
Soldering of PC Products

This application note describes soldering processes compatible with the Maxwell BOOSTCAP™ ultracapacitor. It is applicable to the PC5 and PC10 product line.

General Precautions

Excessive heat applied to the ultracapacitor during soldering processes may damage the component causing deterioration in performance and life. The following precautions should be followed when soldering the Maxwell BOOSTCAP™ ultracapacitor.

- 1) Product comes vacuum bag sealed with desiccant bags. Once opened from packaging, product should be soldered as soon as possible to prevent oxidation of the pins.
- 2) The tip of the soldering iron should not touch the body of the ultracapacitor. This can damage the heat shrink insulator.
- 3) Minimize the time that the soldering iron is in contact with the terminal.
- 4) When using processes such as UV curing to pre-heat or cure adhesives the ultracapacitor should not be exposed to temperatures above 100° C for more than 5 minutes.
- 5) Bending of the ultracapacitor leads requires that the lead be supported at the seal interface. Excessive forces at this interface will damage the hermetic seal causing electrolyte leakage. The bending should begin 1.5 mm from the seal interface with at least a 1 mm bend radius.
- 6) The ultracapacitor is polarized. Reference the label for positive and negative potentials.
- 7) The ultracapacitor case is at the negative potential. Insure that the case is adequately insulated from other components.

Lead Pin Composition

The lead pins for the PC5 and PC10 products are comprised of two different materials for the positive and negative pin respectively. Both pins are solderable per [J-STD-002B Category 1](#).

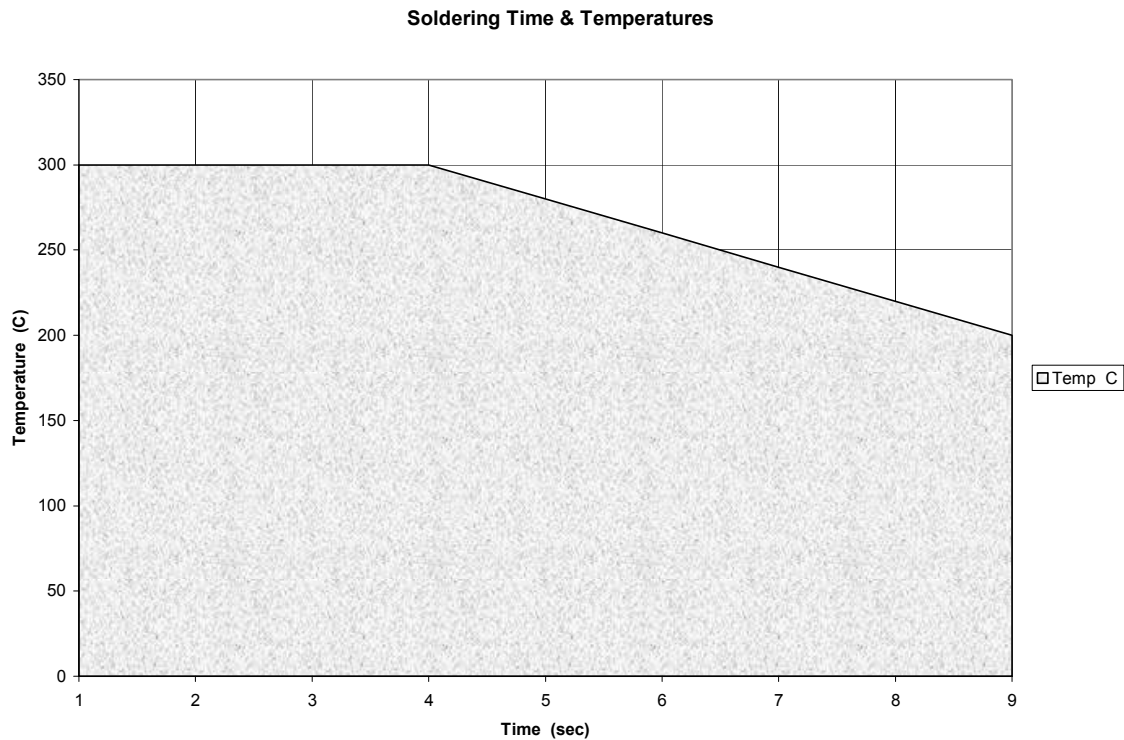
The positive pin, located to the far side of the product is comprised of Kovar as the base metal. The Kovar is Nickel plated (nickel fluoroborate solution) per MIL STD QQN 290A, 150-250 microns thick.

The negative pin, located closer to the product center is comprised of 316 Stainless Steel as the base metal. The stainless steel is nickel plated per MIL STD QQN 290, 150-250 microns thick followed by gold plating per MIL G 45204B type III, 30-70 microns thick.

Both pins are then pre-tinned with Sn/Pb 60/40 to a thickness of 100-400 microns thick. RoHS compliance is anticipated no later than January 2006. If additional information is needed, please contact Maxwell Technologies.

Hand Soldering

Components are solderable through hand soldering techniques. A well-controlled soldering iron is recommended to prevent damage as described in the general precautions. Below is a recommended soldering schedule for temperature and time.



Wave Soldering

Components are wave solderable. The recommended schedule for wave soldering is provided below.

Solder pot temperature - 248 °C

Preheat bottom side only. Board temperature at top of board should be 100 °C just before tinning

Conveyor speed - 2.8 cm/sec

Dwell time – 2.5 seconds