

## FEATURES AND BENEFITS

- DuraBlue™ Shock and Vibration Technology
- Up to 1,000,000 duty cycles or 10 year DC life\*
- Highest power and energy
- Up to 18 kW/kg of Specific Power<sup>1</sup>
- Up to 4 Wh of Stored Energy<sup>1</sup>
- Threaded terminals or laser-weldable posts

## TYPICAL APPLICATIONS

- High shock and vibration environments
- Automotive subsystems
- Wind turbine pitch control
- Hybrid vehicles
- Rail
- Heavy industrial equipment
- UPS & telecom systems



## PRODUCT SPECIFICATIONS

### ELECTRICAL BCAP3400

Rated Voltage	2.85 V
Minimum Capacitance, initial <sup>2</sup> , rated value	3,400 F
Typical Capacitance, initial <sup>1,2</sup>	3,500 F
Maximum ESR <sub>DC</sub> , initial <sup>2</sup> , rated value	0.28 mΩ
Typical ESR <sub>DC</sub> , initial <sup>1,2</sup>	0.22 mΩ

### POWER & ENERGY

Minimum Usable Specific Power, P <sub>d</sub> <sup>3</sup>	6.7 kW/kg
Typical Usable Specific Power, P <sub>d</sub> <sup>1,3</sup>	8.5 kW/kg
Minimum Impedance Match Specific Power, P <sub>max</sub> <sup>4</sup>	14 kW/kg
Typical Impedance Match Specific Power, P <sub>max</sub> <sup>1,4</sup>	18 kW/kg
Minimum Specific Energy, E <sub>max</sub> <sup>5</sup>	7.4 Wh/kg
Typical Specific Energy, E <sub>max</sub> <sup>1,5</sup>	7.6 Wh/kg
Minimum Stored Energy, E <sub>stored</sub> <sup>6,13</sup>	3.84 Wh
Typical Stored Energy, E <sub>stored</sub> <sup>1,6,13</sup>	3.95 Wh

### SHOCK & VIBRATION

Vibration Specification	ISO 16750-3, Tables 12 & 14
Shock Specification	SAE J2464, IEC 60068-2-27, -29

### SAFETY

Short Circuit Current, typical (Current possible with short circuit from rated voltage. Do not use as an operating current.)	10,000 A
Certifications	UL810a, RoHS, REACH

### THERMAL

Thermal Resistance (R <sub>ca</sub> , Case to Ambient), typical	3.2°C/W
Thermal Capacitance (C <sub>th</sub> ), typical	640 J/°C
Maximum Continuous Current (ΔT = 15°C) <sup>7</sup>	131 A <sub>RMS</sub>
Maximum Continuous Current (ΔT = 40°C) <sup>7</sup>	211 A <sub>RMS</sub>

## TYPICAL CHARACTERISTICS

### TEMPERATURE BCAP3400

Operating temperature range (Cell case temperature)	
Minimum	-40°C
Maximum	65°C

### ELECTRICAL

Leakage Current at 25°C, maximum <sup>8</sup>	18 mA
Absolute Maximum Voltage <sup>9</sup>	3.0 V
Absolute Maximum Current	2,000 A

### LIFE

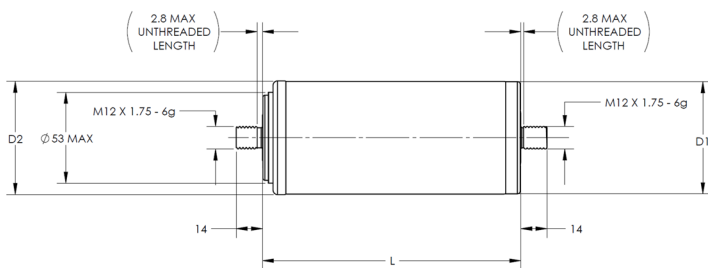
DC Life at High Temperature <sup>2</sup> (held continuously at Rated Voltage & Maximum Operating Temperature)	1,500 hours
Capacitance Change (% decrease from rated value)	25%
ESR Change (% increase from rated value)	110%
Projected DC Life at 25°C <sup>2</sup> (held continuously at Rated Voltage)	10 years
Capacitance Change (% decrease from rated value)	20%
ESR Change (% increase from rated value)	100%
Projected Cycle Life at 25°C <sup>2, 10, 11</sup>	1,000,000 cycles
Capacitance Change (% decrease from rated value)	20%
ESR Change (% increase from rated value)	100%
Shelf Life (Stored uncharged at 25±10°C)	4 years

