



LxL-LA-R2xx LOW PROFILE DUAL CHANNEL OPTICAL RECEIVER

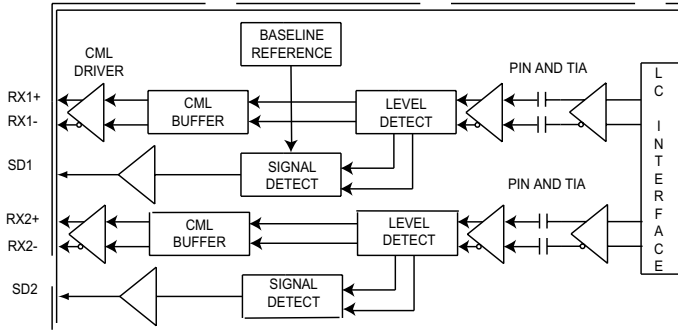
Dual RX Channel,
Multimode 1x/2x Fibre Channel Applications
3.3V, 1310nm mode conditioned FP Laser

PRELIMINARY

FEATURES

- Dual RX receiver, lower cost than 2 independent units
- Low Profile Design - 0.386 inches max. height
- Surface mount I/O pins for high speed signal integrity
- All metal body, solder or screw mount options
- Industrial Temp Range, Vibration tolerant design
- RX data squelch on Signal Detect deassert
- Individual (separate) +3.3 V power supply per port
- Industry standard duplex multimode LC receptacle
- Compliant with ANSI Fiber Channel FC-PI / PH2
- EN-60825 / IEC-825 / CDRH Class 1 Compliant
- Optional Parylene C Conformal Coating

BLOCK DIAGRAM



APPLICATIONS

The LxL-LT12x multimode optical fiber transceivers provide low profile, cost effective solutions for 1x and 2x Fibre Channel multimode optical fiber data links with a duplex LC connector interface.

These transceivers are fully compliant with the 1x and 2x Fibre Channel standards but can be used for any other data communications purpose within their operating parameters.

DESCRIPTION

The LxL-LT12x fiber optic transceivers consist of transmitter and receiver functions combined in an RJ Format module. The optical transmitter is a 1310nm FP 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. A Transmit Disable (TDIS) function is provided to enable control of the optical output.

The optical receivers consist of PIN and Preamplifier assemblies and CMOS limiting post-amplifier integrated circuits. Outputs from the receivers consist of differential CML data signals on the Receive (RX+ and RX-) pins and a single ended LVTTTL signal detect function on the Signal Detect (SD) pin. The RX data is squelched (JAM) upon Signal Detect deassert to prevent garbage data output when no optical signal is present.

ORDERING INFORMATION

L X L - LA - R 2 X X

Product Family	Shell Options	Application	Optical Wavelength, Signal Detect, Fiber	Temperature and Coating	Mounting
L= Low Profile RJ XCVR	N= No GND Tabs (Flat Shell)	L= 1x/2x FC (1.0625 - 2.125Gbps)	LA-R2= Dual RX Channels, 1310 nm Multimode, 3.3VDC Power	H= -40 to 85 C, No Coating	BLANK= Solder Posts (0.125 length)
	T= GND Tabs			M= -40 to 85 C, Conformal Coating	B= Screw Posts (0.050 length)

L L - LA - R 2



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ABSOLUTE MAXIMUM RATINGS

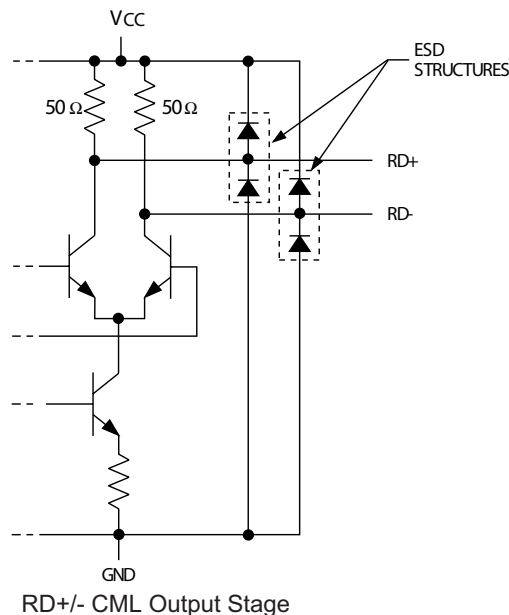
Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values 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	T_A	-40		+85	°C
Supply Voltage	V_{CC}	+3.135		+3.465	V
RX Data Output Load	R_L		50		Ohms

