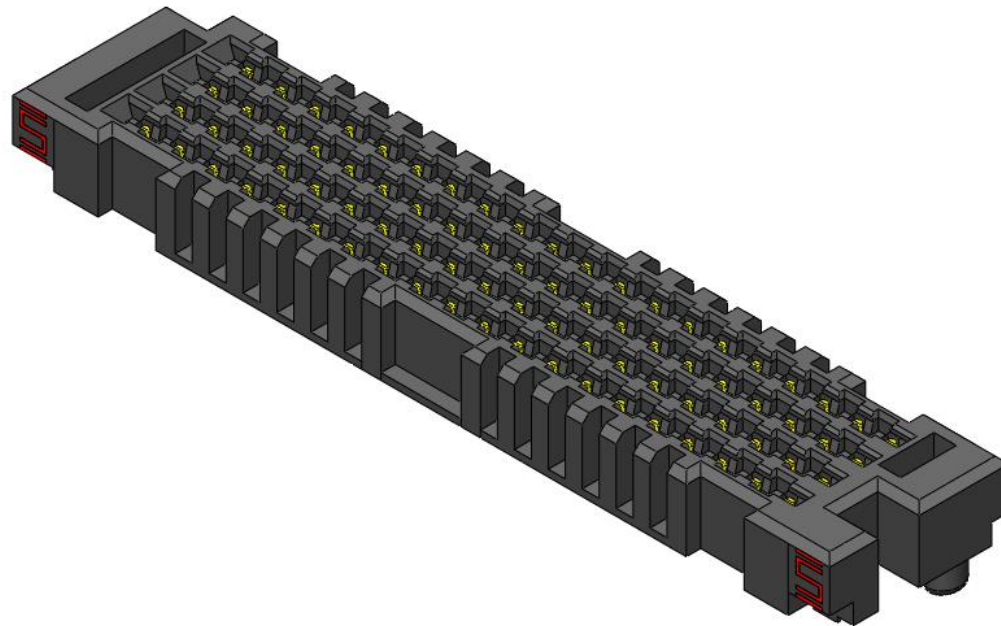
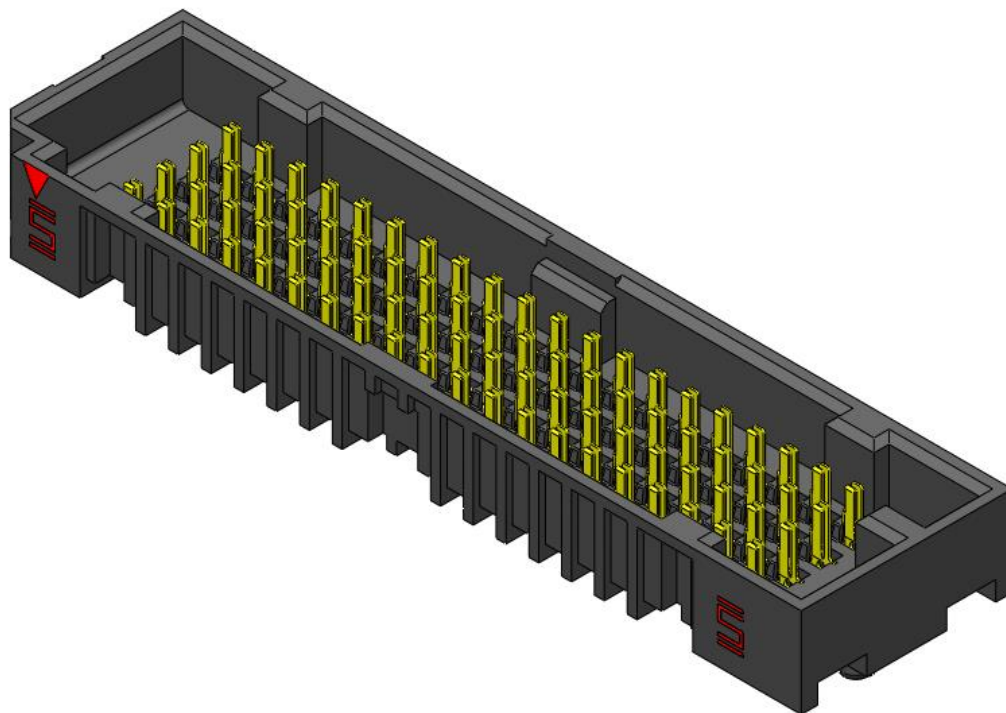


