

SOLDER REFLOW FOR STANDARD AND LEAD-FREE PACKAGES

TABLE 1 - STANDARD PACKAGE , LEADED PROCESS, PACKAGE PEAK REFLOW TEMPERATURE

Package Thickness	Volume mm ³ < 350	Volume mm ³ >= 350
< 2.5mm	240 +0/-5°C	225 +0/-5°C
>= 2.5mm	225 +0/-5°C	225 +0/-5°C

NOTES:

1. The package thickness and volume dictates the maximum component temperature. The thermal gradients between packages can be reduced by using convection reflow processes.
2. Volume of the package does not account for the external terminals.
3. Package volume is the equivalent of package size multiplied by the height.

TABLE 2 - LEAD-FREE PROCESS, PACKAGE PEAK REFLOW TEMPERATURE

Package Thickness	Volume mm ³ < 350	Volume mm ³ 250 - 2000	Volume mm ³ > 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

NOTES:

1. The profiling tolerance is +0, -X °C but at no time will it exceed -5°C.
2. Volume of the package does not account for the external terminals.
3. The package thickness and volume dictates the maximum component temperature. The thermal gradients between packages can be reduced by using convection reflow processes.
4. Components used in lead-free assembly shall be evaluated using the lead-free classification temperature and profiles as defined in the above table.
5. Table 3 will help determine if the components are lead-free or not.
6. The device manufacturer/supplier shall ensure process compatibility up to and including the stated classification temperature at the rated MSL level.

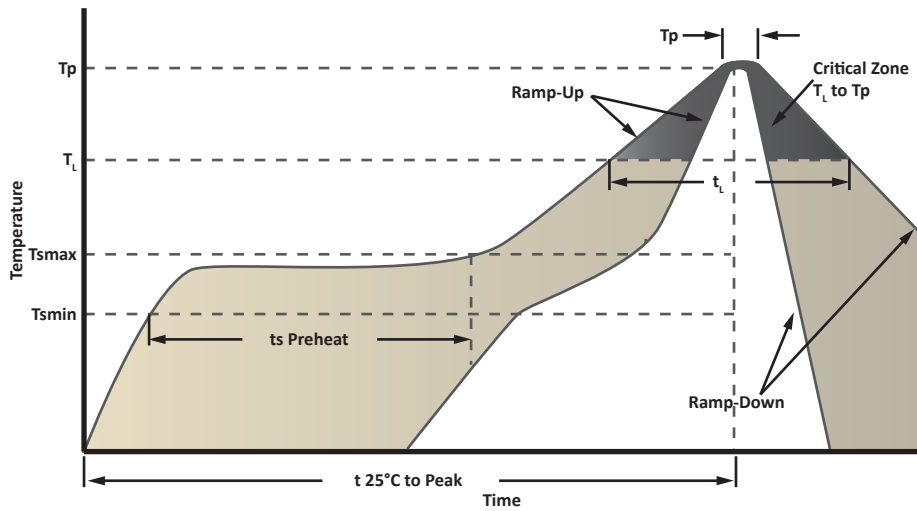
TABLE 3 - CLASSIFICATION REFLOW PROFILES

Profile Feature	Sn - Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp Up Rate ($T_{S_{MAX}}$ to T_p)	3°C/seconds Max.	3°C/seconds Max.
Preheat Temperature Min $T_{S_{MIN}}$ Temperature MAX $T_{S_{MAX}}$ Time ($T_{S_{MIN}}$ to $T_{S_{MAX}}$) (ts)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time Maintained Above Temperature (T_L) Time(t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak/Classification Temperature (T_p)	See Table 1	See Table 2
Time Within 5°C of Actual Temperature (t_p)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6°C/seconds Max.	6°C/seconds Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

NOTES:

1. All temperatures refer to topside of the package, measured on the package body surface.
2. Time within 5°C of the actual peak temperature (T_p) specified for the reflow profiles is "supplier" minimum and "user" maximum.

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COMPANY INFORMATION

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