p Series: BMOD Power

15 Volt Module

> Features:

» 15 V working voltage
» Individually balanced cells
» Rugged, fully enclosed system
» Screw mountable
» Module-to-module balance cable included
» UL Recognized

> Applications:

» Automotive subsystems
» Consumer electronics
» Short term UPS and telecom
» Renewable energy systems
» Portable power tools

> Overview:

The Power-type ultracapacitor product line gives industrial customers a much wider range of choices to meet their energy storage and power delivery requirements. The modules are specifically engineered to provide cost-effective solutions for UPS, telecommunications and other lighter duty industrial electronics applications.

In addition to meeting or exceeding demanding industrial application requirements for both watt-hours of energy storage and watts of power delivery per kilogram, all of these products will perform reliably for more than five hundred-thousand discharge-recharge cycles.

The proprietary architecture and material science on which BOOSTCAP® products are based enable continued leadership in controlling costs, flexibility in product offerings and allow application specific performance tailoring.

> BMOD Power Series Specifications:

Item	Product Specification	
Operating Temperature Range	-40 °C to +65 °C	
Storage Temperature Range	-40 °C to +70 °C	
Rated Voltage	15 V DC	
Capacitance Tolerance	+/- 20%	
Resistance Tolerance	+/- 25%	
Maximum Operating Voltage	50 V (maximum of 3 modules in series)	
Temperature Characteristics	Capacitance Change	Within ± 5% of initial measured value at 25 °C (at -40 °C)
	Internal Resistance	Within 150% of initial measured value at 25 °C (at -40 °C)
Endurance	After 1000 hours application of rated voltage at 65 °C	
	Capacitance Change	Within 20% of initial specified value
	Internal Resistance	Within 25% of initial specified value
Shelf Life	After 1000 hours storage at 65 °C without load shall meet specification for endurance	
Life Test	After 10 years at rated voltage and 25 °C	
	Capacitance Change	Within 20% of initial specified value
	Internal Resistance	Within 100% of initial specified value
Cycle Test	Capacitors cycled between specified voltage and half rated voltage under constant current at 25 °C (500,000 Cycles)	
	Capacitance Change	Within 20% of initial specified value
	Internal Resistance	Within 100% of initial specified value

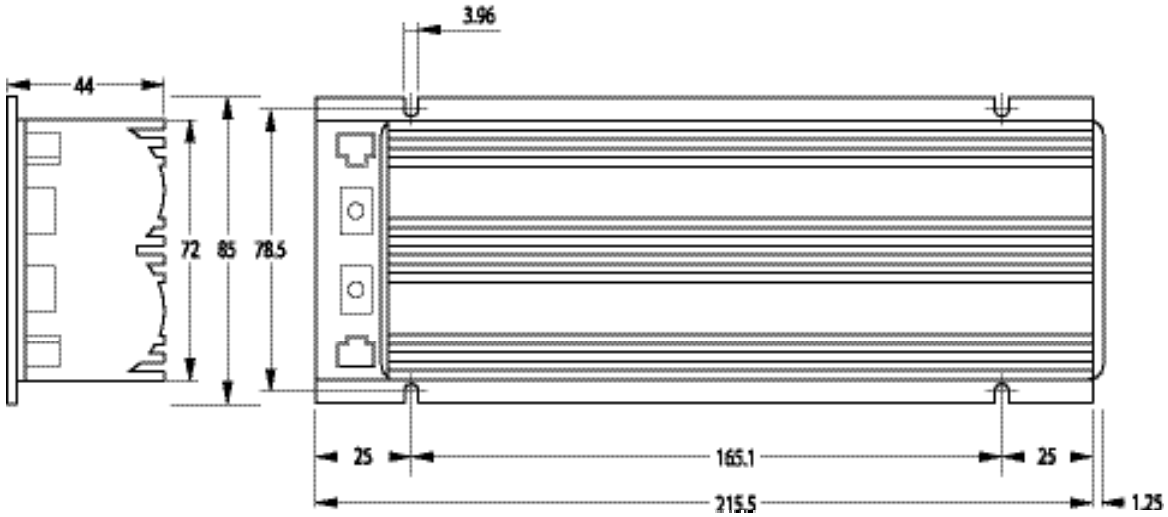
> BMOD Power Product Specifications:

Part Number	Capacitance (F)	ESR, DC (mohm)	ESR, 1khz (mohm)	Ic (mA)
BMOD0052 P015 B01	52	14.5	8.0	1.00
BMOD0052 P015 B02	52	14.5	8.0	50.0

> BMOD Power Product Properties:

Maxwell Part No.	Rth (C/W)	Isc (A)	Emax (Wh/kg)	Pmax (W/kg)	Pd (W/kg)
BMOD0052 P015 B01	1.80	1500	2.39	10,300	2,700
BMOD0052 P015 B02	1.80	1500	2.39	10,300	2,700

> Dimensions:



Part Number	Vol (l)	Mass (g)	Size (mm)		
			L	W	H
BMOD0052 P015 B01	0.815	680	218	85	44
BMOD0052 P015 B02	0.815	680	218	85	44

Product dimensions and specifications may change without notice. Please contact Maxwell Technologies directly for any technical specifications critical to application.

> Mounting Recommendations:

The module should be mounted to a strong chassis surface with four 6-32, or M4 screws. The mounting screws should have a mechanical locking method that is appropriate for the vibration levels. To provide the best possible EMI protection, the mounting surface should be electrically grounded.
Do not reverse polarize.

> Markings

Rated capacitance, rated voltage, part number, manufacturer, positive and negative terminal, warning marking, UL symbol, lot number

US Patent: 6,806,686 and additional Patents Pending

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> Additional Technical Information:

Capacitance and ESR, DC measured per document 1007239

I_C= Leakage current after 72 hours, 25˚C Isc = short circuit current (maximum peak current)

R_{th} = Thermal resistance

$$E_{max} = \frac{½\ CV^2}{3600 \text{ x } mass} \qquad P_{max} = \frac{\frac{V^2}{4R\ (1khz)}}{mass} \qquad P_d = \frac{\frac{0.12V^2}{R\ (DC)}}{mass}$$

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