

# Notes of reflow profile of Pb-free/Green Device

All Fortune devices is MSL Level 3 condition, and the standard reflow temperature profile of Pb-free/Green device is shown as follows(Please refer to JEDEC standard : J-STD-020-C).

Table 5-2 Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (Ts <sub>max</sub> to Tp)	3 °C/second max.	3° C/second max.
Preheat - Temperature Min (Ts <sub>min</sub> ) - Temperature Max (Ts <sub>max</sub> ) - Time (ts <sub>min</sub> to ts <sub>max</sub> )	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-180 seconds
Time maintained above: - Temperature (T <sub>L</sub> ) - Time (t <sub>L</sub> )	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak/Classification Temperature (Tp)	See Table 4.1	See Table 4.2
Time within 5 °C of actual Peak Temperature (tp)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

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

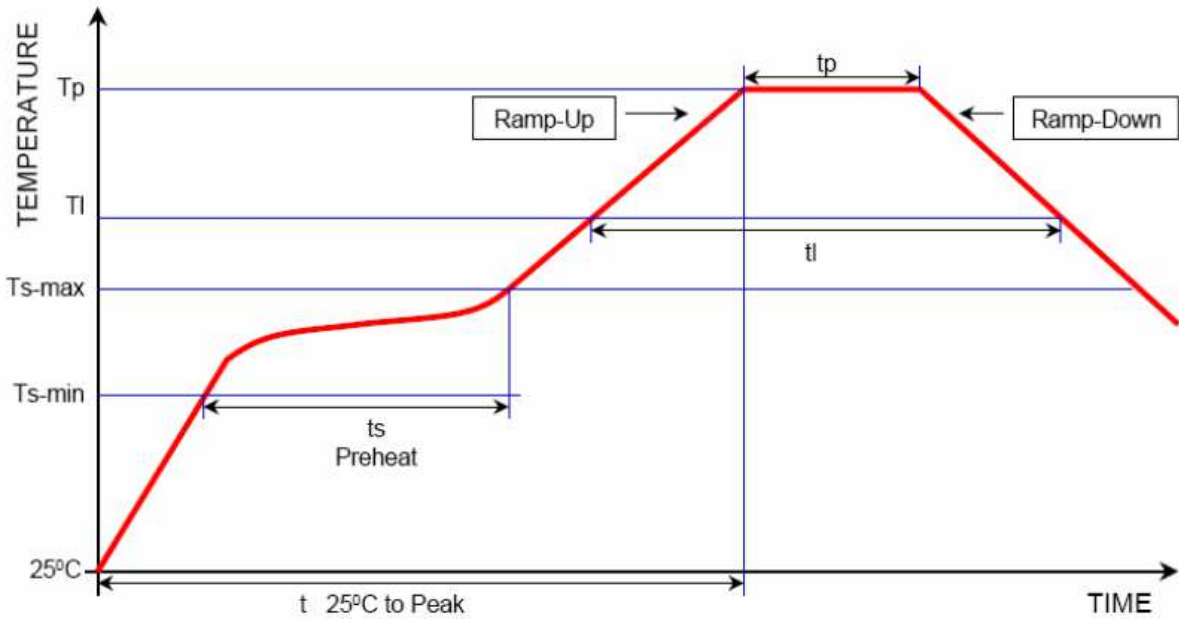
Table 4-2 Pb-free Process – Package Classification Reflow Temperatures

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 +0 °C *	260 +0 °C *	260 +0 °C *
1.6 mm - 2.5 mm	260 +0 °C *	250 +0 °C *	245 +0 °C *
≥2.5 mm	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.

Fortune's Pb-free products, except for QFP

Fortune's QFP Pb-free



Remarks :

1. Electrical "OPEN" may occur because of poor soldered joint of Pb-free/Green device when the Pb-free/Green device is used in reflow profile of Sn-Pb eutectic device.
2. If there are both Sn-Pb eutectic and Pb-free/Green devices in PCB at the same time, the "Reflow Profile of Pb-free/Green" should be applied. (max. soldering temperature can be up to 260°C).
3. Suggestion of solder compound : Sn 96 ~96.5% 、 Ag 3 ~3.5% 、 Cu 0.5% . ◦

Quality Assurance Dept