DETAIL OF DATA I/O STAGES



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RECEIVERS

VCCR_X = 3.135V to 3.465V, T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity ¹	P _I	-20		0	dBm
Optical Modulation Amplitude(p-p)	OMA	15			μW
Optical Input Wavelength	λ _{IN}	1270		1355	nm
Optical Return Loss	ORL	12			dB
Supply Current ³	I _{CC}		140	220	mA
Signal Detect Assert Time	t _{SDAS}		<10	100	μS
Signal Detect Deassert Time	t _{SDDA}		<10	350	μS
Signal Detect Deassert Level ²	SD _{OFF}	-29			dBm
Signal Detect Assert Level	SD _{ON}			-23	dBm
Signal Detect Hysteresis	HYS	1.5	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

Notes:

1. BER=10⁻¹² @ 1.25Gbps, PRBS 2⁷-1, NRZ, Compliant with ANSI X3.297 / FC-PH-2
2. RX Data outputs are squelched when Signal Detect is deasserted to prevent garbage data output when no optical signal is present.
3. Supply current is total current for both receivers active. Divide by 2 for only one receiver active.

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CONFORMAL COATING OPTION

Parameter	Value
Specification	MIL-I-46058C, Type XY
Coating:	Parylene type C
Deposition:	Vacuum deposited
Film Thickness:	1 MIL +/- 0.0002

LINK DISTANCES

Fiber Specification	Application	Distance
62.5/125 (200MHz*Km)	2x Fibre Channel - ANSI X3.297 FC-PI	150M
	1x Fibre Channel - ANSI X3.297 FC-PH-2	300M
50/125 (500MHz*Km)	2x Fibre Channel - ANSI X3.297 FC-PI	300M
	1x Fibre Channel - ANSI X3.297 FC-PH-2	500M

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 One File
FDA CDRH 21-CFR 1040	Eye Safety	Class 1	CDRH Accession Number On File

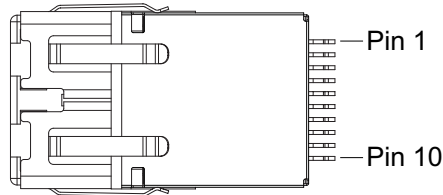
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Low Profile Optical Transceiver
Top View Shown



PIN FUNCTIONS

Pin Number	Symbol	Description	Logic Family
GP	GP	Grounding Posts Connect to chassis ground	N/A
1	RD2+	Channel 2 Receiver DATA Out	CML
2	VEE2	Channel 2 Signal Ground	N/A
3	RD2-	Channel 2 Receiver DATA Out	CML
4	VCC2	Channel 2 Power Supply	N/A
5	SD1	Channel 1 Signal Detect output Satisfactory Optical Input: Logic "1" Output Fault Condition: Logic "0" Output	LVTTTL
6	SD2	Channel 2 Signal Detect output Satisfactory Optical Input: Logic "1" Output Fault Condition: Logic "0" Output	LVTTTL
7	RD1+	Channel 1 Receiver DATA Out	CML
8	VCC1	Channel 1 Power Supply	N/A
9	RD1-	Channel 1 Receiver DATA Out	CML
10	VEE1	Channel 1 Signal Ground	N/A

