FEATURES AND BENEFITS
- High performance product with low ESR
- Exceptional shock and vibration resistance
- Long lifetimes with up to 500,000 duty cycles*
- Compliant with UL, RoHS, and REACH requirements

TYPICAL APPLICATIONS
- Wind Turbine Pitch Control
- UPS System
- Actuators
- Emergency Lighting
- Telematics

PRODUCT SPECIFICATIONS

ELECTRICAL
- Rated Voltage, $V_R$: 2.7 VDC
- Surge Voltage: 2.85 VDC
- Rated Capacitance, $C$: 360 F
- Min. / Max. Capacitance, Initial: 360 F / 432 F
- Typical Capacitance, Initial: 375 F
- Rated (Max.) ESR$_{DC}$, Initial: 3.2 mΩ
- Typical ESR$_{DC}$, Initial: 2.9 mΩ
- Typical ESR$_{DC}$, Initial, 5 sec: 3.4 mΩ
- Maximum Leakage Current: 0.75 mA
- Maximum Peak Current, Non-repetitive: 220 A

PHYSICAL
- Nominal Mass: 71.4 g

POWER & ENERGY
- Operating Temp. Range:
  - Standard (-40°C to 65°C) at 2.7V
  - Extended (-40°C to 85°C) at 2.3V
- Maximum Stored Energy, $E_{max}^{6,9}$: 0.36 Wh
- Gravimetric Specific Energy: 5.1 Wh/kg
- Usable Specific Power: 3.8 kW/kg
- Impedance Match Specific Power: 7.9 kW/kg

SAFETY
- Certifications: RoHS, REACH, UL 810A

TYPICAL CHARACTERISTICS

THERMAL CHARACTERISTICS
- Typical Thermal Resistance ($R_{th, Housing}$): 8.8°C/W
- Typical Thermal Capacitance ($C_{th}$): 75.6 J/°C
- Usable Continuous Current (BOL) $\Delta T = 15°C$: 23 A
- Usable Continuous Current (BOL) $\Delta T = 40°C$: 38 A
- LIFE*
  - Projected DC Life at Room Temperature (At rated voltage and 25°C, EOL): 10 years
  - DC Life at Standard High Temperature (At rated voltage and 65°C, EOL): 1,500 hours
  - DC Life at De-Rated Voltage & Higher Temperature (At 2.3V and 85°C, EOL): 1,000 hours
- Projected Cycle Life at Room Temperature (Constant current charge-discharge from $V_r$ to 1/2$V_r$ at 25°C, EOL): 500,000 cycles
- Shelf Life (Stored uncharged at 25°C, ≤ 50% RH): 4 years

*Results may vary. Additional terms and conditions, including the limited warranty, apply at the time of purchase. See the warranty details for applicable operating and use requirements.
Datasheet: 2.7V 360F ULTRACAPACITOR CELL

1. Surge Voltage
   Absolute maximum voltage, non-repetitive. Duration not to exceed 1 second.

2. “Typical” values represent mean values of production sample.

3. Rated Capacitance & ESR<sub>DC</sub> (measure method)
   • Capacitance: Constant current charge (10 mA/F) to V<sub>ap</sub>, 5 min hold at V<sub>ap</sub>,
     constant current discharge 10 mA/F to 0.1 V.
     e.g. in case of 2.7V 360F cell, charge with 10 mA/F, 5 min hold at 2.7V, constant
     current discharge (40 * 360 * 2.7 = 38,880 mA).
   • ESR<sub>DC</sub>: Constant current charge (10 mA/F) to V<sub>ap</sub>, 5 min hold at V<sub>ap</sub>,
     constant current discharge (40 * 360 * 2.7 = 38,880 mA).
   • Maximum Leakage Current
   If applicable, module leakage current is the sum of cell and balancing circuit
   leakage currents.
   • Current measured after 72 hrs at rated voltage and 25°C. Initial leakage current can
     be higher.
   • Current needed to discharge cell/module from rated voltage to half-rated
     voltage in 1 second.

4. Maximum Leakage Current
   • Current measured after 72 hrs at rated voltage and 25°C. Initial leakage current can
     be higher.
   • If applicable, module leakage current is the sum of cell and balancing circuit
     leakage currents.

5. Maximum Peak Current
   • The stated maximum peak current should not be used in normal operation
     and is only provided as a reference value.

6. Energy & Power (Based on IEC 62391-2)
   • Maximum Stored Energy
   • E<sub>max</sub> (Wh) = \( \frac{3.600}{0.12} \times \) E<sub>SR<sub>DC</sub></sub>
   • Usable Specific Power (W/kg) = \( \frac{E_{max}}{VR_{max}} \)
   • Impedance Match Specific Power (W/kg) = \( \frac{0.25V_R^2}{ESR_{DC} \times mass} \)
   • Presented Power and Energy values are calculated based on
     Rated Capacitance & Rated (Max.) ESR<sub>DC</sub>

7. Cycle Life Test Profile
   Cycle life varies depending upon application-specific characteristics.
   Actual results will vary.

8. Temperature Rise at Constant Current
   • \( \Delta T = I \times ESR_{DC} \times R_{th} \)
   • (Note: Design should consider EOL ESR<sub>DC</sub> for application temperature rise
     evaluation.)

9. Per United Nations material classification UN3499, all Maxwell ultracapacitors
   have less than 10 Wh capacity to meet the requirements of Special Provisions
   361. Both individual ultracapacitors and modules composed of those
   ultracapacitors shipped by Maxwell can be transported without being treated
   as dangerous goods (hazardous materials) under transportation regulations.

10. BOL: Beginning of Life, rated initial product performance
    EOL: End of Life criteria.
    • Capacitance: 80% of min. BOL rating
    • ESR<sub>DC</sub>: 2x max. BOL rating

BCAP0360 P270 S18

**WARNING:**
The blank terminals are provided for mechanical support only.
The corresponding PCB patterns must be isolated from positive
and negative terminals. Failure to isolate the blank terminals
may result in malfunction of the product.

The information in this document is correct at time of printing and is subject to change without notice. Images are not to scale. Products and related processes may be covered by one or more U.S. or international patents and pending applications. Please see www.maxwell.com/patents for more information.

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**Part Description**

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<th>T (±0.1)</th>
<th>H (±1.0)</th>
<th>A (±0.1)</th>
<th>B (±0.1)</th>
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**Dimensions (mm)**

| BCAP0360 P270 S18 | 63.0 | 35.0 | 1.5 | 5.6 | 22.5 | 19.5 | 5.6 |

When ordering, please reference the Maxwell Model Number below.

**Maxwell Model Number:** BCAP0360 P270 S18
**Maxwell Part Number:** 133524
**Alternate Model Number:** ESHSR-0360C0-002R7A1