

FEATURES AND BENEFITS

- Highest power performance available
- Lowest RC time constant
- Over 1,000,000 duty cycles
- Proprietary material science and packaging technology
- Threaded terminal or weldable posts

TYPICAL APPLICATIONS

- Automotive subsystems
- Grid Stabilization
- Hybrid drive trains
- Rail system power
- Transportation
- Utility vehicles



PRODUCT SPECIFICATIONS

ELECTRICAL

	BCAP0650	BCAP1200	BCAP1500	BCAP2000	BCAP3000
Rated Capacitance ¹	650 F	1,200 F	1,500 F	2,000 F	3,000 F
Minimum Capacitance, initial ¹	650 F	1,200 F	1,500 F	2,000 F	3,000 F
Maximum ESR _{DC} , initial ¹	0.8 mΩ	0.58 mΩ	0.47 mΩ	0.35 mΩ	0.29 mΩ
Rated Voltage	2.70 V	2.70 V	2.70 V	2.70 V	2.70 V
Absolute Maximum Voltage ¹¹	2.85 V	2.85 V	2.85 V	2.85 V	2.85 V
Maximum Continuous Current (ΔT = 15°C) ²	54 A _{RMS}	70 A _{RMS}	84 A _{RMS}	110 A _{RMS}	130 A _{RMS}
Maximum Continuous Current (ΔT = 40°C) ²	88 A _{RMS}	110 A _{RMS}	140 A _{RMS}	170 A _{RMS}	210 A _{RMS}
Maximum Peak Current, 1 second ³	600 A	1,000 A	1,200 A	1,600 A	2,200 A
Leakage Current, maximum ⁴	1.5 mA	2.7 mA	3.0 mA	4.2 mA	5.2 mA

TEMPERATURE

Operating temperature range
(Cell case temperature)

Minimum	-40°C	-40°C	-40°C	-40°C	-40°C
Maximum	65°C	65°C	65°C	65°C	65°C

Storage temperature range
(Stored uncharged)

Minimum	-40°C	-40°C	-40°C	-40°C	-40°C
Maximum	70°C	70°C	70°C	70°C	70°C

PHYSICAL

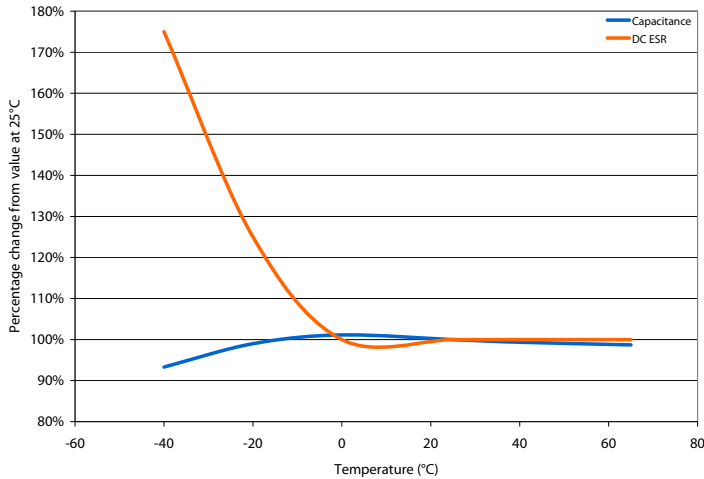
Mass, typical	160 g	260 g	280 g	360 g	510 g
Terminals	Threaded or Weldable	Threaded or Weldable	Threaded or Weldable	Threaded or Weldable	Threaded or Weldable
Vibration	IEC 16750	IEC 16750	IEC 16750	IEC 16750	IEC 16750
Shock	SAE J2464	SAE J2464	SAE J2464	SAE J2464	SAE J2464

PRODUCT SPECIFICATIONS (Cont'd)

POWER & ENERGY	BCAP0650	BCAP1200	BCAP1500	BCAP2000	BCAP3000
Usable Specific Power, P_d^5	6,800 W/kg	5,800 W/kg	6,600 W/kg	6,900 W/kg	5,900 W/kg
Impedance Match Specific Power, P_{max}^6	14,000 W/kg	12,000 W/kg	14,000 W/kg	14,000 W/kg	12,000 W/kg
Specific Energy, E_{max}^7	4.1 Wh/kg	4.7 Wh/kg	5.4 Wh/kg	5.6 Wh/kg	6.0 Wh/kg
Stored Energy ⁸	0.66 Wh	1.22 Wh	1.52 Wh	2.03 Wh	3.04 Wh
LIFE					
High Temperature¹ (at Rated Voltage & Maximum Operating Temperature)	1,500 hours	1,500 hours	1,500 hours	1,500 hours	1,500 hours
Capacitance Change (% decrease from minimum initial value)	20%	20%	20%	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%	100%	100%	100%
Room Temperature¹ (at Rated Voltage & 25°C)	10 years	10 years	10 years	10 years	10 years
Capacitance Change (% decrease from minimum initial value)	20%	20%	20%	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%	100%	100%	100%
Cycle Life^{1,9}	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Capacitance Change (% decrease from minimum initial value)	20%	20%	20%	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%	100%	100%	100%
Test Current	65 A	100 A	100 A	100 A	100 A
Shelf Life^{1,10} (Stored uncharged up to a maximum storage temperature)	2 years	2 years	2 years	2 years	2 years
SAFETY					
Short Circuit Current, typical (Current possible with short circuit from rated voltage. Do not use as an operating current.)	3,400 A	4,700 A	5,700 A	7,700 A	9,300 A
Certifications	RoHS, UL810a	RoHS, UL810a	RoHS, UL810a	RoHS, UL810a	RoHS, UL810a

