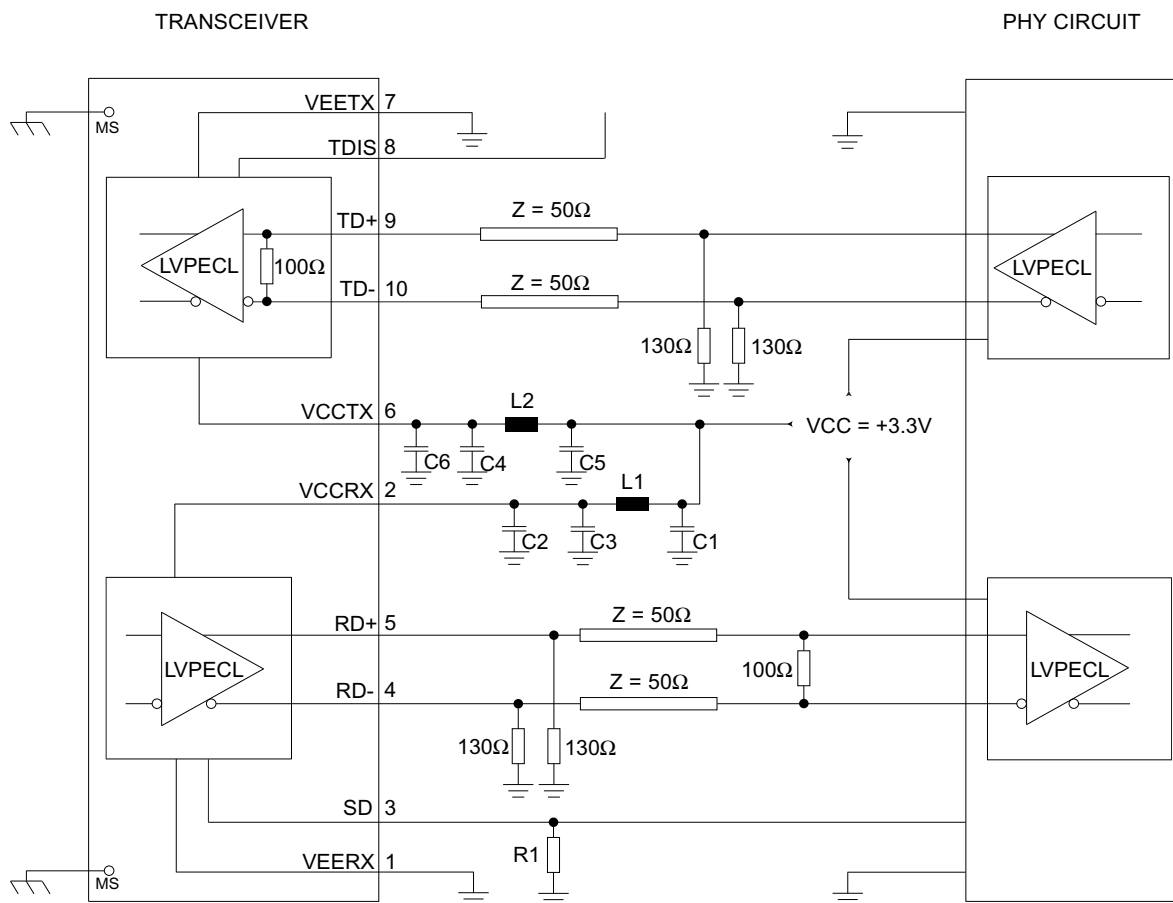
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TRANSCEIVER APPLICATION SCHEMATIC

For Interface To +3.3V LVPECL Circuits



R1 = 150Ω for SF2-LP12x / Remove for SF2-LT12x
 L1, L2 = 1μH to 4.7μH*
 C1, C2, C6 = 10nF
 C3, C4, C5 = 4.7μF to 10μF
 * Or ferrite bead alternative

