



Table 2

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

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak		
Temperature Min (T _{smin})	100 °C	150 °C
Temperature Max (T _{smax})	150 °C	200 °C
Time (ts) from (T _{smin} to T _{smax})	60-120 seconds	60-120 seconds
Ramp-up rate (TL to T _p)	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 _p)	For users T _p must not exceed the Classification temp in Table 2A. For suppliers T _p must equal or exceed the Classification temp in Table 2A	For users T _p must not exceed the Classification temp in Table 2B. For suppliers T _p must equal or exceed the Classification temp in Table 2B
Time (t _p)* within 5 °C of the specified classification temperature (T _c), see Table 2a & 2B Figure 5-1. J-STD-020D.1	20* seconds	30* seconds
Ramp-down rate (T _p 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 _p) is defined as a supplier minimum and a user maximum		

Table 2A

SnPb Eutectic Process - Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2B

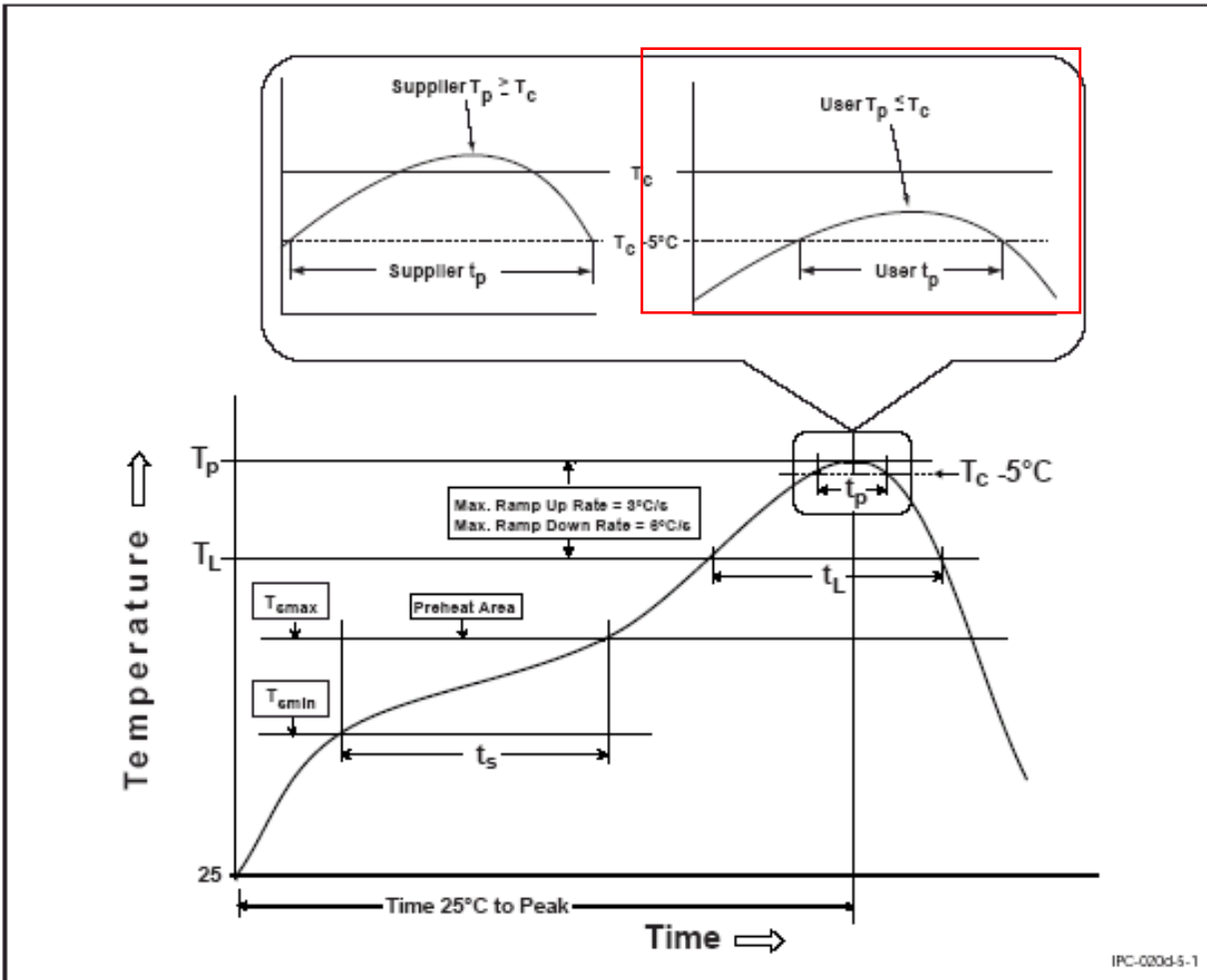
Pb-Free Process - Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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_p does not change the classification temperature (T_c).
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)