Series: LPAF / LPAM .050" (1,27 mm) SEARAY™ LP Low Profile High Speed Open Pin Field Array

LPAF Series – Socket, Vertical Orientation



LPAM Series – Terminal, Vertical Orientation



Series: **LPAF / LPAM** .050" (1,27 mm) SEARAY™ LP Low Profile High Speed Open Pin Field Array

1.0 SCOPE

1.1 This specification covers performance, testing and quality requirements for Samtec LPAF/LPAM Series .050" (1,27 mm) SEARAY™ LP Low Profile High Speed Open Pin Field Array connectors. All information contained in this specification is for a 4,00 mm mated height vertical configuration unless otherwise noted.

2.0 DETAILED INFORMATION

2.1 Product prints, footprints, catalog pages, test reports and other specific, detailed information can be found at www.samtec.com?LPAF and www.samtec.com?LPAM.

3.0 TESTING

3.1 **Current Rating:** 1.5A

3.2 **Voltage Rating:** 250 VAC

3.3 **Operating Temperature Range:** -55°C to +125°C

3.4 **Electrical:**

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Withstanding Voltage	EIA-364-20 (No Flashover, Sparkover, or Breakdown)	750 VAC	Pass
Insulation Resistance	EIA-364-21 (5000 MΩ minimum)	5,000 MΩ	Pass
Contact Resistance (LLCR)	EIA-364-23	Δ 15 mΩ maximum (Samtec defined)/ No damage	Pass

3.5 **Mechanical:**

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Durability	EIA-364-09C	100 cycles	Pass
Random Vibration	EIA-364-28 Condition V, Letter B 7.56 G 'RMS', 50 to 2000 Hz, 2 hours per axis, 3 axis total, PSD 0.04	Visual Inspection: No Damage LLCR: Δ 15 mΩ maximum Event Detection: No interruption > 1.0 microsecond	Pass
Mechanical Shock	EIA-364-27 100 G, 6 milliseconds, sawtooth wave, 11.3 fps, 3 shocks/direction, 3 axis (18 total shocks)	Visual Inspection: No Damage LLCR: Δ 15 mΩ maximum Event Detection: No interruption > 1.0 microsecond	Pass
Normal Force	EIA-364-04	30 grams minimum for gold interface	Pass

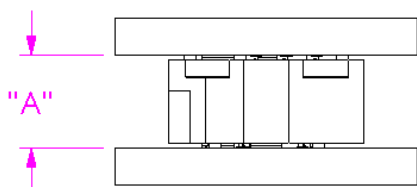
Series: **LPAF / LPAM** .050" (1,27 mm) SEARAY™ LP Low Profile High Speed Open Pin Field Array

3.6 Environmental:

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Thermal Shock	EIA-364-32 Thermal Cycles: 100 (30 minute dwell) Hot Temp: +85°C Cold Temp: -55°C Hot/Cold Transition: Immediate	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 750 VAC IR: >5,000 M Ω	Pass
Thermal Aging (Temp Life)	EIA-364-17 Test Condition 4 @ 105°C Condition B for 250 hours	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 750 VAC IR: >5,000 M Ω	Pass
Cyclic Humidity	EIA-364-31 Test Temp: +25°C to +65°C Relative Humidity: 90 to 95% Test Duration: 240 hours	Visual Inspection: No Damage LLCR: Δ 15 m Ω DWV: 750 VAC IR: >5,000 M Ω	Pass
Gas Tight	EIA-364-36 Gas Exposure: Nitric Acid Vapor Duration: 60 min. Drying Temp.: 50°C +/- 3°C Measurements: Within 1 hour of Exposure	LLCR: Δ 15 m Ω	Pass

