FastCap® Ultracapacitors

Reflowable Chip Ultracapacitor Prototype

P/N: 16-0004-0.0

Form Factor: 8x11x2.3 (mm)

KEY FEATURES

FEATURES AND BENEFITS:

- 10x higher energy density than tantalum capacitors
- Long lifetime: over 3000 hours at 85°C
- Low resistance: 180mΩ at 85°C
- Wide operating temperature -20°C to 85°C
- Sealed ceramic package
- Surface mount design
- Pick-and-place compatible
- RoHS compliant
- Pb-free reflow compliant

APPLICATIONS:

- IoT
- Power loss protection
- Solid state drives
- Wireless sensors
- Energy harvesting
- Pulsed power

TECHNICAL SPECIFICATIONS

Test	Description	Min	Typ	Max	Units
Electrical					
Rated Capacitance	25°C	220	230		mF
	85°C	235	250		mF
Operating Voltage			2.1		V
Surge Voltage			2.5		V
Series Resistance	25°C		330	360	mΩ
	85°C		180	190	mΩ
Leakage Current @ Rated Voltage	96 hrs. @ 70°C		<5		uA
Operating Temperature		-20		85	
Storage Temperature		-45		135	
Physical					
Length			11.0		mm
Width			8.0		mm
Height			2.3		mm
Mass			0.6		g
Volume			0.20		cc

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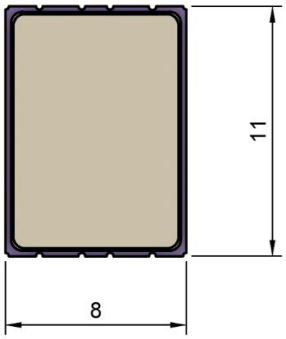
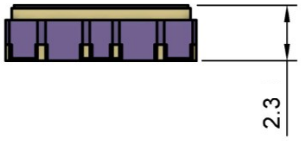
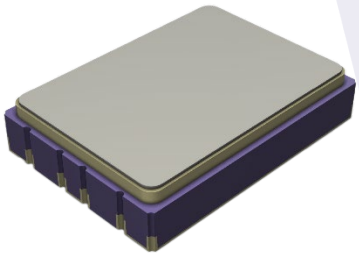
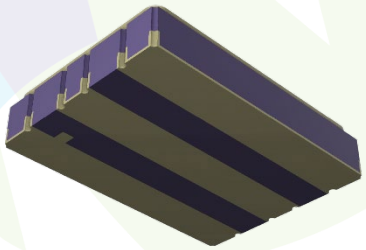
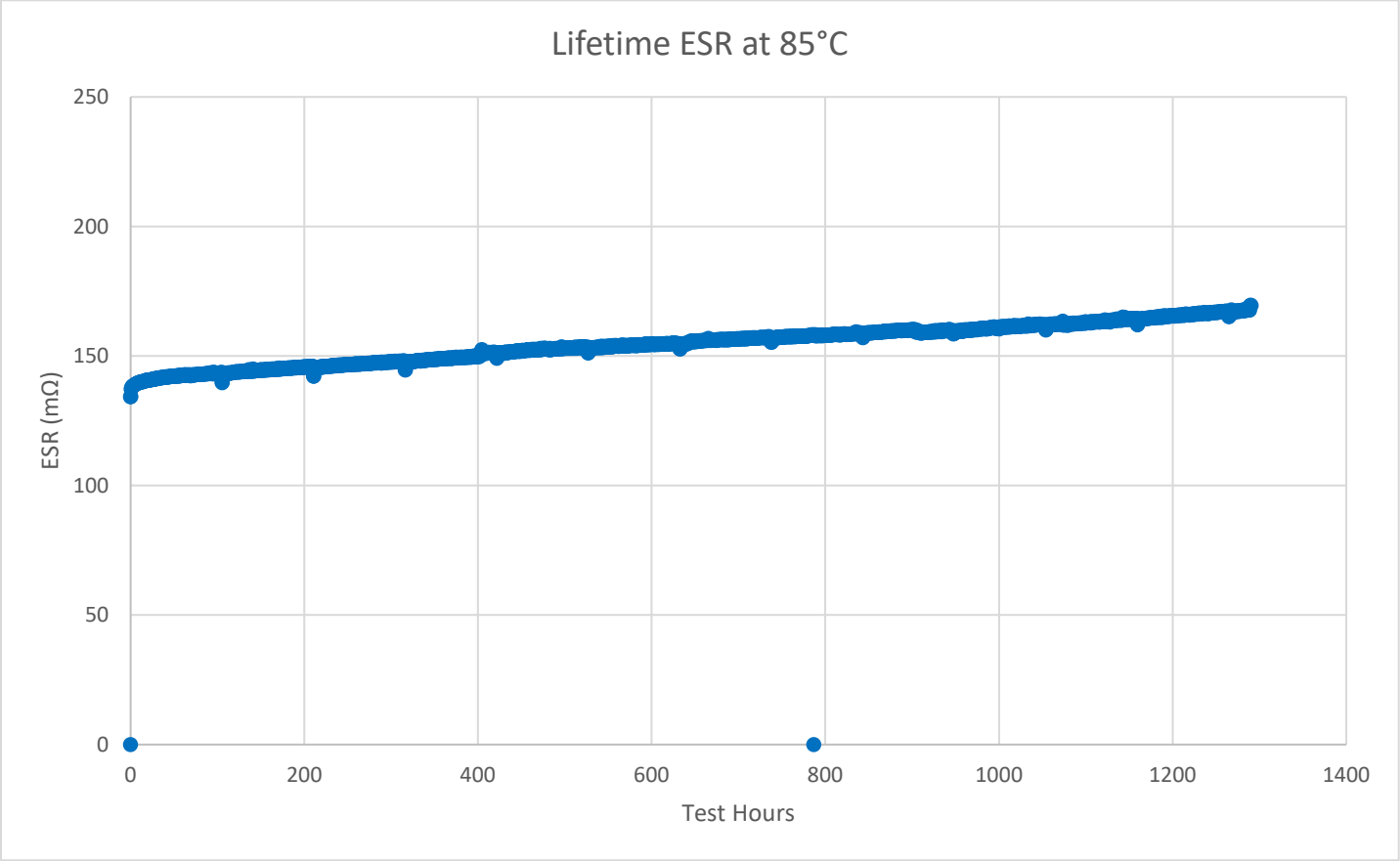








