

**FEATURES AND BENEFITS\***

- Up to 15 year DC life
- 75V DC working voltage
- Resistive cell balancing
- Temperature outputs
- High power density

**TYPICAL APPLICATIONS**

- Wind turbine pitch control
- UPS systems

**PRODUCT SPECIFICATIONS****ELECTRICAL****BMOD0094 P075 B02**

Rated Capacitance <sup>1</sup>	94 F
Minimum Capacitance, initial <sup>1</sup>	94 F
Maximum Capacitance, initial <sup>1</sup>	113 F
Maximum ESR <sub>DC</sub> , initial <sup>1</sup>	13 mΩ
Test Current for Capacitance and ESR <sub>DC</sub> <sup>1</sup>	100 A
Rated Voltage	75 V
Absolute Maximum Voltage <sup>2</sup>	91 V
Absolute Maximum Current	1,900 A
Leakage Current at 25°C, maximum <sup>3</sup>	50 mA
Maximum Series Voltage	750 V
Capacitance of Individual Cells <sup>9</sup>	3,000 F
Maximum Stored Energy, Individual Cell <sup>9</sup>	3.0 Wh
Number of Cells	32

**TEMPERATURE**

Operating Temperature (Cell Case Temperature)	
Minimum	-40°C
Maximum	65°C
Storage Temperature (Stored Uncharged)	
Minimum	-40°C
Maximum	70°C

\*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.

## PRODUCT SPECIFICATIONS (Cont'd)

## PHYSICAL

BMOD0094 P075 B02

Mass, typical	25 kg
Power Terminals	M8/M10
Recommended Torque - Terminal	20/30 Nm
Vibration Specification	SAE J2380
Shock Specification	N/A
Environmental Protection	IP54
Cooling	Natural Convection

## MONITORING / CELL VOLTAGE MANAGEMENT

Internal Temperature Sensor	RTD
Temperature Interface	Analog
Cell Voltage Monitoring	N/A
Connector	Harting
Cell Voltage Management	Passive

## POWER &amp; ENERGY

Usable Specific Power, $P_d^4$	2,100 W/kg
Impedance Match Specific Power, $P_{max}^5$	4,300 W/kg
Specific Energy, $E_{max}^6$	2.9 Wh/kg
Stored Energy, $E_{stored}^7$	73 Wh

## SAFETY

Short Circuit Current, typical (Current possible with short circuit from rated voltage. Do not use as an operating current.)	5,800 A
Certifications	RoHS
High-Pot Capability <sup>10</sup>	2,500 VDC

## TYPICAL CHARACTERISTICS

### THERMAL CHARACTERISTICS

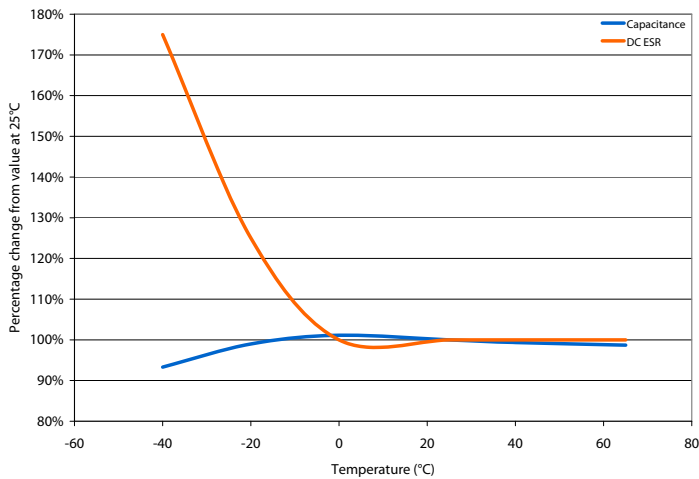
BMOD0094 P075 B02

Thermal Resistance ( $R_{ca}$ , All Cell Cases to Ambient), typical <sup>8</sup>	0.50°C/W
Thermal Capacitance ( $C_{th}$ ), typical	19,000 J/°C
Maximum Continuous Current ( $\Delta T = 15^\circ\text{C}$ ) <sup>8</sup>	48 A <sub>RMS</sub>
Maximum Continuous Current ( $\Delta T = 40^\circ\text{C}$ ) <sup>8</sup>	78 A <sub>RMS</sub>

### LIFE

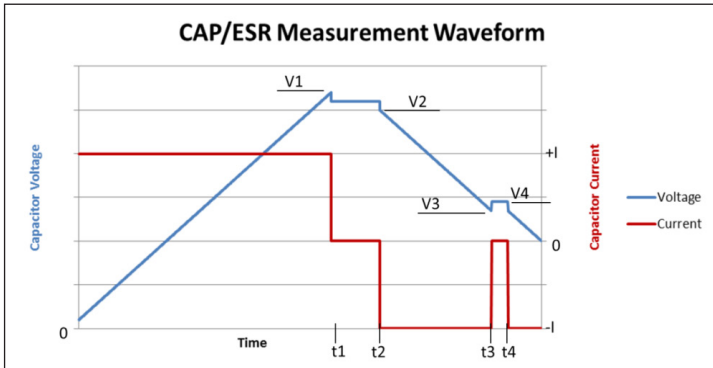
DC Life at High Temperature <sup>1</sup> (held continuously at Rated Voltage and Maximum Operating Temperature)	1,500 hours
Capacitance Change (% decrease from minimum initial value)	20%
ESR Change (% increase from maximum initial value)	100%
Projected DC Life at 25°C <sup>1</sup> (held continuously at Rated Voltage)	15 years
Capacitance Change (% decrease from minimum initial value)	20%
ESR Change (% increase from maximum initial value)	100%
Shelf Life (Stored uncharged at 25°C)	4 years