4.0 MATED SYSTEM

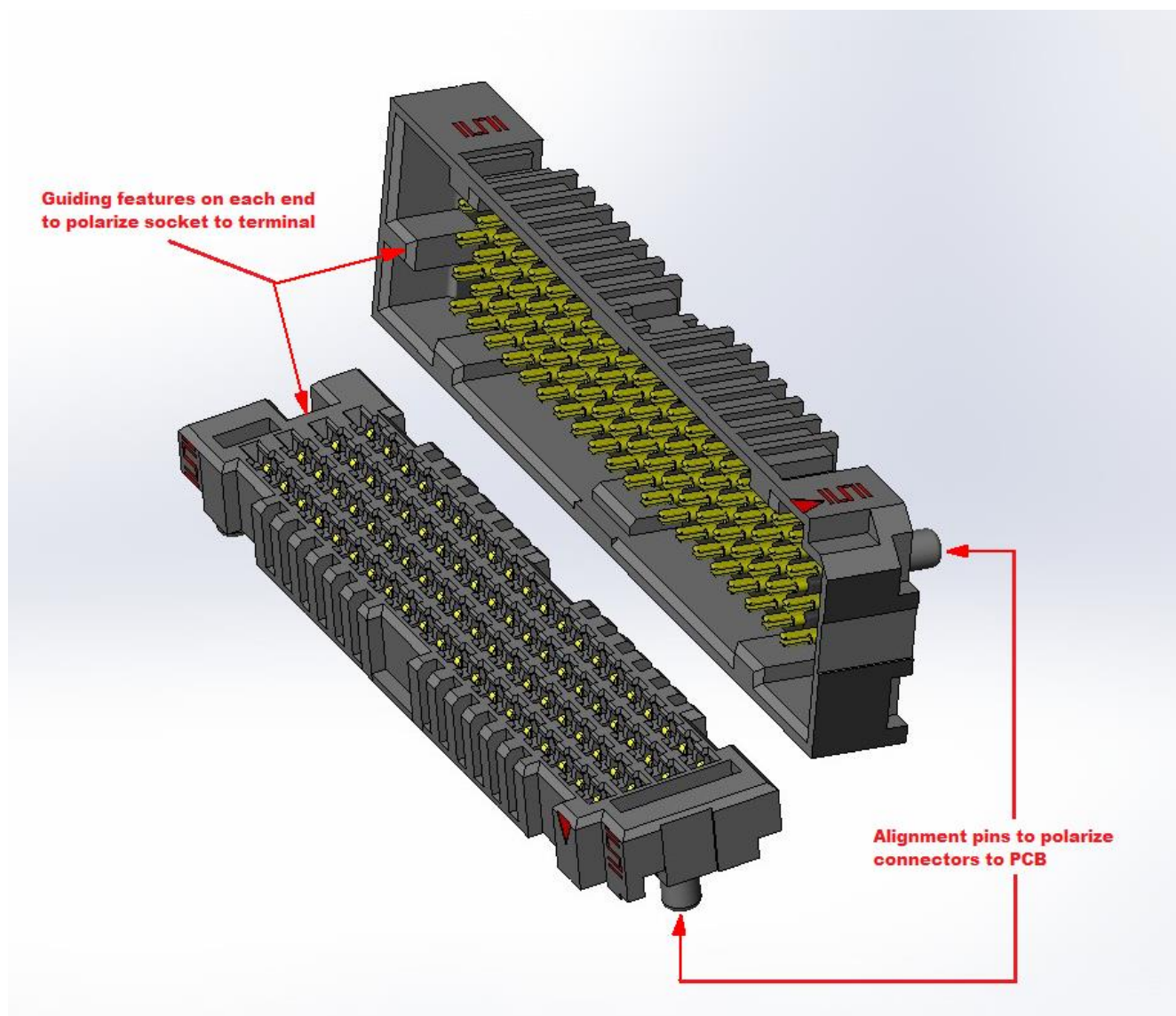
4.1 Stack Heights



LPAF	LPAM	
	"A"	
	-01.0	-01.5
-03.0	4.00[.158]	4.50[.177]
-03.5	4.50[.177]	5.00[.197]

