

p	<p>Series: MC BMOD Power 48 Volt Module</p>	<p>Ultra low internal resistance Highest power performance available Lowest RC time constant</p>
---	---	--

> **Features:**

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

> **Applications:**

- » Industrial
- » UPS
- » Power Quality
- » Telecommunication
- » Renewable energy



> **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%	
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

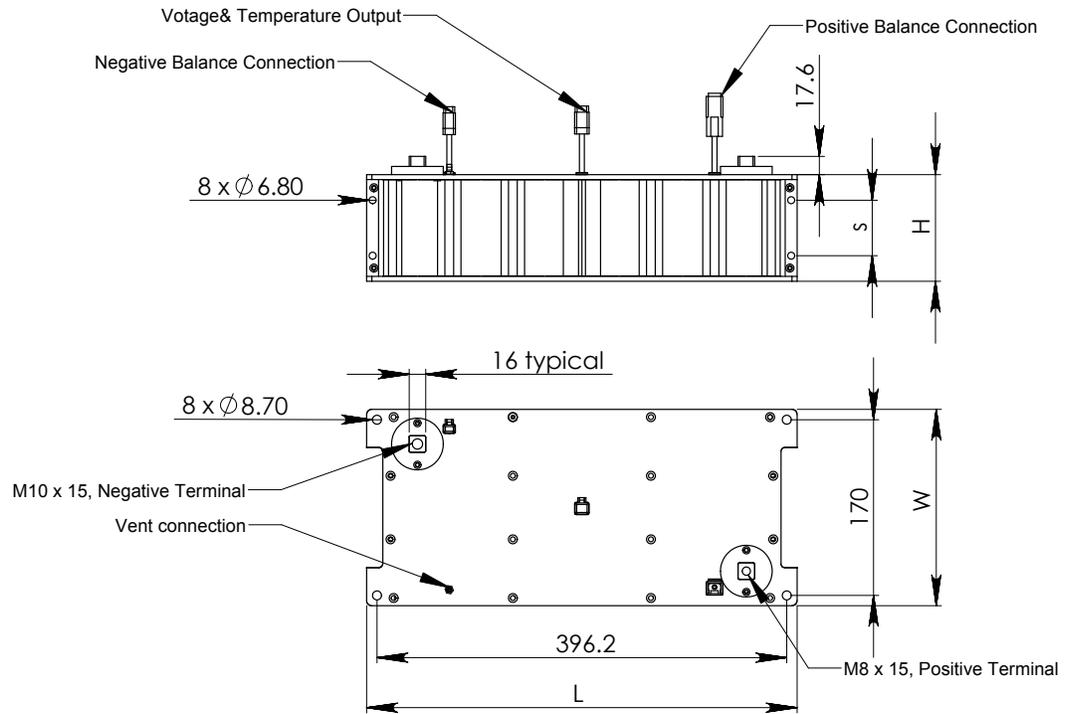
› **BMOD Series 48v Product Specifications:**

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
BMOD0145 P048	140	8.0	6.8	5.2

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

Maxwell Part No.	Rth (C/W)	Isc (A)	E _{max} (Wh/kg)	P _{max} (W/kg)	P _d (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
BMOD0145 P048	0.27	4,800	3.52	6,400	2,600

› **Dimensions:**



Part Number	Vol (l)	Mass (kg)	Size (mm)			
			L (+/- 0.5)	W (+/- 0.5)	H (+/- 0.5)	s (+/- 0.5)
BMOD0083 P048	8.5	11.0	416	190	108	53.7
BMOD0110 P048	9.8	12.4	416	190	124	70.7
BMOD0145 P048	12.6	13.5	416	190	160	89.4

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 M8 through holes. Follow user manual instructions for terminal, balance and output connections.

Patent Pending

Worldwide Headquarters

MAXWELL TECHNOLOGIES
 9244 Balboa Avenue • San Diego, 92123 CA, USA
 PHONE: +(1) 858 503 3300
 FAX: +(1) 858 503 3301
 EMAIL: info@maxwell.com

European Office

MAXWELL TECHNOLOGIES SA
 CH-1728 Rossens • Switzerland
 PHONE: +41 (0) 26 411 85 00
 FAX: +41 (0) 26 411 85 05
 EMAIL: info@maxwell.com

> 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

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

**Disclaimer of Warranty/Limitation of Liability
for Uses in Life Support Devices or Critical Systems**

Maxwell Technologies, Inc. and its Affiliates (“Maxwell”) provide no warranties of any kind either express or implied, including (without limitation) the implied warranties of merchantability and fitness, for uses of its products as components in life support devices or critical systems.

“Life support devices” are devices or systems, which (a) are intended for surgical implant into a living body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with the instructions provided in the labeling can be reasonably expected to result in bodily injury to the user. An example of a life support device includes, but is not limited to, a heart pacemaker.

A “critical system” is any system whose failure to perform can affect the safety or effectiveness of a higher level system, or cause bodily or property injury by loss of control of the higher level device or system. An example of a critical system includes, but is not limited to, aircraft avionics.

You agree that Maxwell will not be liable to you for any loss or damages, either actual or consequential, indirect, punitive, special, or incidental, arising out of or relating to these terms.

These terms are a non-waivable condition to any contract that Maxwell may enter into. An exception to these terms may only be authorized in a writing signed by the President of Maxwell or a duly authorized officer.

Patent Pending

Worldwide Headquarters

MAXWELL TECHNOLOGIES
9244 Balboa Avenue • San Diego, 92123 CA, USA
PHONE: +(1) 858 503 3300
FAX: +(1) 858 503 3301
EMAIL: info@maxwell.com

European Office

MAXWELL TECHNOLOGIES SA
CH-1728 Rossens • Switzerland
PHONE: +41 (0) 26 411 85 00
FAX: +41 (0) 26 411 85 05
EMAIL: info@maxwell.com

Maxwell
TECHNOLOGIES
www.maxwell.com