

TECHNICAL NOTE

MAXWELL TECHNOLOGIES ® HC CELL SOLDERING GUIDELINES

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MAXWELL TECHNOLOGIES TECHNICAL NOTE:

HC Cell Soldering Guidelines

Maxwell HC series of products are designed to be mounted to PC boards and to accept solder as a means of attaching those products to their substrate. Maxwell has converted these products to be compliant with the requirements of the RoHS directive and as such has moved to lead free preparations that require adjustments in the processes which are used to interconnect these compliant products with their substrates.

NOTE: Please note that the process and parameters described in this document were developed on specific equipment. The parameters will apply to that equipment and it is very likely that alternative pieces of equipment will require adjustment and fine tuning of those parameters to achieve an optimized result.

General Notes

- During soldering, electrical characteristics may deteriorate due to excessive heat and there may be a build-up of internal pressure.
- Depending on the type and size of the board, overheating of ultracapacitor may cause the safety vent to burst. This will greatly shorten the product life or cause leaking problem.
- Do not dip the entire ultracapacitor body into melted solder.
- Only flux the leads of ultracapacitor.
- Ensure there is no direct contact between the sleeve of the ultracapacitor and the PC board or any other component.
- When soldering the capacitor on the wiring board, make sure the body of ultracapacitor does not touch the circuit board.
- Excessive heat during soldering may cause sleeve to shrink or crack.
- The lead material is a Iron steel core coated with Copper (30-45um depending upon the lead diameter) and then Tin (~11um).

Hand Soldering

Warning. Do not touch the ultracapacitor external sleeve with the soldering rod which can cause the sleeve to melt or crack. The recommended temperature of the soldering rod tip is less than or equal to 350°C. The soldering duration should be shorter than 3 seconds. Minimize the time that the soldering iron is in direct contact with the terminals of ultracapacitor as excessive heating of the leads may lead to higher equivalent series resistance (ESR).

Solder Composition and size - Sn96.5Ag3.0Cu0.5 alloy

Recommended solder – Kester SN96227558 – includes flux core, other solders are available on the market which will be equivalent to this type.

Flux – If not using flux core wire, use a halide free, activated rosin based flux. There are many such fluxes available on the market.

Maximum contact time with component leads – 10 seconds

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Wave Soldering

Recommended Solder Pot Temperature – 248°C / 478°F

Solder Composition – Sn96.86, Ag2.7, Cu0.44 alloy

Recommended Solder – Nihon Genma Mfg. Co., Ltd. NP303-CQS-1

Recommended Preheat – Preheat board from bottom side only, bring top of board to 100C maximum immediately before soldering, preheat time will depend upon heating efficiency. Use a maximum preheating time of 60 seconds for PC boards 0.8 mm or thicker. Use the following table for wave soldering on leads only:

Solder Bath Temperature (°C)	Recommended Solder Exposure (seconds)	Maximum Exposure (Seconds)
220	7	9
240	7	9
250	5	7
260	3	5

NOTE: Do not exceed 100°C on the top of the board, exceeding this temperature may damage supercapacitor

Reflow Soldering

Reflow soldering should not be used on HC family of ultracapacitors.