ULP, *Ultra-Low Profile*, Aluminum Electrolytic Capacitors Technology Intro

High Energy Density Electrolytic
with Industry's Lowest-Profile

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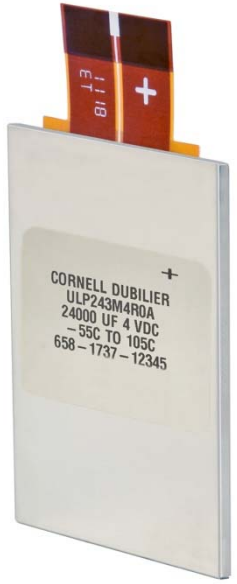
Lowest-Profile, High-Energy Density Aluminum Electrolytic Capacitors.

ULP Series takes a new approach in aluminum electrolytic technology for low-profile circuitry.

- 2 or 3mm thin…comparable in height to SMT tantalum capacitors
- Can replace arrays of SMT, solid tantalum or aluminum electrolytic capacitors
- Increases reliability – one device vs. many; fewer PCB connection points
- 3,000 hr. life @ 85 °C (105 °C under test)
- -55 to 105 °C at full-rated voltage



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ULP Ultra-Low Profile Series includes 16 value/voltage combinations.

- Capacitance from 500µF to 24,000µF, 4 to 63 WVDC

WV (v)	ULP (2mm)		ULP (3mm)	
	85°C Cap(µF)	ESR @ 120Hz (mΩ)	85°C Cap(µF)	ESR @ 120Hz (mΩ)
4	7,800	80	24,000	45
6.3	6,600	105	20,000	65
10	5,200	105	15,000	65
16	3,600	105	11,000	65
25	2,300	105	6,900	65
35	1,400	105	4,400	65
50	700	105	2,200	65
63	500	105	1,500	65

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Traditional methods of low-profile bulk storage consume valuable PCB space!

- **A single ULP can replace 34 to 208 solid tantalum chip caps, depending on values!**
- About 70% less board space than ULP alternatives!
- Eliminates wasted space between components in bulk arrays
- Link to ULP Product Cut Sheet

http://www.cde.com/resources/catalogs/ULP.pdf

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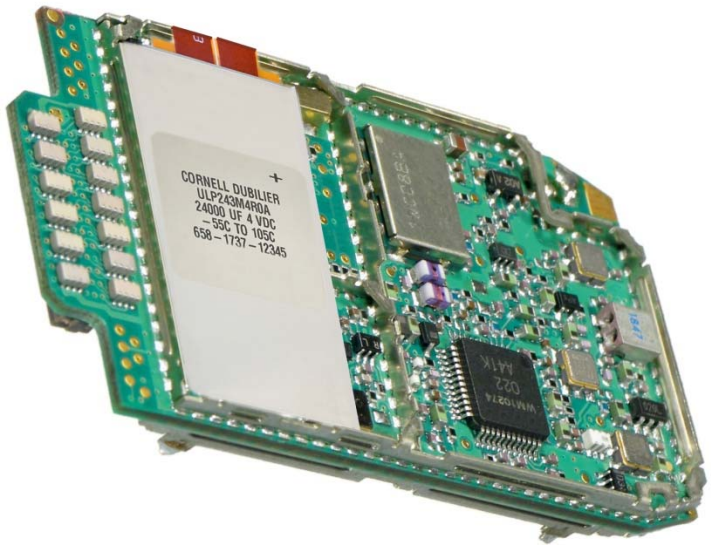
Smaller, more reliable circuits are possible with ULP Ultra-Low Profile Capacitors.

- Lower in height than V-chip electrolytics, tantalums or board-mounted axials, with much greater bulk storage capability
- Provides bulk storage in the least amount of space
- Overall size and weight of finished board is reduced



2 or 3mm thin!

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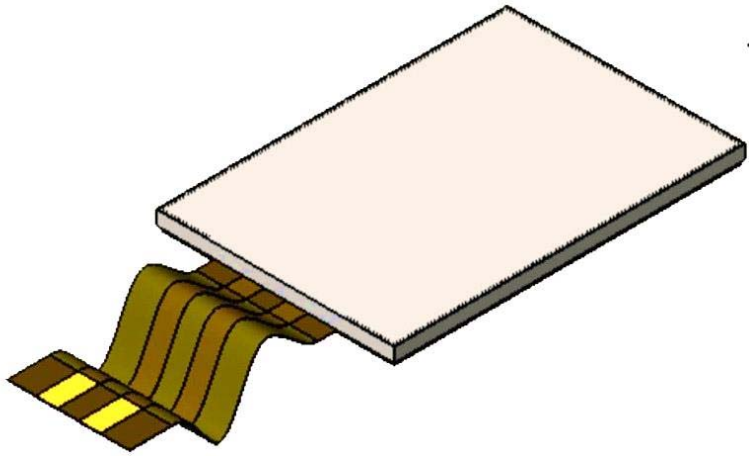
Keys to high performance…