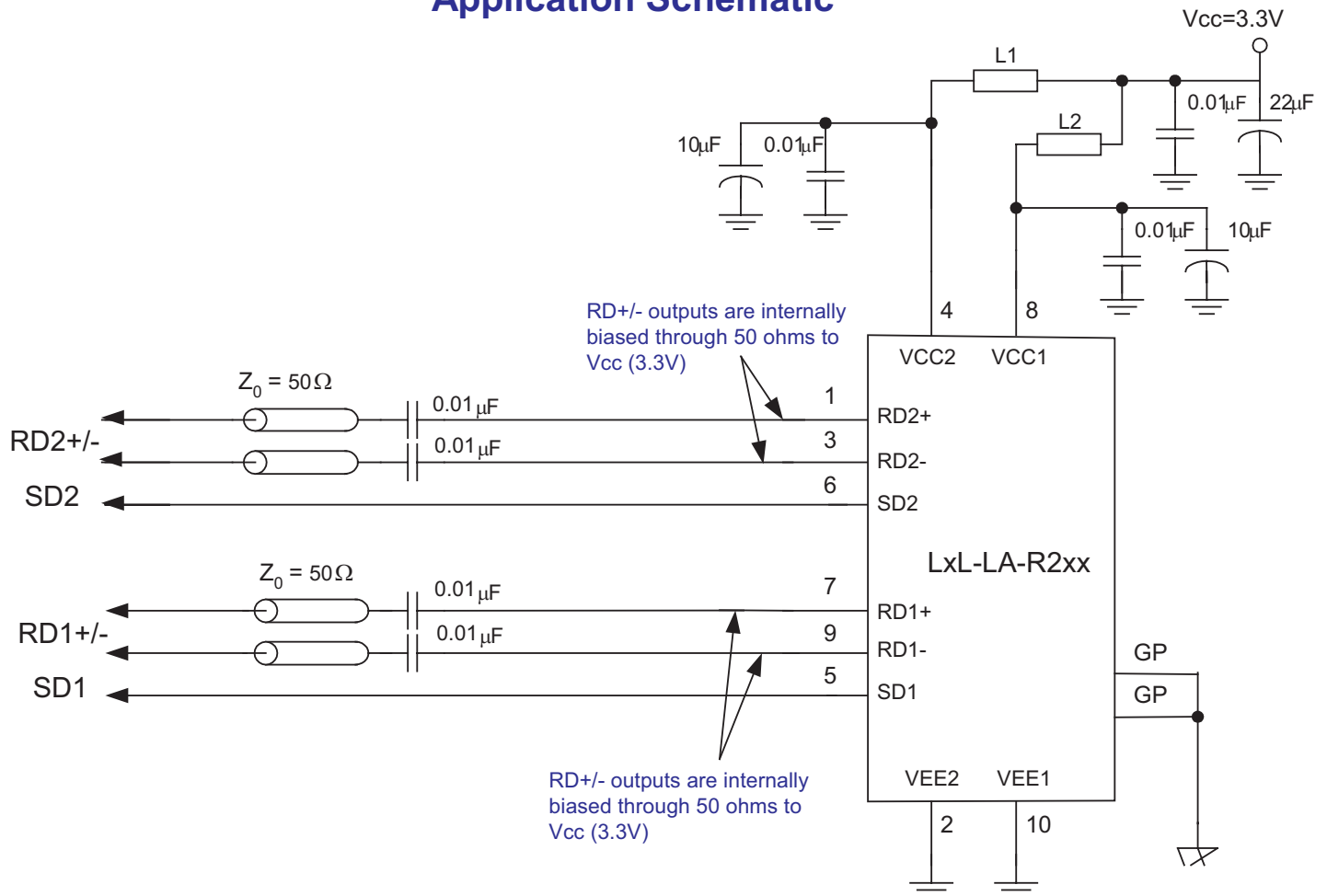
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Application Schematic



Notes:

- 1) L1 and L2 = MuRata BLM21A601S or equivalent (600Ω at 100MHz or better).
- 2) Route the differential pairs (RD1 +/- and RD2 +/-) together using 50 Ω impedance matched traces.
- 3) Use separate power supply filtering for VCC1 and VCC2 as shown.
- 4) Use low ESR capacitors such as NPO or COG for AC Coupling of the RD1+/- and RD2+/- data signals.
- 5) Ground Posts (GP) are isolated from Signal Ground (Vee), and may be connected to Chassis Ground (as shown) or to Signal Ground if a Chassis Ground is not available.

