µModule LGA and BGA Packaging Care and Assembly Instructions

MSL Compliance

- Moisture classification is Level 3 or Level 4 (J-STD-020D.1)
- Labels outside and inside shipping box indicate MSL.
- All µModule® devices are shipped dry packed and vacuum sealed in trays or tubes (only small quantity samples are shipped in tubes) with a desiccant and a moisture level indicator.
- Purchase µModule products from Linear Technology or a Linear Technology authorized distributor.
- Always check the integrity of the seal, presence of the desiccant and color of the moisture indicator. If the vacuum seal is punctured, the desiccant is missing, or the indicator has turned pink, then the units must be baked for 48 hours at 125°C prior to board mount. MSL3 packages must be mounted within 168 hours and MSL4 packages must be mounted within 72 hours after removing from a properly sealed moisture barrier bag or after bake.

Download Application Note and details at:

http://www.linear.com/micromodule

Stencil Design

- 5mil (0.125mm) stencil thickness is recommended (6mil acceptable). Adjust for solder volume accordingly.
- Solder volume ~0.05mm^3
- For 0.635mm pad, stencil opening 0.620mm (slightly smaller than the pad) is recommended so that paste is not in the solder mask area.

Solder Paste

- Use a Type III or IV paste.
- Use of Sn/Pb (leaded) or SAC (lead free) paste is acceptable.
- Follow recommendations from paste vendor.

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Placement (LGA Package)

- The LGA part needs to be pushed into the solder paste (if using a 5mil stencil, we recommend placing the component into the paste 2mils). If your machine uses force for the setting, adjust the force in such a way that there is good contact of solder paste on LGA, but do not press the part to the PCB; doing so will squeeze the solder onto the solder mask. Good contact of the solder paste minimizes voiding; allow voids up to 30%.
- Component pad area should be parallel to the PCB to ensure planarity of component before reflow. Heavy internal components inside µModule devices tend to tilt the package after reflow, so some tilt (2mils maximum) can be expected.

Reflow Profile (Thermocouple Attached on PCB under µModule Device)

- Sn/Pb; Pb-free SAC305
- Ramp up slope <3°C/s
- See Figure 1 for recommended reflow profile
- Soak temperature: Sn/Pb: 150°C; Pb-free SAC305: 180°C to 200°C
- Soak time: 90s to 110s
- Peak reflow temperature <245°C
- Time above liquidus 30s to 60s
- Ramp down slope <5°C/s
- Use of profiling equipment and a 9+ zone oven are recommended.
- If your optimized profile is quite different from the above, follow the recommended vendor profile to see if it works (all parameters except reflow peak temperature need to be <245°C). *If a µModule package is next to a larger device and the temperature of the µModule package is higher than the recommended peak temperature, thermal shielding techniques need to be utilized to keep the µModule package below 245°C.*

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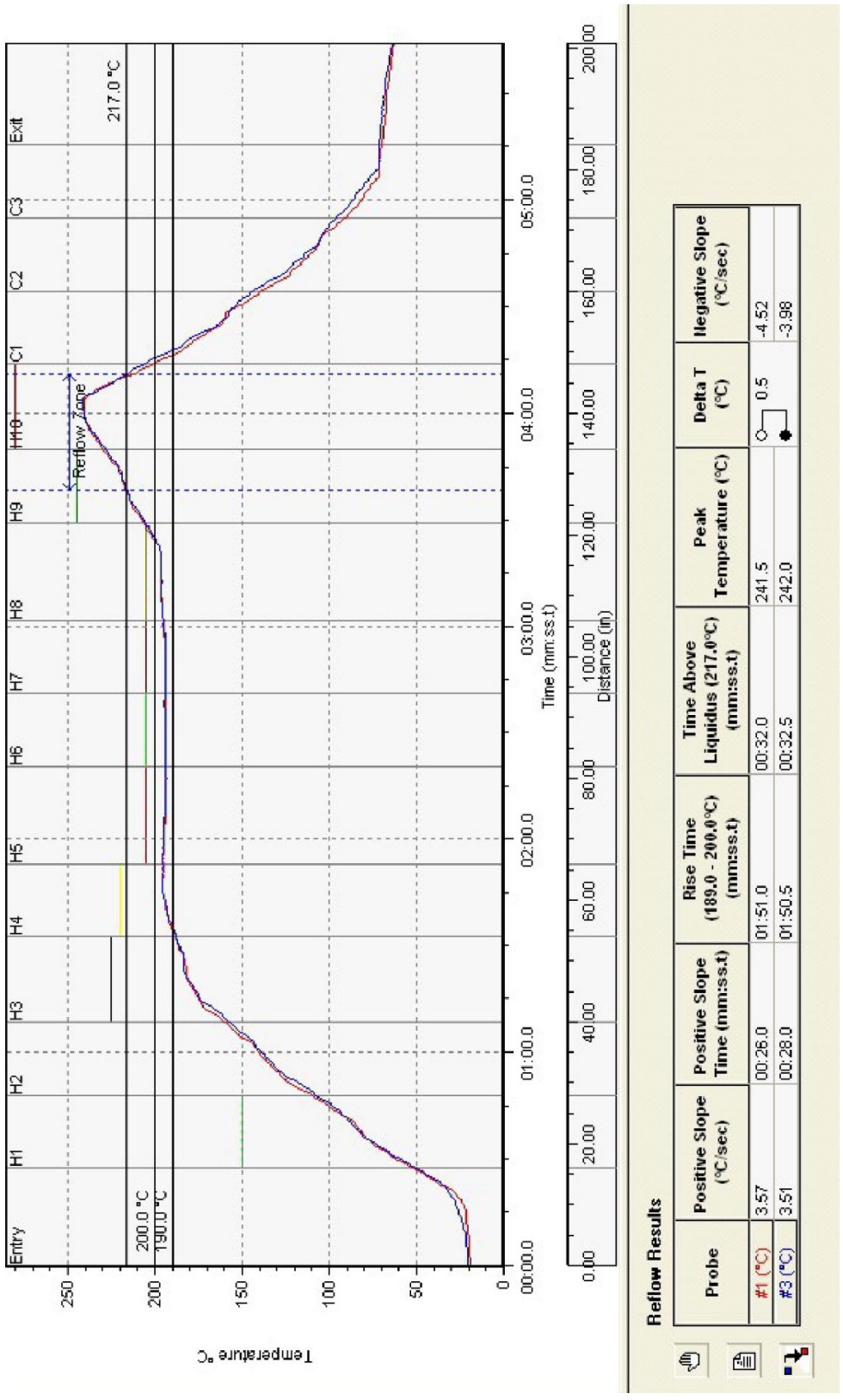

Figure 1. Lead Free (Pb-Free) Reflow Profile Example

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