- Ultra-thin package concept allows much denser concentration of foil and electrolyte
- Higher capacitance density due to high-gain foils, unique packaging and seal system
- Up to 0.4J/cc energy density
- Nickel-Silver Outer Case
- Flex (FPC) lead system
- Very robust construction, 10g vibration rating



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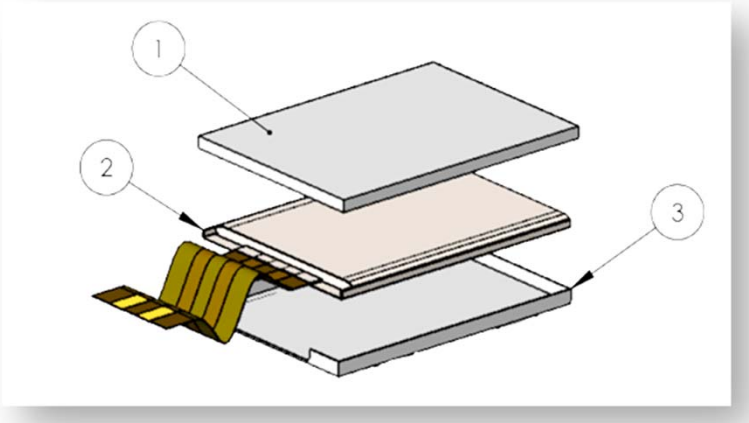
Not just lower profile…
ULP is a better capacitor!

- Primary seal is a heat-sealed polymer / no rubber gaskets or grommets!
- Primary seal is near-hermetic, for long life
- Outer metal casing is also sealed and provides a layer of physical protection



1. *Top Case Half*
2. *Capacitor Assembly*
3. *Bottom Case Half*

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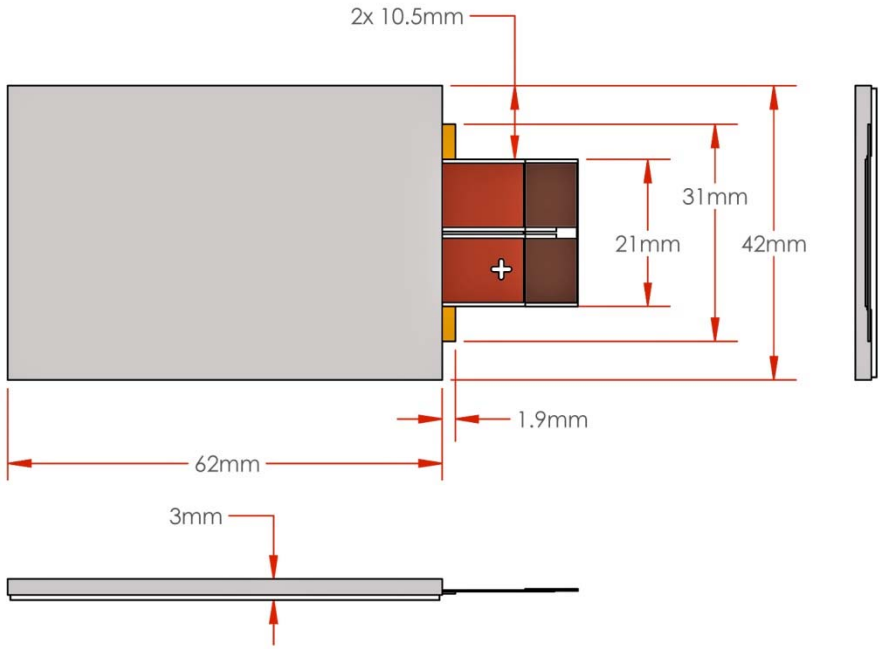
Design characteristics.

- Case thickness is only 2 or 3mm with a footprint of 62x42mm
- Flex (FPC) Lead System allows on or off-board mounting
- Integrated solution to board ZIF connector
- Sealed, robotically laser-welded nickel-silver case
- REACH/RoHS Compliant
- Very light weight



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Designed for *maximum* capacitance in the *smallest* package.

ULP capacitors allows designers to "think thin," while achieving higher end-product performance...

- Bulk storage in portable devices
- Disk drives
- Portable instruments and medical monitors
- IoT remote monitoring devices
- Compact power supplies
- Drones and RPVs
- Video monitors, displays

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ULP Ultra-Low Profile Series Summary

- Ultra-thin package design: 2 or 3mm
- One ULP capacitor can replace up to 160 tantalum chips, depending on values
- Up to 0.4J/cc energy density, saves space
- Values from 500µF to 24,000µF; 4 to 63 WVDC
- Rated at 3,000 hours at 85 °C
- Increases reliability – one device vs. many; fewer PCB connection points

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