TYPICAL LIFETIME PERFORMANCE



Average ESR increase is 14% after 1,000 hours at 85°C. ESR measured with 4-point Arbin measurement at test temperature. Arbin measurement is the average voltage drop over 10 pulses of 100mA at a frequency of 1kHz. Consult the Arbin manual for more detail.

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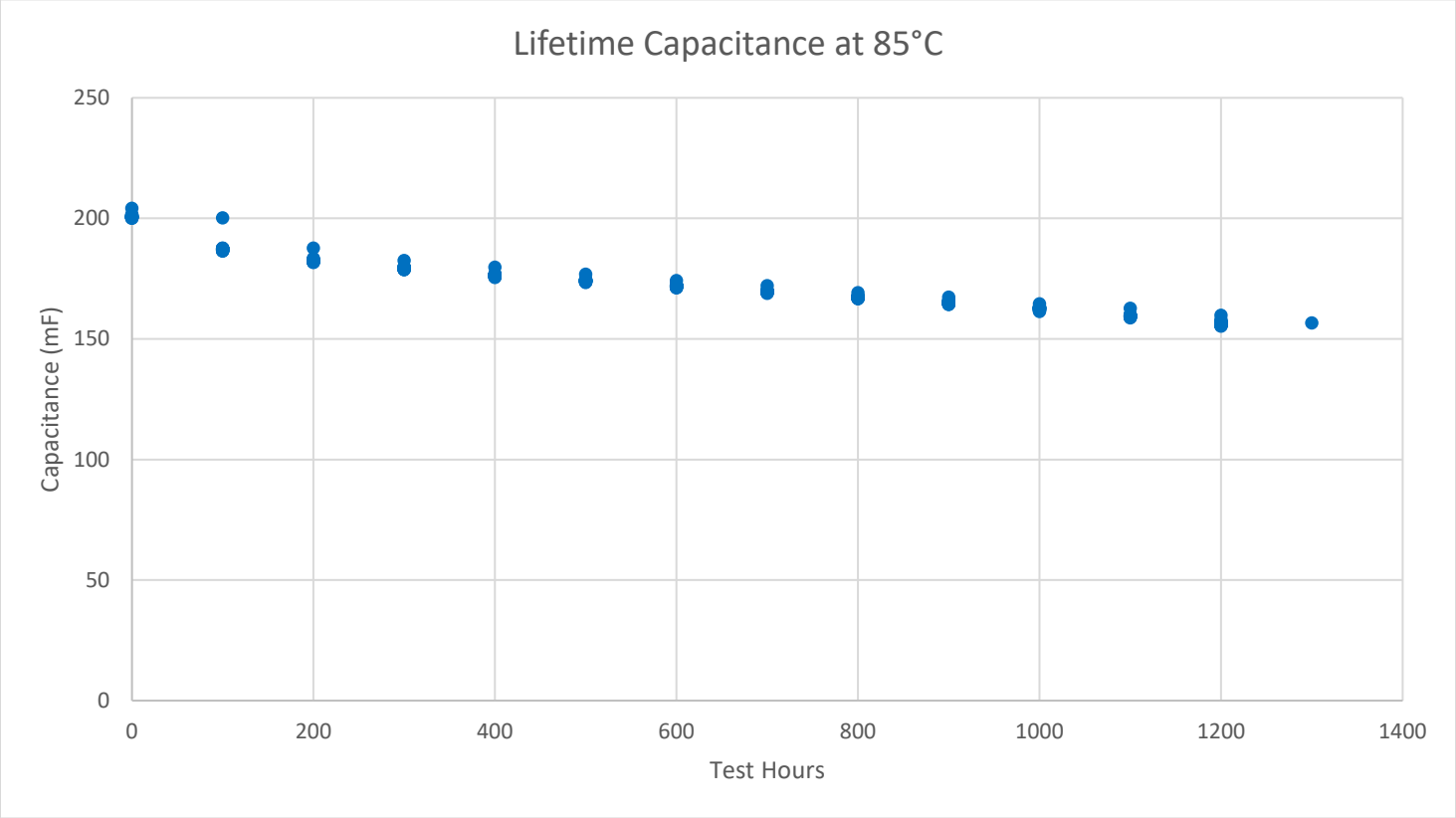

Average capacitance retention is 80% after 1,000 hours at 85°C. Capacitance measured on 100mA discharge. Cells are cycled 20 times every 100 hours at test temperature.

