AKOUSTIS SOLDER APPLICATION NOTES

1) Recommended Hand Soldering Procedures

Hand soldering LGA components with lead-free solder joints can be challenging and requires the optimization of reflow processes. Results will vary depending on the equipment, materials and procedures used. Hand soldering should be performed with a hot air nozzle solder tool using basic reflow process steps:

- Clean and prepare PCB
- Apply solder paste
- Place component
- Reflow and inspect

Clean and prepare PCB

Baking of PCBs for moisture removal is recommended. Follow the time and temperatures recommend by the PCB manufacture.

Apply solder paste

Apply solder paste carefully on each pad using a dispensing system. The volume of solder paste must be controlled to prevent shorting between pads and neighboring components. Screen printing with a stencil is also an effective method to control dispense volume if spacing allows. It is recommended to use a no-clean solder paste.

Place component

Follow the Moisture Sensitivity Level (MSL) guidelines before placing component. Placement of component should be within 50% of minimum pad size. For example, if smallest pad on the component is 300um, placement accuracy should be within 150um. The component exhibits self-alignment and will properly center during reflow.

Reflow and Inspect

During hand soldering, the package peak temperature and temperature ramps should not exceed those of the standard assembly reflow process. Hot air solder settings can be slightly higher than peak reflow temp, but cannot exceed 300-degree C. The hot air solder tool should be held at a 45-degree angle aimed at the bottom of the component. While heating, the solder tool should be moved around the bottom perimeter of the component until the reflow temp is reached. Once cool down is complete, the solder joint should be inspected.

2) Air Cavity LCP Package Rework

Akoustis

- A10252
- A10154
- A10158
- A10160
- A10166

product uses an organic laminate package base structure capped with a Liquid Crystal Polymer (LCP) air cavity lid. This package style is a high volume approach used for commercial MEMS based product, including acoustic microphones and BAW filters.

The LCP material can withstand a continuous heat of 280°C (536°F) with a melt point of 335°C (635°F). LCP is inherently flame retardant and meets the flammability requirements of UL 94V-O.

When rework is required to remove a packaged part from a second level board assembly, care must be taken to avoid subjecting parts to temperatures that meet or exceed the melting point of the LCP.

Akoustis recommended rework method is to apply a backside heat to the second level board assembly with any additional topside heat applied no greater than 300°C. If limitations exist that prevent the application of backside heat, custom rework tooling should be used that focusses heat around the perimeter of the package directly onto the package I/O and second level I/O pads.

Lid deformation or lid melting will occur if parts reach excess heat of greater than 300°C.