

KEMET Hand Soldering Procedures

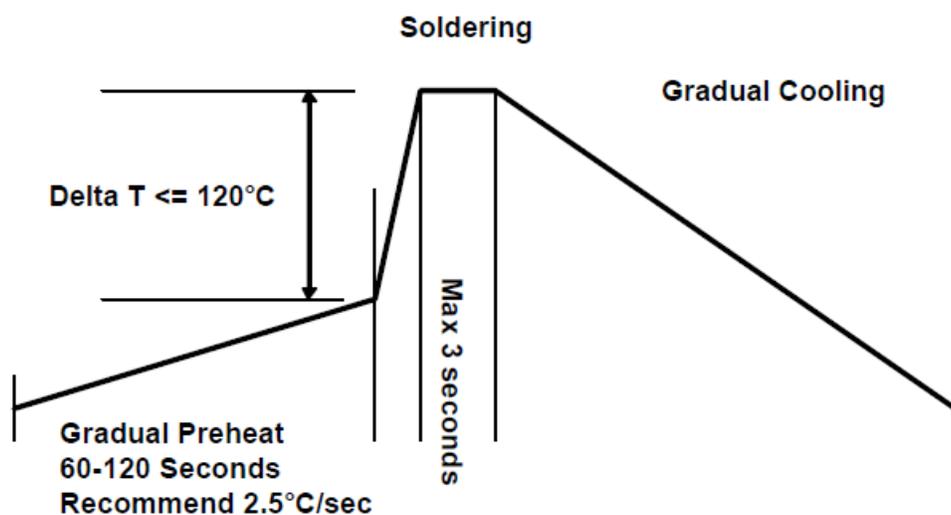
In hand soldering Tantalum (MnO₂ & Polymer) SMT capacitors, a manufacturer can utilize two hand soldering methodologies that include pre-heating or no pre-heating of the capacitors. KEMET recommends utilizing a pre-heating technique. However, due to the large temperature gradient between the capacitors and the tip of the soldering iron and the general lack of strenuous process control techniques manual soldering is not typically recommended. The thermal stresses from the large thermal gradients and the propensity of the operator touching the tip of the soldering iron to the device can lead to mechanical and/or electrical damage.

When manually soldering, it is important that the soldering process be carefully monitored and carried out so that the temperature gradient falls within the recommended conditions below.

Process 1 (with Preheating)

- 1) Utilize 1.0 mm thread eutectic solder with soldering flux in the core. Either a rosin-based or non-activated flux is recommended.
- 2) The capacitors shall be pre-heated so that the temperature gradient between the devices and the tip of the soldering iron is $\Delta T \leq 120^\circ\text{C}$ or below.
- 3) The temperature of the solder iron tip should not exceed 300°C .
- 4) The required amount of solder shall be melted in advance on the soldering tip.
- 5) After soldering the capacitors shall be cooled gradually at room ambient temperature. Forced air cooling is not permitted.

Manual Solder Profile with Pre-heating



Process 2 (without Preheating)

- 1) Soldering iron tip shall never directly touch the termination egress or the case body of the capacitors.
- 2) Lands are sufficiently pre-heated with a soldering iron tip before sliding the soldering iron tip to the terminal electrode of the capacitor for soldering.

Reference	Condition
Case Size	All
Temperature of Soldering Iron	270°C
Wattage	20 W Max.
Shape of Soldering Iron	3 mm Max.
Soldering Time with Soldering Iron	3 seconds Max.