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5.0 POLARIZING FEATURES



6.0 HIGH SPEED PERFORMANCE

6.1 Based on a 3 dB insertion loss

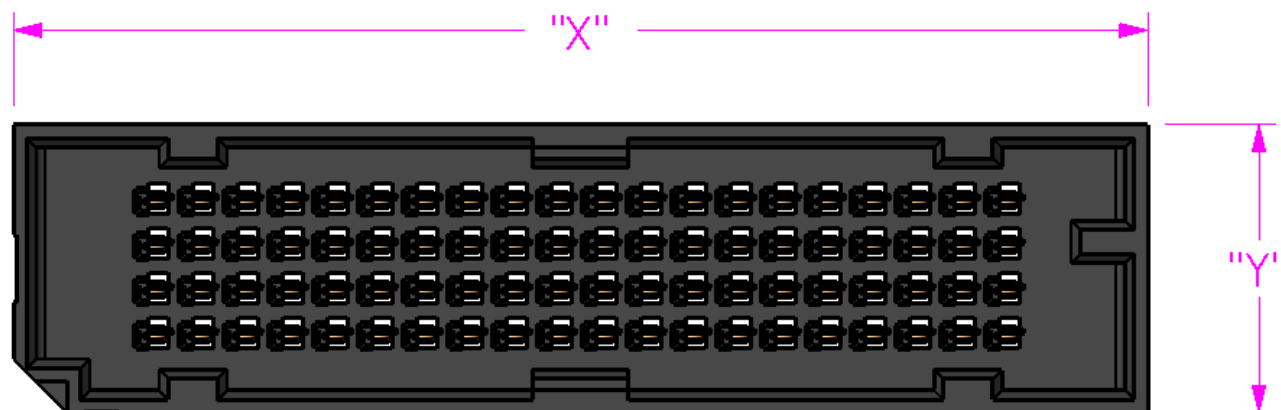
6.2 System Impedance: 50 ohm for single-ended and 100 ohm for differential pair

Stack Height	Single-Ended Signaling	Differential Pair Signaling
4 mm	17.00 GHz	18.50 GHz

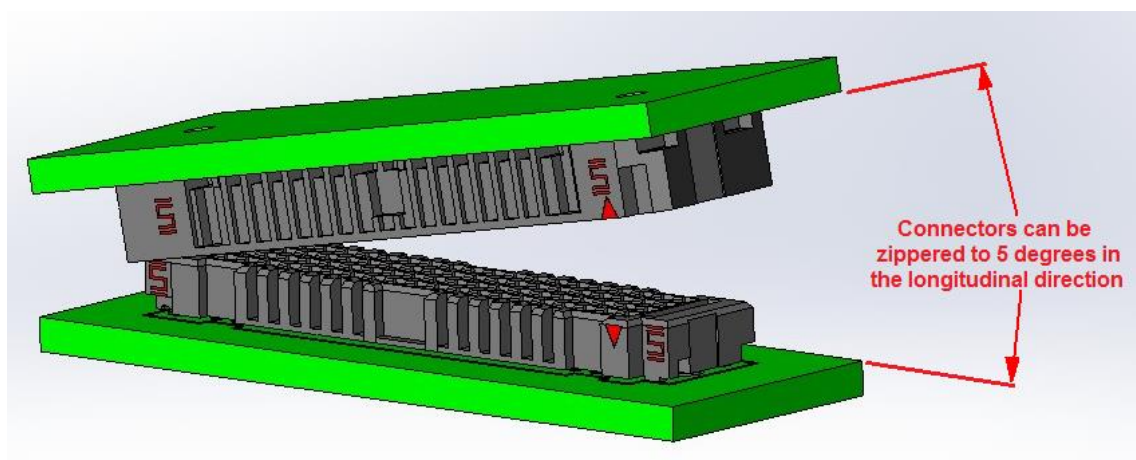
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7.0 PROCESSING RECOMMENDATIONS

7.1 Mating Alignment Requirements: The parts can be rigidly misaligned by no more than .004" (0,10mm) in the X- and .004" (0,10mm) in the Y-direction to ensure a good mate.