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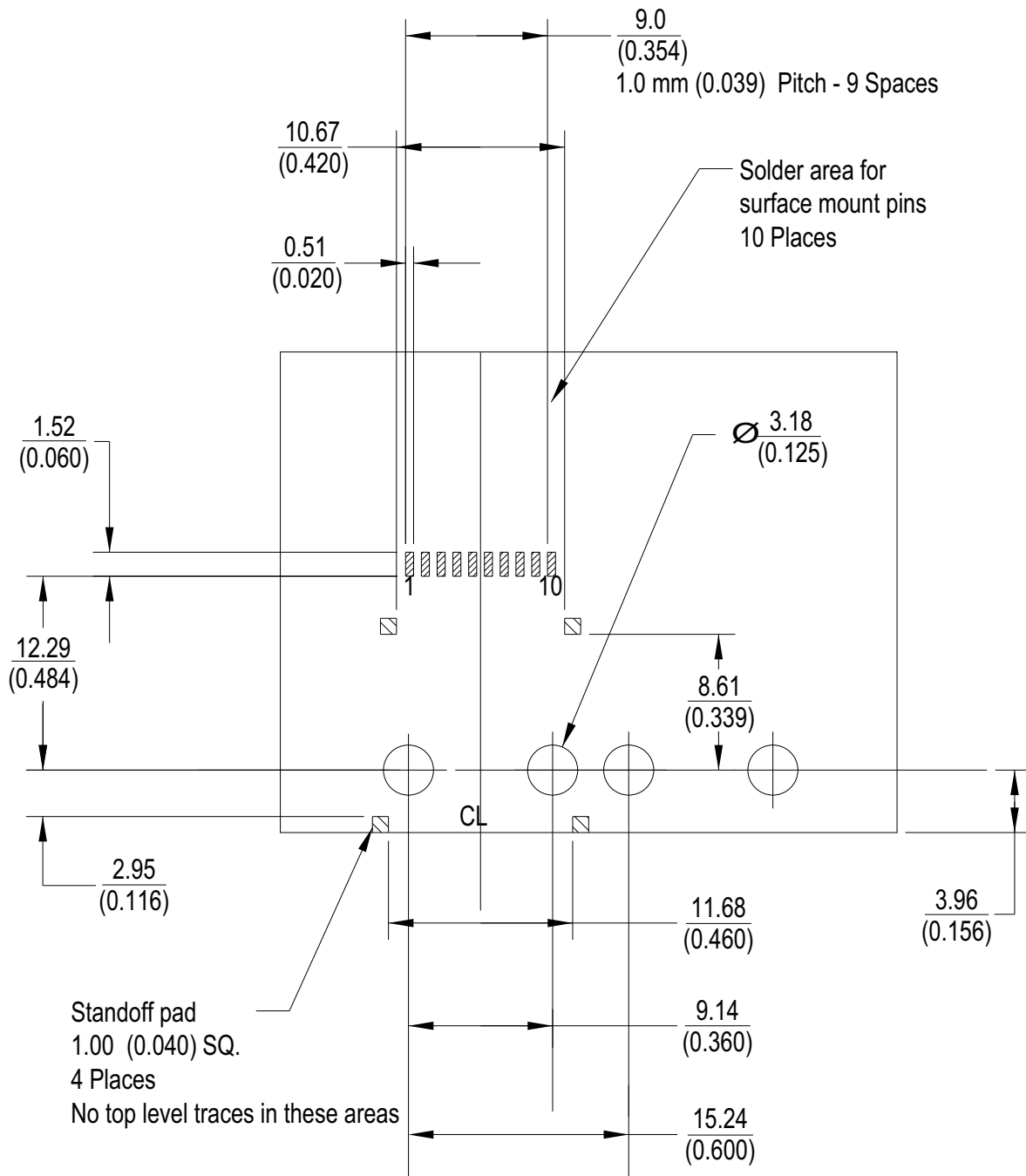
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LOW PROFILE OPTICAL TRANSCEIVER PCB FOOTPRINT

