GUIDELINE FOR AUTOMATED REFLOW SOLDERING PROCESS FOR PRODUCTS CONTAINING WIREWOUND TRANSFORMERS

Forward

The guidelines provided in this application note consider the guidelines of JEDC J-STD-020 and describe the basic surface-mounting assembly requirements for solder reflow of wire wound transformer based products manufactured by Synergy Microwave Corporation. Optimum yields are achieved by careful optimization of the heating profile to allow for package size limitations.

Peak Reflow Temperature

Determining the maximum allowable peak reflow temperature is a process that involves consideration of the package volume and thickness for Pb-free soldering processes as described in Table I below:

Table I. Package peak reflow temperature (Tp)

Reflow Process	Thickness	Volume		
		<350 mm^3	>350 mm^3	>2000 mm^3
Pb-Free	>2.5 mm	230°C +0/-5°C	225°C +0/-5°C	225°C +0/-5°C

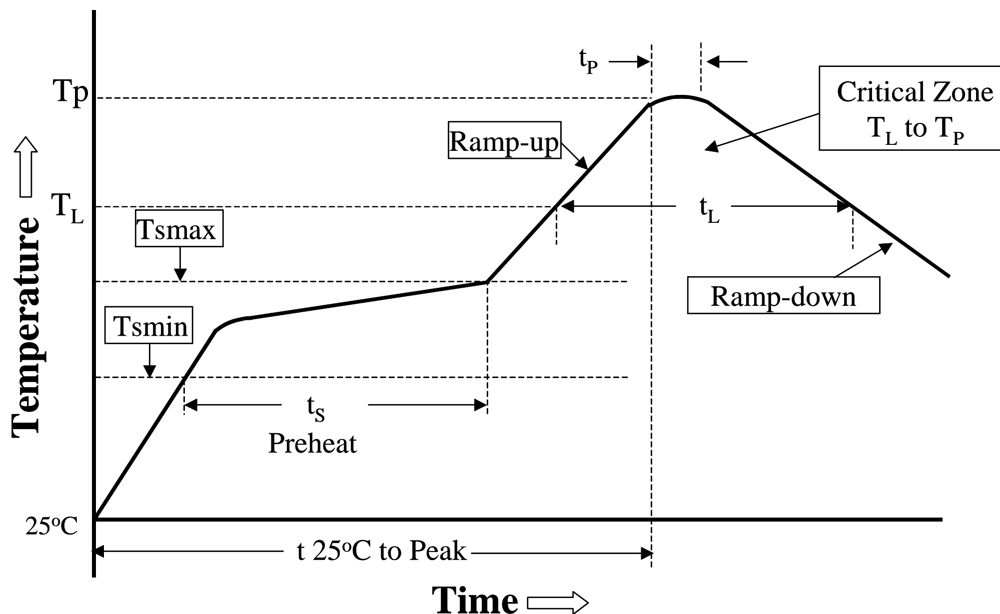

Figure 1. Temperature reflow profile

Table II. Reflow profile parameters

Reflow Profile Feature	**Pb-Free Assembly**
Average ramp-up rate (Tsmax to Tp)	3^oC/second max.
Preheat -Minimum Temperature (T_{Smin}) -Maximum Temperature (T_{Smax}) -Time (T_{Smin} to T_{Smax})	150^oC 200^oC 60 – 180 seconds
Time maintained above: -Minimum Temperature (T_L) -Time (t_L)	217^oC 60 – 150 seconds
Peak Temperature (Tp)	Per Table I
Time within 5^oC of actual peak temperature (tp)	10 - 20 seconds max.
Ramp-down rate	6^oC/second max.
Time at 25^oC to Peak Temperature	8 minutes max.

Consideration for maximum reflow temperature limits – One reflow pass

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- Recommended Solder Reflow profile for Pb-Free Process -