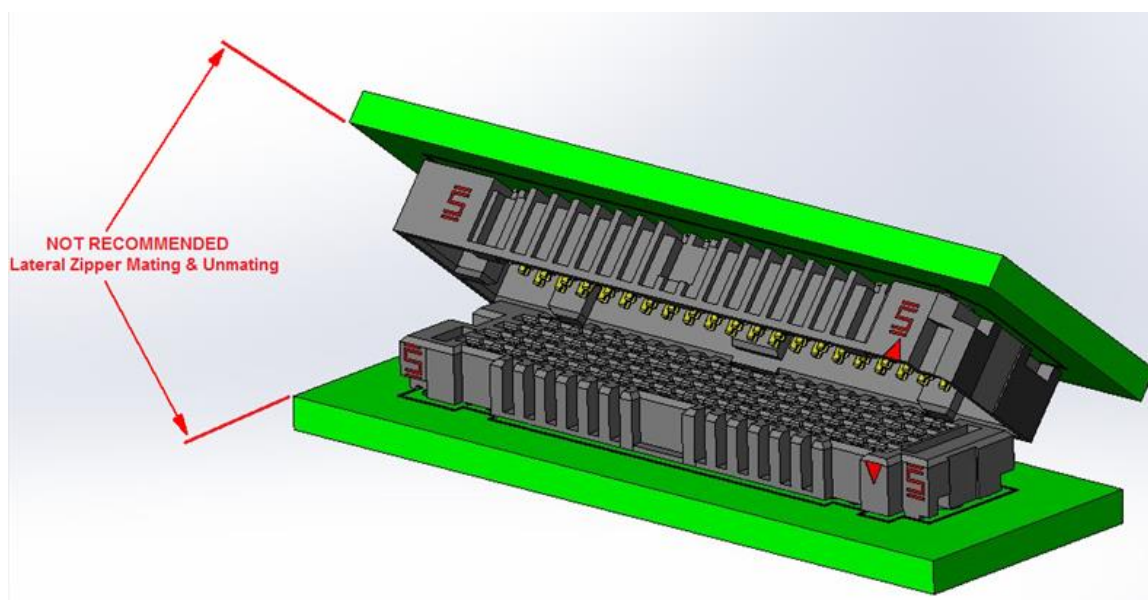


7.2 Mating Angle Requirements: The connector can be zippered in the longitudinal direction only.



7.2.1

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7.2.2

7.3 Maximum Reflow Passes: The parts can withstand three reflow passes at a maximum oven temperature of 260°C.

7.4 Stencil Thickness: The stencil thickness is .006" (0,15 mm).

7.5 Placement: Machine placement of the parts is recommended.

7.6 Thermal Profile: The importance of properly profiling the fully populated printed circuit assembly cannot be overstated. The reflow process that forms the solder joint is sometimes overshadowed by other processes, but is critical to ensuring the solder crimp reaches proper reflow conditions. Certain components can be sensitive to time and temperature, so both variables must be controlled and a thermal profile must be performed prior to processing or production. Thermocouples should be placed as close to the solder crimp as possible (underneath the part) in the center and on the outside edge of the connector. Due to the large number of processing variables (printed wiring board design, reflow oven type, component quantity, solder paste type, etc.), Samtec does not provide specific reflow profiles for any connector. We recommend that the solder paste manufacturer's guidelines be followed for optimum soldering results.

7.7 Reflow Environment: Samtec recommends the use of a low level oxygen environment (typically achieved through Nitrogen gas infusion) in the reflow process to improve solderability.

7.8 Rework Guidelines: Samtec recommends following these rework guidelines as needed: [Reworking Grid Array Connectors](#)

7.8.1 Samtec recommends a minimum spacing of .125" (3,18mm) between adjacent connectors to allow adequate room for hot-air rework equipment.

7.9 Solder Screen Printing Process:

7.9.1 Complete solder pad coverage is critical to ensure successful results. Automated inspection of each print is recommended. If solder paste does not completely cover the solder pad, the assembly should be rejected, cleaned and re-printed.

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- 7.9.2** Stencil cleaning may need to be monitored more frequently to ensure complete solder pad coverage is maintained.



- 7.9.3**

Solder crimp location relative to solder print. Notice good contact between solder crimp and solder paste.

7.10 Handling:

- 7.10.1** These connectors are typically packaged in trays or tape-and-reel which protect the solder crimps from damage. They should be handled like any other BGA or IC device.
- 7.10.2** Avoid resting the connector on the solder crimps except during final placement onto the board.
- 7.10.3** When using tape-and-reel packaging, ensure the bottom of the pocket is protected as it travels through the feeder.
- 7.10.4** Avoid touching the solder crimps.
- 7.10.5** When a partially used tray needs to be stored, use the flat cover from the original shipment or an empty tray to cover connectors. Band trays using flex wrap or rubber bands.

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8.0 ADDITIONAL RESOURCES

- 8.1 For additional mechanical testing or product information, contact our Customer Engineering Support Group at CES@samtec.com
- 8.2 For additional information on high speed performance testing, contact our Signal Integrity Group at SIG@samtec.com
- 8.3 For additional processing information, contact our Interconnect Processing Group at IPG@samtec.com.
- 8.4 For RoHS, REACH or other environmental compliance information, contact our Product Environmental Compliance Group at PEC@samtec.com