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



Top View Shown

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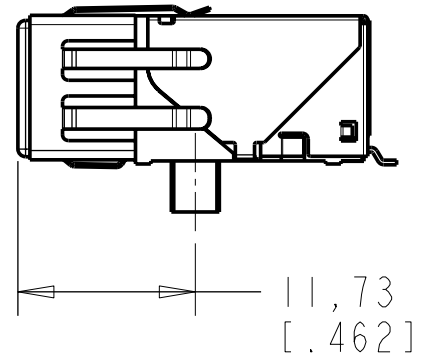
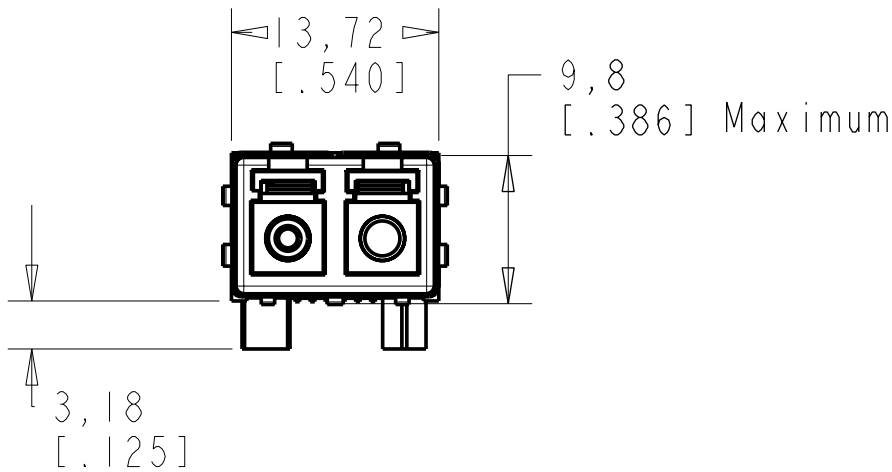
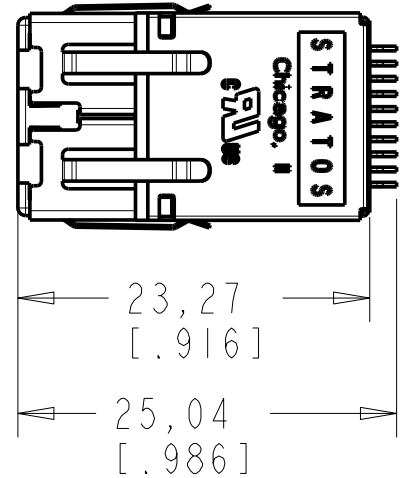
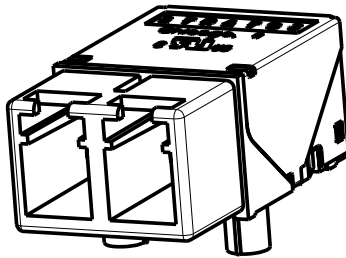
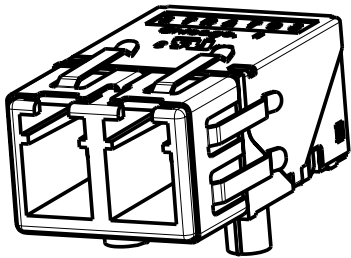
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MECHANICAL DETAIL (SOLDER POST VERSION)

GROUND CLIP SHELL

FLAT SHELL



RECOMMENDED PANEL CUT-OUT
for PROPER GROUND CLIP CONTACT
is 0.400 X 0.560 INCHES.

STRATOS

7444 West Wilson Avenue, Chicago, IL 60706 USA
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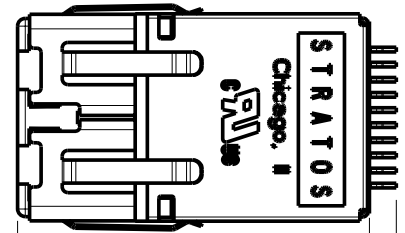
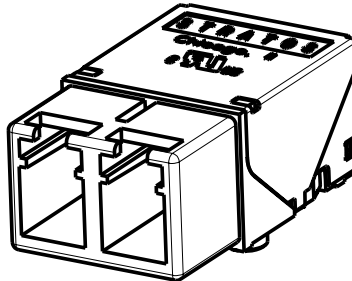
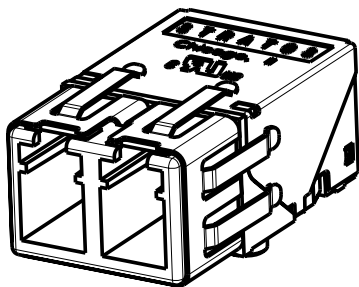
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MECHANICAL DETAIL (SCREW POST VERSION)

