2.7V 5F ULTRACAPACITOR CELL

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
- Actuators
- Emergency Lighting
- Telematics
- Automotive
- Security Equipment
- Backup System
- Smoke Detectors
- Advanced Metering

PRODUCT SPECIFICATIONS

ELECTRICAL
- Rated Voltage, \( V_R \) 2.7 VDC
- Surge Voltage\(^1\) 2.85 VDC
- Rated Capacitance, \( C^3 \) 5 F
- Min. / Max. Capacitance, Initial 4.5 F / 6.0 F
- Typical Capacitance, Initial\(^2,3\) 5.17 F
- Rated (Max.) ESR\(_{DC}\), Initial\(^3\) 45 mΩ
- Typical ESR\(_{DC}\), Initial\(^2,3\) 36 mΩ
- Typical ESR\(_{DC}\), Initial, 5 sec\(^2,3\) 70 mΩ
- Maximum Leakage Current\(^4\) 8 μA
- Maximum Peak Current, Non-repetitive\(^5\) 5.5 A

PHYSICAL
- Nominal Mass 2.1 g

POWER & ENERGY
- Operating Temp. Range
- Standard (-40°C to 65°C) at 2.7 V
- Extended (-40°C to 85°C) at 2.3 V
- Maximum Stored Energy, \( E_{max}^{6,9} \) 5.0 mWh
- Gravimetric Specific Energy\(^6\) 2.4 Wh/kg
- Usable Specific Power\(^6\) 9.2 kW/kg
- Impedance Match Specific Power\(^6\) 19.2 kW/kg

THERMAL
- Typical Thermal Resistance (\( R_{th}\), Housing)\(^8\) 60°C/W
- Typical Thermal Capacitance (\( C_{th}\)\(^2\)) 2.0 J/°C
- Usable Continuous Current (BOL) \((\Delta T = 15 \, ^\circ C)\)\(^8,10\) 2.3 A
- Usable Continuous Current (BOL) \((\Delta T = 40 \, ^\circ C)\)\(^8,10\) 3.8 A

LIFE*
- Projected DC Life at Room Temperature (At rated voltage and 25°C, EOL\(^10\)) 10 years
- DC Life at High Temperature (At rated voltage and 65°C, EOL\(^10\)) 1,500 hours
- DC Life at De-rated Voltage & Higher Temperature (At 2.3V and 85°C, EOL\(^10\)) 1,500 hours
- Projected Cycle Life at Room Temperature\(^7\) (Constant current charge-discharge from \( V_R \) to \( 1/2V_R \) at 25°C, EOL\(^10\)) 500,000 cycles
- Shelf Life (Stored uncharged at 25°C, ≤ 50% RH) 4 years

SAFETY
- Certifications RoHS, REACH, UL 810A

*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.
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 (measure method)
   • Capacitance: Constant current charge (10 mA/F) to V<sub>in</sub>, 5 min hold at V<sub>in</sub>, constant current discharge 10 mA/F to 0.1 V.
     e.g. in case of 2.7V 5F cell, 10 * 5 = 50 mA
   • ESR<sub>DC</sub>: Constant current charge (10 mA/F) to V<sub>in</sub>, 5 min hold at V<sub>in</sub>, constant current discharge (40 * C * V<sub>in</sub>(mA)) to 0.1 V.
     e.g. in case of 2.7V 5F cell, charge with 10 * 5 = 50 mA and discharge with 40 * 5 * 2.7 = 540 mA

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
   • Current needed to discharge cell/module from rated voltage to half-rated voltage in 1 second.

BCAP0005 P270 S01

When ordering, please reference the Maxwell Model Number below.

Maxwell Model Number: BCAP0005 P270 S01
Maxwell Part Number: 133514
Alternate Model Number: ESHSR-0005C0-002R7

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