# Recommended Soldering Guidelines.

Most contamination problems can be prevented by exercising care during the cleaning and soldering process. Care should be taken not to immerse or spray unsealed switches during flux removal. Contact E-Switch for specific soldering recommendations and specifications not found in this catalog. Generalized soldering procedures are outlined below.

## HAND SOLDERING AND TEMPERATURES

Recommend soldering irons of 30 watt maximum with a tip temperature of 345°C (650°F) for 2-3 seconds and solder of 0.030 - 0.040 diameter.

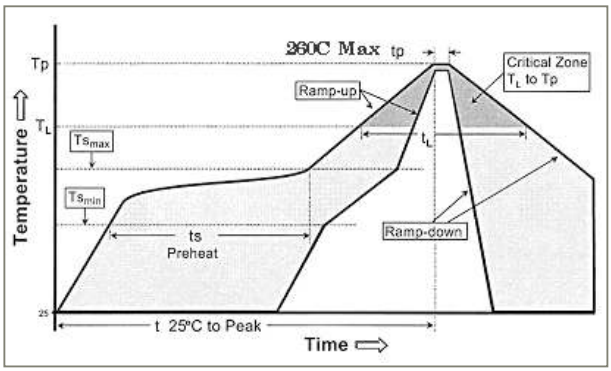
## SMT REFLOW (LEAD AND LEAD-FREE)

**"TYPICAL" SMT REFLOW (Pb and Pb-Free)**

| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|---|---|
| Average Ramp-Up Rate ($Ts_{max}$ to Tp) | 3 °C/second max. | 3 °C/second max. |
| **Preheat** | | |
| -Temperature Min ($Ts_{min}$) | 100 °C | 150 °C |
| -Temperature Max ($Ts_{max}$) | 150 °C | 200 °C |
| -Time ($ts_{min}$ to $ts_{max}$) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature ($T_L$) | 183 °C | 217 °C |
| -Time ($t_L$) | 60-150 seconds | 60-150 seconds |
| 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.*

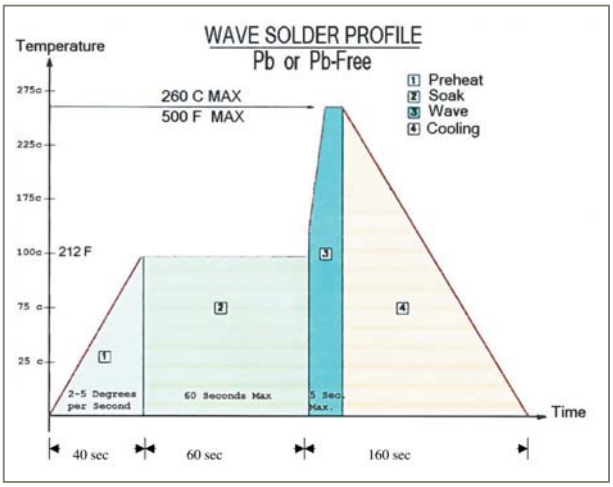
**Classification Reflow Profile**




## WAVE SOLDER TIME AND TEMPERATURES

When wave soldering, we recommend using a no-clean flux soldering process, rather than a process that requires washing. The fluxing process must be controlled so as not to have flux migrate inside the switch.

**WAVE SOLDER**
**(Includes Pb-Free, max component side preheat temp-130°C)**




Good venting is required. No-clean flux vapors can enter the switch if adequate venting is not available. The vapors will condense on the internal contacts and become an insulator when they solidify.

- Preheat temperature/time: Circumferential temperature of the p.c. board not to exceed 100°C (212°F) for 60 seconds.
- Soldering temperature/time: not to exceed 260°C (500°F) for 5 seconds.