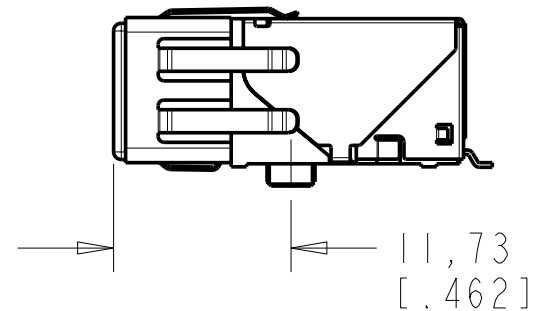
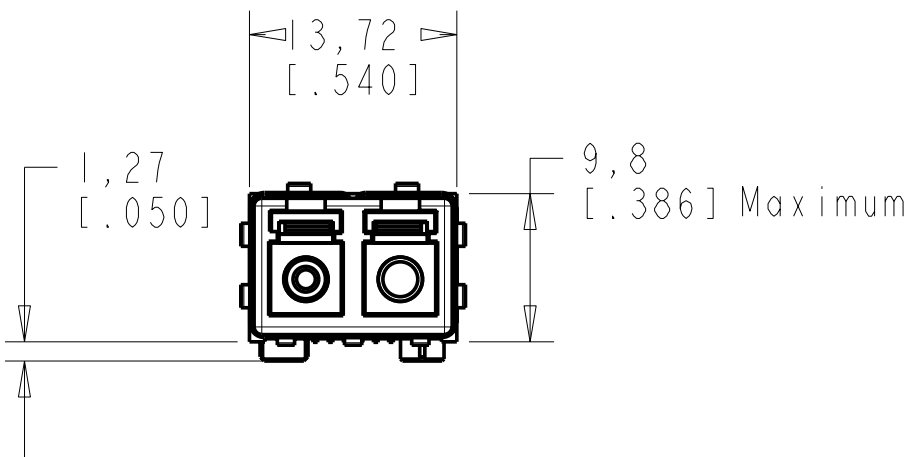
GROUND CLIP SHELL

FLAT SHELL



23,27
[.916]

25,04
[.986]