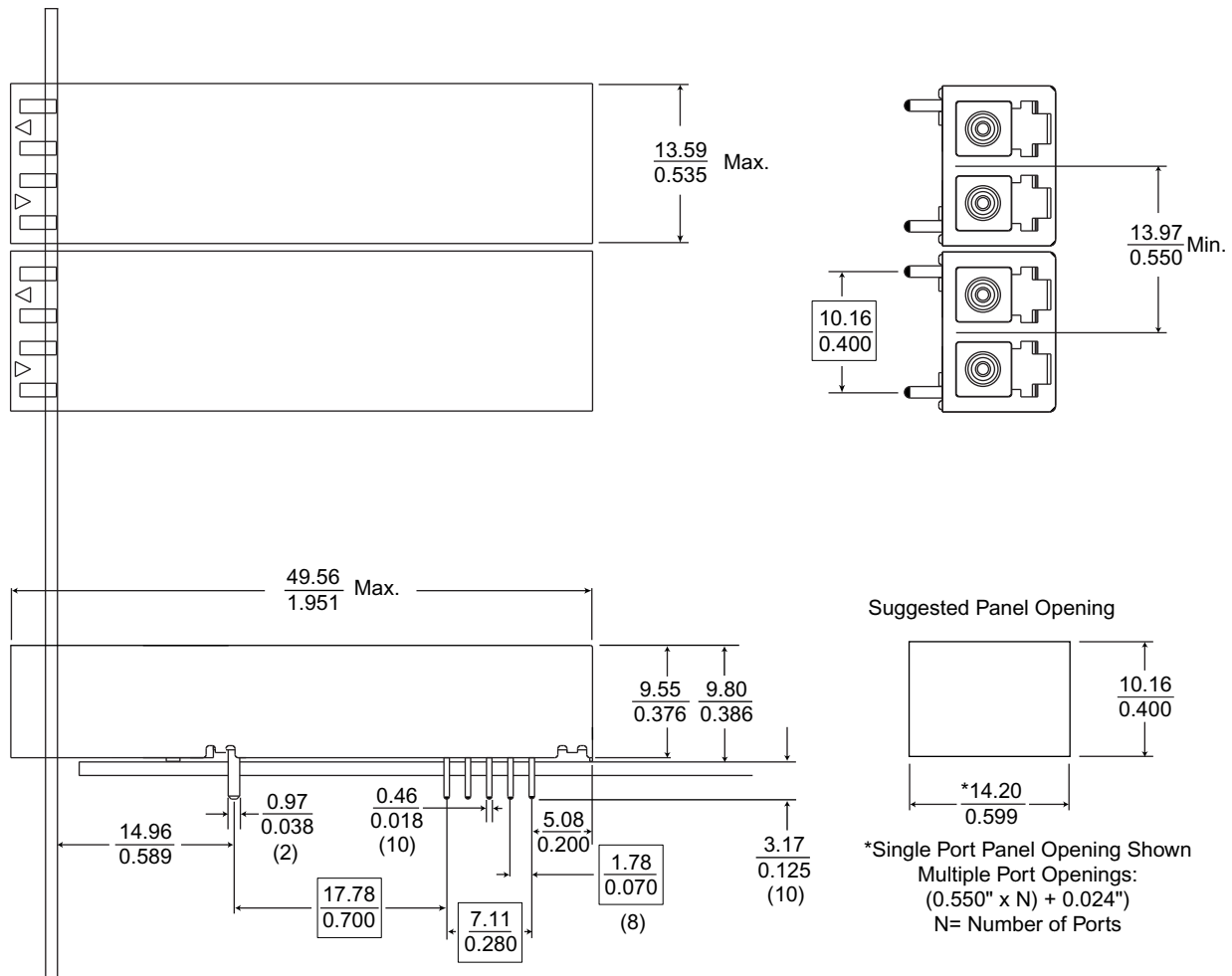
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SMALL FORM FACTOR OUTLINE DIMENSIONS PER 1997 MULTISOURCE AGREEMENT

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



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1450 Treeland Blvd., S.E., Palm Bay, FL 32909-2211 USA

Telephone: 321-308-4100 Fax: 321-308-0434

Web Page: www.stratoslightwave.com