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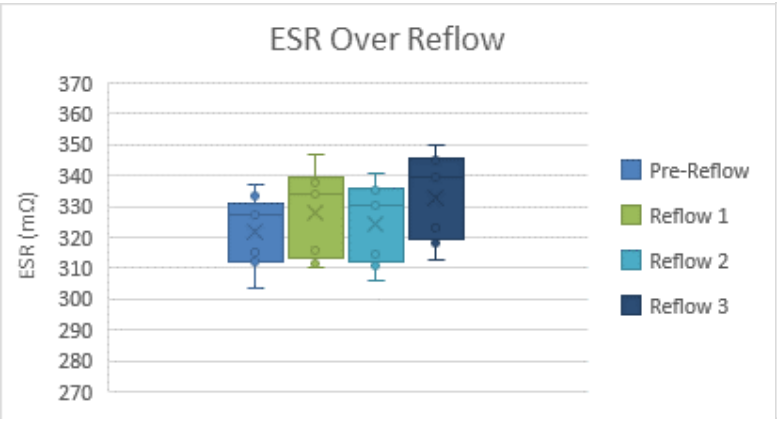
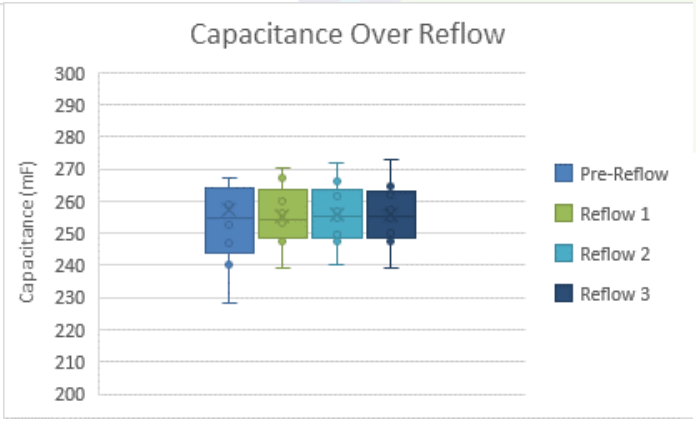
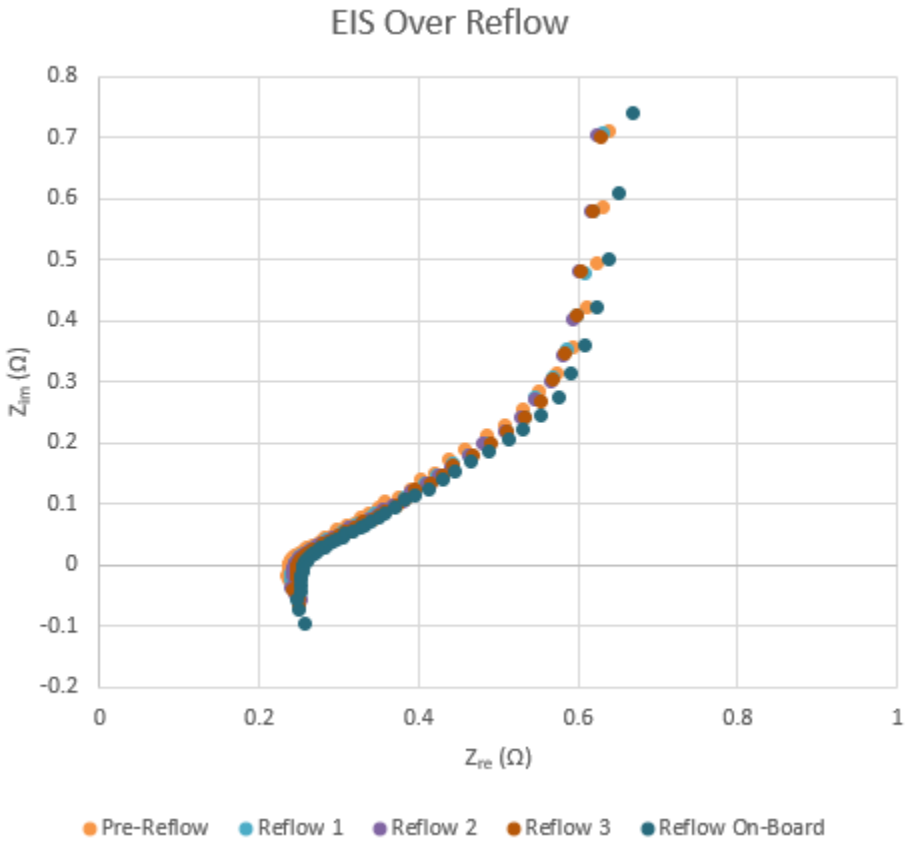
TYPICAL REFLOW PERFORMANCE