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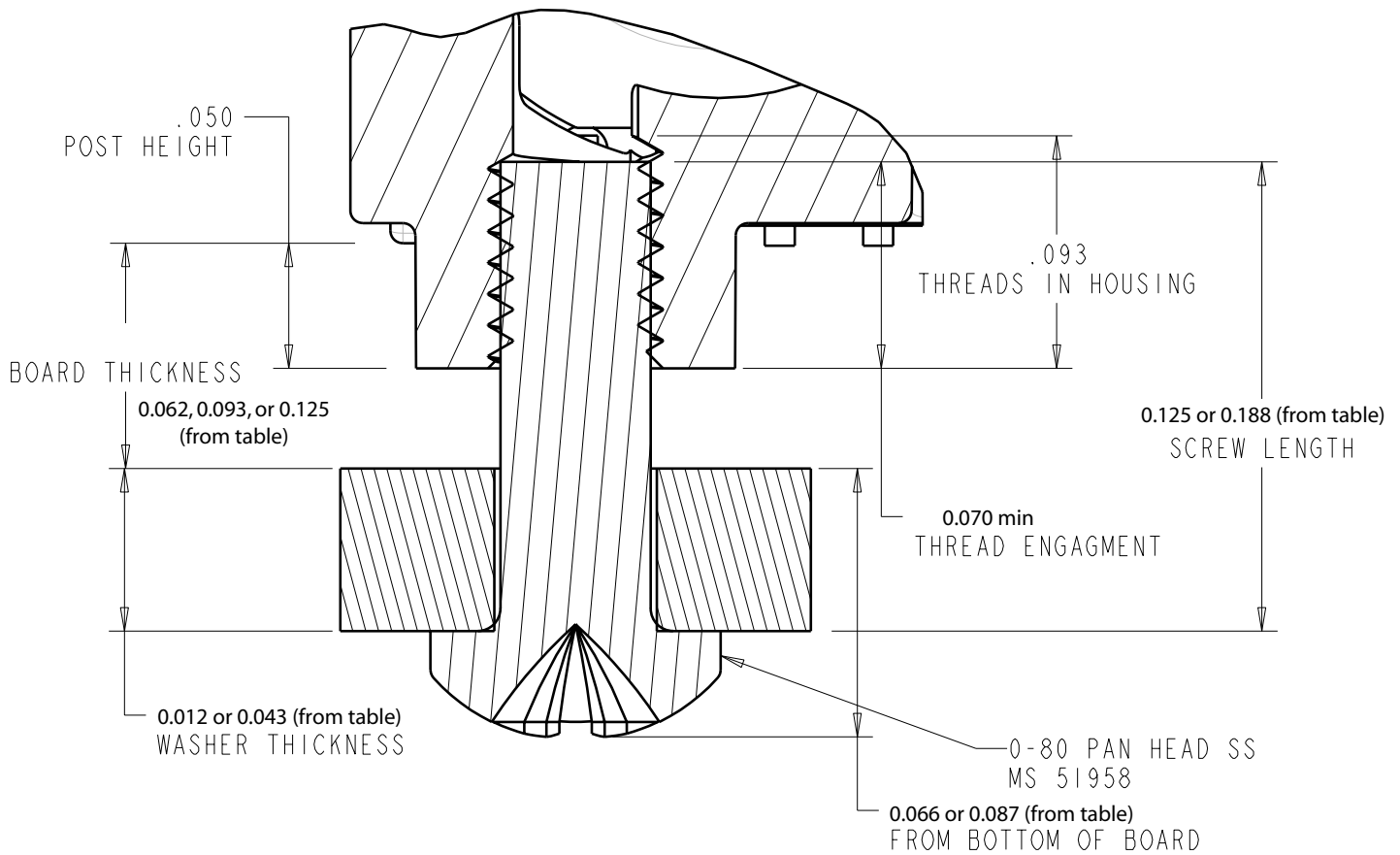
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PCB Nominal Thickness	Screw Length	Washer Thickness	Screw/Washer Height	Order Stratos Washer	Order Stratos Screw
0.062 in +/- 0.005	0.125 in	0.043 in	0.087 in	751-00002	618-00001
0.093 in +/- 0.005	0.125 in	0.012 in	0.066 in	751-00001	618-00001
0.125 in +/- 0.005	0.188 in	0.043 in	0.087 in	751-00002	618-00002

Notes:

1) Customer may choose to any type 0-80 Stainless Steel (SS) screw configuration (pan head, flat head, hex head, etc) as long as the thread engagement is less than 0.93 inches max into the Low Rider housing.

2) Customer can order 0-80 SS pan head screws and washers from Stratos for standard sized PCB thicknesses as identified in the table. The Stratos part number is identified for the screw/washer combination for each of three standard sized PCB thicknesses. Be sure to order 2 washers and 2 screws per Low Rider device.

3) Torque screws to 7 to 9 in-oz for a clamping force of 36 to 47 lbs per screw. Do not exceed 16 in-oz torque per screw.



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PART NUMBER SUMMARY AND OPTIONS

Part Number	Flat Shell	Clip Shell	Conf Coat	Solder Posts	Screw Posts
LNL-LA-R2H	X			X	
LNL-LA-R2M	X		X	X	
LNL-LA-R2HB	X				X
LNL-LA-R12MB	X		X		X
LTL-LA-R2H		X		X	
LTL-LA-R2M		X	X	X	
LTL-LA-R2HB		X			X
LTL-LA-R2MB		X	X		X

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