



**Series: MC BMOD Power
48 Volt Module**

- » Ultra Low Internal Resistance
- » Highest Power Performance Available
- » Lowest Time Constant

› **Features:**

- » 48.6V Operating Voltage
- » Ultra Low internal resistance
- » Over 1M duty cycles
- » Individually balanced cells
- » Voltage and temperature sensor output included
- » Compact, rugged, fully enclosed and splash proof design

› **Applications:**

- » Transportation
- » Automotive
- » Industrial
- » UPS
- » Telecommunication



› **Overview:**

The Power-type ultracapacitor product line gives customers in the automotive and transportation sector a much wider range of choices to meet their energy storage and power delivery requirements.

The modules are specifically engineered for hybrid vehicle drive trains, automotive subsystems and other heavy duty applications that require the lowest equivalent series resistance (ESR) and highest efficiency available.

In addition to meeting or exceeding demanding automotive and transportation 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 one million 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. The cells used in the modules operate at 2.7 volts, enabling them to store more energy and deliver more power per unit volume than any other commercially available ultracapacitor products.

› **BMOD Series 48v Specifications:**

Item		Performance
Operating Temperature Range		-40 °C to +65 °C
Storage Temperature Range		-40 °C to +70 °C
Rated Voltage		48.6 V DC
Capacitance Tolerance		+20/-5%
Resistance Tolerance		Max.
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 1500 hours application of rated voltage at 65 °C	
	Capacitance Change	Within 20% of initial specified value
	Internal Resistance	Within 60% of initial specified value
Shelf Life		After 1500 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 30% of initial specified value
	Internal Resistance	Within 150% of initial specified value
Cycle Test	Capacitors cycled between specified voltage and half rated voltage under constant current at 25 °C (1 million)	
	Capacitance Change	Within 30% of initial specified value
	Internal Resistance	Within 150% of initial specified value

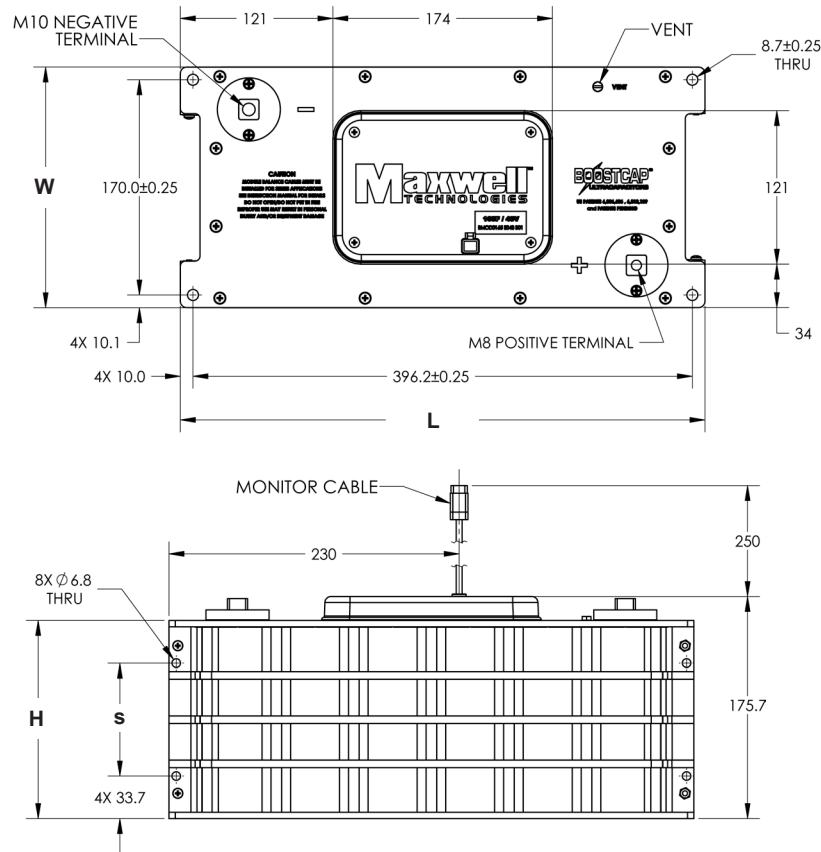
› **BMOD Series 48v Product Specifications:**

Maxwell Part No.	Capacitance (F)	ESR, DC (mohm)	ESR, 1khz (mohm)	Ic (mA)
BMOD0083 P048	80	12.3	9.8	3.0
BMOD0110 P048	110	9.5	7.6	4.2
BMOD0165 P048	165	7.1	5.2	5.2

› **BMOD Series 48v Product Properties:**

Maxwell Part No.	Rth (C/W)	Isc (A)	Emax (Wh/kg)	Pmax (W/kg)	Pd (W/kg)
BMOD0083 P048	0.39	3,900	2.48	5,400	2,000
BMOD0110 P048	0.33	4,300	2.91	6,200	2,400
BMOD0165 P048	0.25	4,800	3.81	7,900	3,200

› **Dimensions:**



Part Number	Vol (l)	Mass (kg)	Size (mm)			
			L (+/- 0.25)	W (+/- 0.25)	H (+/- 0.25)	s (+/- 0.5)
BMOD0083 P048	8.5	11.0	416.2	190.1	103.2	53.7
BMOD0110 P048	9.8	12.4	416.2	190.1	120.2	70.7
BMOD0165 P048	12.6	14.2	416.2	190.1	156.7	89.3

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

› **Markings: Modules are marked with the following information**

Rated capacitance, rated voltage, product number, name of manufacturer, positive and negative terminal, warning marking, serial #

› **Mounting Recommendations:**

Modules can be secured at 8 locations, 4 front face and/or 4 bottom face, at provided holes for M8 bolt. Follow user manual instructions for terminal, balance and output connections.

Patent 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 I_{sc} = short circuit current (maximum peak current)

R_{th} = Thermal resistance

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

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