### PHYSICAL

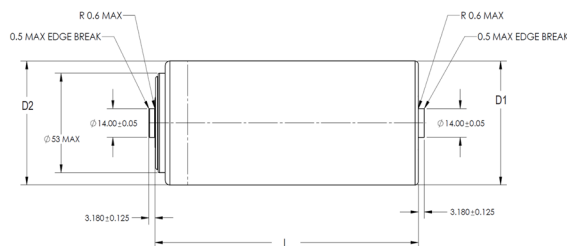
Mass, typical	520 g
Terminals	Threaded <sup>12</sup> or Weldable

\*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.

BCAP3400 P285 K04



BCAP3400 P285 K05



Part Description	Dimensions (mm)			Package Quantity
	L (±0.3mm)	D1 (±0.2mm)	D2 (±0.7mm)	
BCAP3400 P285 K04/05	138	60.4	60.7	15

NOTES

1. Typical values represent mean values of a production sample.
2. Capacitance and ESR<sub>DC</sub> measured using 100 A test current at 25°C per document number 1007239 available at maxwell.com.
3. Per IEC 62391-2,  $P_d = \frac{0.12V^2}{ESR_{DC} \times \text{mass}}$
4.  $P_{\text{max}} = \frac{V^2}{4 \times ESR_{DC} \times \text{mass}}$
5.  $E_{\text{max}} = \frac{\frac{1}{2} CV^2}{3,600 \times \text{mass}}$
6.  $E_{\text{stored}} = \frac{\frac{1}{2} CV^2}{3,600}$
7.  $\Delta T = I_{\text{RMS}}^2 \times ESR \times R_{ca}$
8. After 72 hours at rated voltage. Initial leakage current can be higher.
9. Absolute maximum voltage, non-repeated. Not to exceed 1 second.
10. Cycle using specified test current per waveform in K2 2.7V Series Datasheet.
11. Cycle life varies depending upon application-specific characteristics. Actual results will vary.
12. Maximum Torque is 14 Nm.
13. Per United Nations material classification UN3499, all Maxwell ultracapacitors have less than 10 Wh capacity to meet the requirements of Special Provisions 361. When packaged according to the regulation, both individual ultracapacitors and modules composed of those ultracapacitors shipped by Maxwell can be transported without being treated as dangerous goods (hazardous materials).

MOUNTING RECOMMENDATIONS

Do not reverse polarity. Please refer to document number 1016419, available at maxwell.com for welding recommendations.

MARKINGS

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

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, 7580243, 7791860, 7791861, 7859826, 7883553, 7935155, 8072734, 8098481, 8279580.



**Maxwell Technologies, Inc.**  
**Global Headquarters**  
 3888 Calle Fortunada  
 San Diego, CA 92123  
 USA  
 Tel: +1 (858) 503-3300  
 Fax: +1 (858) 503-3301



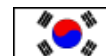
**Maxwell Technologies SA**  
 Route de Montena 65  
 CH-1728 Rossens  
 Switzerland  
 Tel: +41 (0)26 411 85 00  
 Fax: +41 (0)26 411 85 05



**Maxwell Technologies, GmbH**  
 Leopoldstrasse 244  
 80807 München  
 Germany  
 Tel: +49 (0)89 / 4161403 0  
 Fax: +49 (0)89 / 4161403 99



**Maxwell Technologies, Inc.**  
**Shanghai Trading Co. Ltd**  
 Unit A2BC, 12th Floor  
 Huarun Times Square  
 500 Zhangyang Road, Pudong  
 Shanghai 200122, P.R. China  
 Phone: +86 21 3852 4000  
 Fax: +86 21 3852 4099



**Maxwell Technologies Korea Co., Ltd**  
 Room 1524, D-Cube City  
 Office Tower, 15F #662  
 Gyeongin-Ro, Guro-Gu,  
 Seoul, Korea, 152-706  
 Phone: +82 10 4518 9829