No performance degradation after 4 reflows





- Stable impedance over a wide frequency range
- Reflowable at 260° - Pb-Free reflow compliant
- No change in electrical performance after 4 reflow cycles



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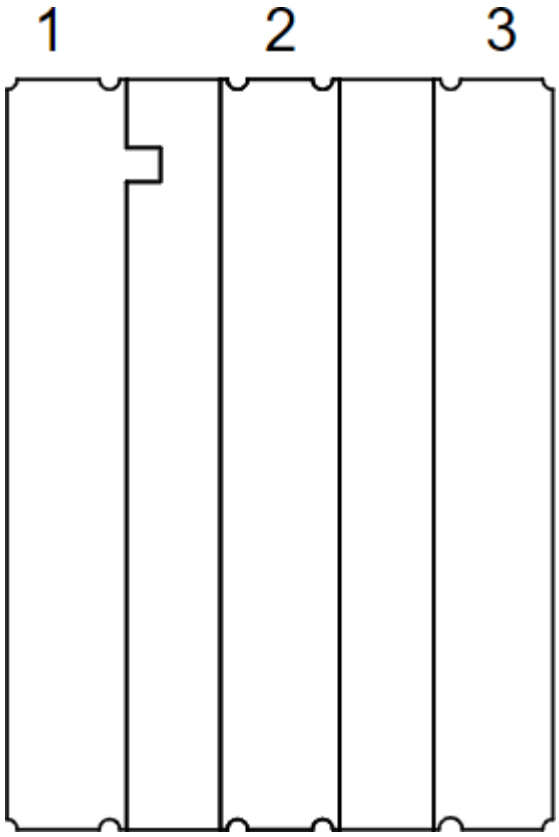
PINOUT DIAGRAM



Bottom View

Electrical Connections	
1	Positive
2	No Connection
3	Negative

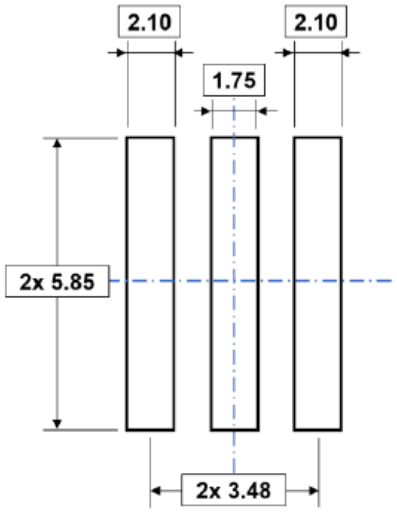
MOUNTING

The capacitors are designed for automatic placement on to printed-circuit boards.
Optimum dimensions of soldering pads depend amongst others on soldering method, mounting accuracy, print layout and / or adjacent components.

For recommended soldering pad dimensions and solder paste application, refer to Fig. 8.3 and Fig. 8.4

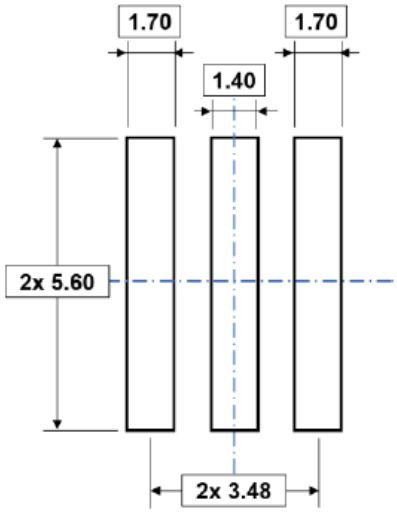
Soldering Pads on PCB, example (Bottom view)

Stencil for Paste Application, example (Top view)



Units in [mm]

Soldering Pads (Recommended dimensions)



Units in [mm]

Soldering Paste Mask (Recommended dimensions)

Rev Number	5
Last Updated	01/26/2022