### ESR AND CAPACITANCE VS TEMPERATURE



NOTES

1. Capacitance and  $ESR_{DC}$  measured at 25°C using specified test current per waveform below.
2. Absolute maximum voltage, non-repeated. Not to exceed 1 second.
3. After 72 hours at rated voltage. Initial leakage current can be higher.
4. Per IEC 62391-2,  $P_d = \frac{0.12V^2}{ESR_{DC} \times \text{mass}}$
5.  $P_{\text{max}} = \frac{V^2}{4 \times ESR_{DC} \times \text{mass}}$
6.  $E_{\text{max}} = \frac{1/2 CV^2}{3,600 \times \text{mass}}$
7.  $E_{\text{stored}} = \frac{1/2 CV^2}{3,600}$
8.  $\Delta T = I_{RMS}^2 \times ESR \times R_{ca}$
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. Duration = 60 seconds. Not intended as an operating parameter.



$V1 = V_{\text{rated}}$        $t2 - t1 = 15 \text{ seconds}$        $\text{Capacitance} = I \times (t3 - t2) / (V2 - V3)$   
 $V3 = 0.5 \times V_{\text{rated}}$        $t4 - t3 = 5 \text{ seconds}$        $ESR = (V4 - V3) / I$

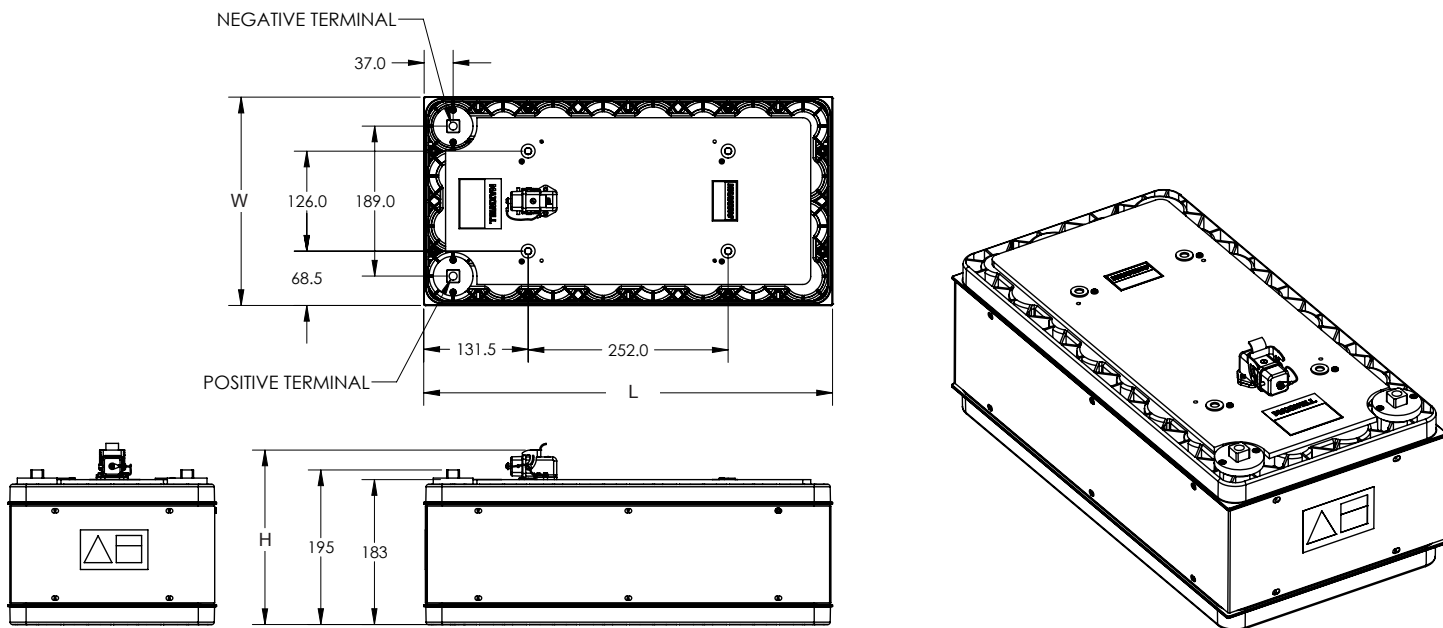
MOUNTING RECOMMENDATIONS

Please refer to the user manual for installation recommendations

MARKINGS

Products are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial number.

**BMOD0094 P075 B02**



Part Description	Dimensions (mm)			Package Quantity
	L (±0.3mm)	W (±0.2mm)	H (±0.7mm)	
BMOD0094 P075 B02	515	263	220	1

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice. Please contact Maxwell Technologies directly for any technical specifications critical to application. All products featured on this datasheet are covered by the following U.S. patents and their respective foreign counterparts: 6643119, 7295423, 7342770, 7352558, 7384433, 7440258, 7492571, 7508651, 7791860, 7791861, 7859826, 7883553, 7935155, 8072734, 8098481, 8279580, and patents pending.



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