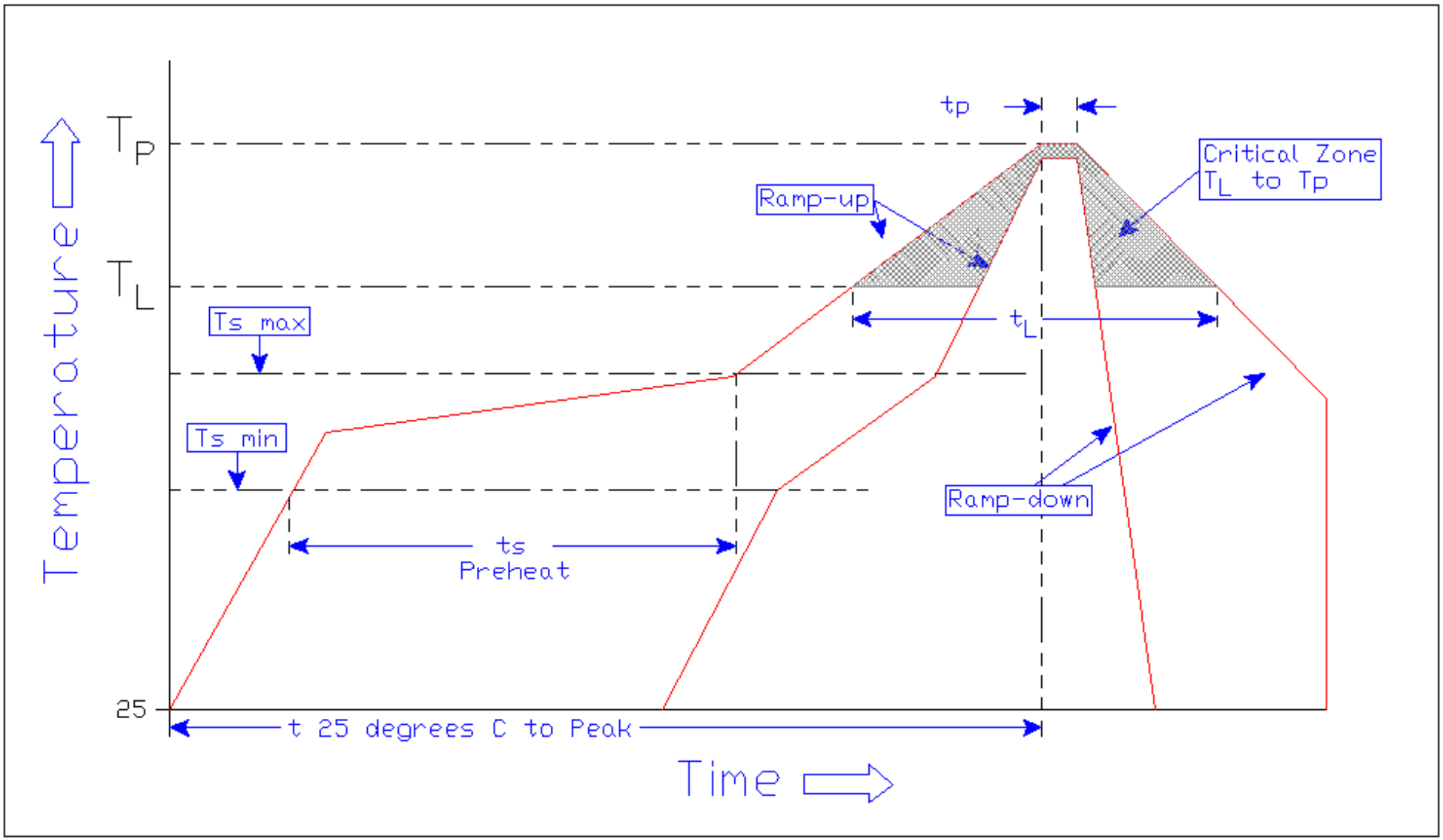

Figure 5-1 Classification Reflow Profile

Classification Reflow Profiles Table

Profile Feature	**Pb-Free Assembly**
Average Ramp-Up Rate (TSmax to Tp)	3° C/second max.
Preheat	
- Temperature Min (TSmin)	150°C
- Temperature Max (TSmax)	200°C
- Time (tSmin to tSmax)	60-180 seconds
Time maintained above:	
- Temperature (TL)	217°C
- Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	See Table 4.2
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

Table 4-2 Pb-free Process – Package Classification Reflow Temperature

Package Thickness	**Volume mm(cubed) <350**	**Volume mm(cubed) 350 - 2000**	**Volume mm(cubed) >2000**
<1.6mm	260 +0°C *	260 +0°C *	260 +0°C *
1.6mm - 2.5mm	260 +0°C *	250 +0°C *	245 +0°C *
≥2.5mm	250 +0°C *	245 +0°C *	245 +0°C *

* Tolerance: The device manufacturer/supplier **shall** assure process compatibility up to and including the stated classification temperature (this means Peak reflow temperature +0 °C. For example 260 °C+0°C) at the rated MSL level.

Note 1: The Profiling tolerance is +0°C, -X °C (based on machine variation capability) whatever is required to control the profile process but at no time will it exceed -5°C. The producer assures process compatibility at the peak reflow profile temperatures defined in Table 4.2.

Note 2: Package volume excludes external terminals (balls, bumps, lands, leads) and/or nonintegral heat sinks.

Note 3: The maximum component temperature reached during reflow depends on package thickness and volume. The use of convection reflow processes reduces the terminal gradients between packages. However, thermal gradients due to differences in thermal mass of SMD packages may still exist.

Note 4: Components intended for use in a "lead-free" assembly process **shall** be evaluated using the "lead-free" classification temperatures and profiles defined in 4.2 and 5.2 whether or not lead free.

NOTE: All Charts, Tables, and descriptions in this document derived from the IPC/JEDEC J-STD-020C, July 2004 Revision, (Sections 4 and 5).

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