

**Table 2**
**Reflow Profiles (per Jedec J-STD-020D.1)**

| Profile Feature   | Sn-Pb Eutectic Assembly   | Pb-Free Assembly  |
|---|---|---|
| <b>Preheat/Soak</b>   |   |   |
| Temperature Min (T <sub>smin</sub> )  | 100 °C  | 150 °C  |
| Temperature Max (T <sub>smax</sub> )  | 150 °C  | 200 °C  |
| Time (ts) from (T <sub>smin</sub> to T <sub>smax</sub> )  | 60-120 seconds  | 60-120 seconds  |
| Ramp-up rate (TL to T <sub>p</sub> )  | 3 °C/second max.  | 3 °C/second max.  |
| Liquidous temperature (TL)  | 183 °C  | 217 °C  |
| Time (tL) maintained above TL   | 60-150 seconds  | 60-150 seconds  |
| Peak package body temperature (T <sub>p</sub> )   | For users T <sub>p</sub> must not exceed the Classification temp in Table 2A. For suppliers T <sub>p</sub> must equal or exceed the Classification temp in Table 2A | For users T <sub>p</sub> must not exceed the Classification temp in Table 2B. For suppliers T <sub>p</sub> must equal or exceed the Classification temp in Table 2B |
| Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>c</sub> ), see Table 2a & 2B Figure 5-1. J-STD-020D.1 | 20* seconds   | 30* seconds   |
| Ramp-down rate (T <sub>p</sub> to TL)   | 6 °C/second max.  | 6 °C/second max.  |
| Time 25 °C to peak temperature  | 6 minutes max.  | 8 minutes max.  |
| * Tolerance for peak profile temperature (T <sub>p</sub> ) is defined as a supplier minimum and a user maximum                                |   |   |

**Table 2A**
**SnPb Eutectic Process - Classification Temperatures (T<sub>c</sub>)**

| Package Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>≥350 |
|-------------------|--------------------------------|--------------------------------|
| <2.5 mm           | 235 °C                         | 220 °C                         |
| ≥2.5 mm           | 220 °C                         | 220 °C                         |

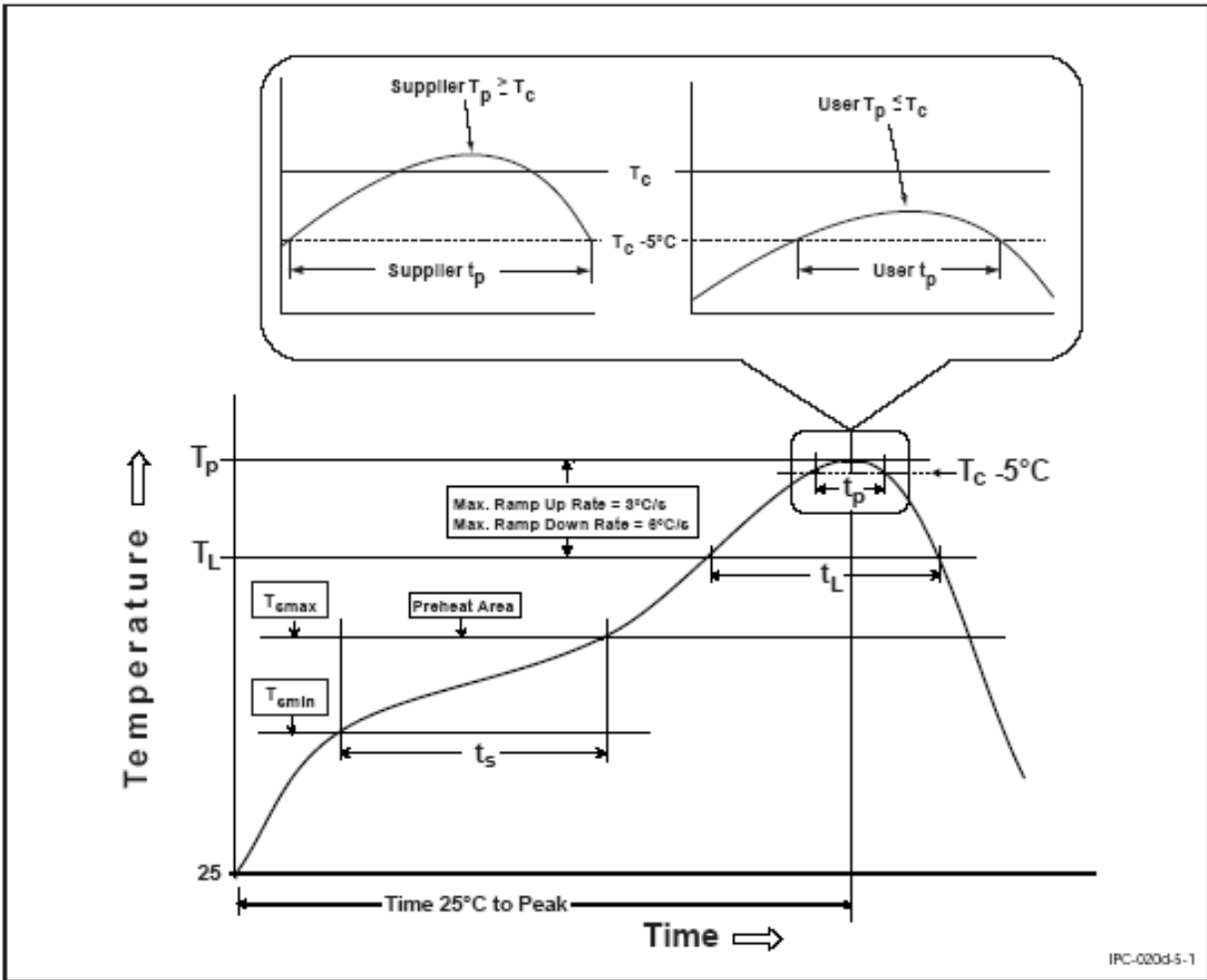
**Table 2B**
**Pb-Free Process - Classification Temperatures (T<sub>c</sub>)**

| Package Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>350 - 2000 | Volume mm <sup>3</sup><br>>2000 |
|-------------------|--------------------------------|--------------------------------------|---------------------------------|
| <1.6 mm           | 260 °C                         | 260 °C                               | 260 °C                          |
| 1.6 mm - 2.5 mm   | 260 °C                         | 250 °C                               | 245 °C                          |
| >2.5 mm           | 260 °C                         | 245 °C                               | 245 °C                          |

**Note:**

1. The use of a higher T<sub>p</sub> does not change the classification temperature (T<sub>c</sub>).
2. All temperatures refer to topside of the package, measured on the package body surface.
3. Package volume excludes external terminals (e.g., balls, bumps, lands, leads) and/or nonintegral heat sinks.
4. Moisture sensitivity levels of components intended for use in a Pb-free assembly process shall be evaluated using the Pb-free classification temperatures and profiles defined in Tables 2 and 2B, whether or not Pb-free.

## Appendix A Solder Reflow Temperature Profile



Classification Profile (Not to scale)