TYPICAL CHARACTERISTICS

THERMAL CHARACTERISTICS	BCAP0650	BCAP1200	BCAP1500	BCAP2000	BCAP3000
Thermal Resistance (R _{th} , Case to Ambient), typical ²	6.5°C/W	5.3°C/W	4.5°C/W	3.8°C/W	3.2°C/W
Thermal Capacitance (C _{th}), typical ²	190 J/°C	300 J/°C	320 J/°C	410 J/°C	600 J/°C



NOTES

1. Capacitance and ESR_{DC} measured at 25°C per Document Number 1007239 available at www.maxwell.com.
2. Per Maxwell Document 1007239 available at www.maxwell.com.
3. Maximum Peak current (1 sec) = $\frac{1/2 CV}{C \times \text{ESR}_{\text{DC}} + 1}$
4. After 72 hours at 25°C and rated voltage. Initial leakage current can be higher.
5. Per IEC 62391-2, $P_d = \frac{0.12V^2}{\text{ESR}_{\text{DC}} \times \text{mass}}$
6. $P_{\text{max}} = \frac{V^2}{4 \times \text{ESR}_{\text{DC}} \times \text{mass}}$
7. $E_{\text{max}} = \frac{1/2 CV^2}{3,600 \times \text{mass}}$
8. $E_{\text{stored}} = 1/2 CV^2$
9. Cycle per Document Number 1007239 available at www.maxwell.com.
10. No more than 10% decrease in capacitance from minimum initial capacitance or 50% increase in ESR from maximum initial ESR.
11. Absolute maximum voltage non repeated, not to exceed 1 second.

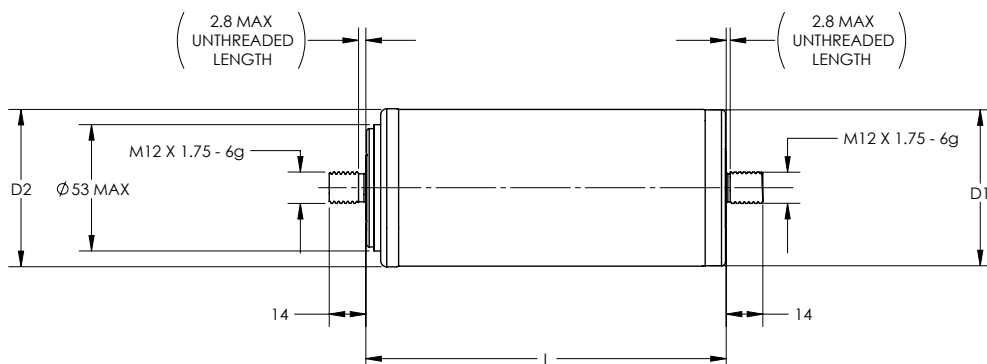
MOUNTING RECOMMENDATIONS

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

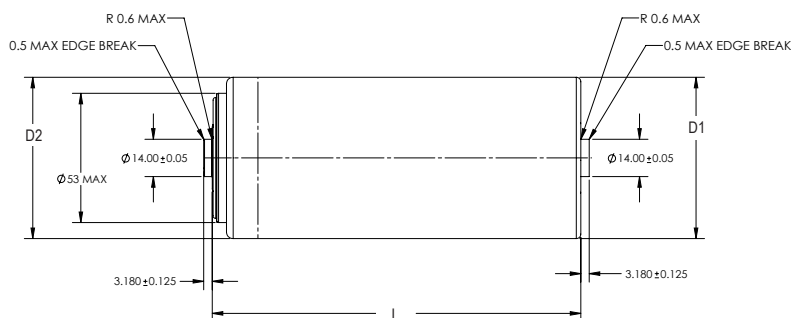
MARKINGS

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

BCAPxxxx P270 K04



BCAPxxxx P270 K05



Part Description	Dimensions (mm)			Package Quantity
	L (± 0.3 mm)	D1 (± 0.2 mm)	D2 (± 0.7 mm)	
BCAP0650 P270 K04/05	51.5	60.4	60.7	15
BCAP1200 P270 K04/05	74	60.4	60.7	15
BCAP1500 P270 K04/05	85	60.4	60.7	15
BCAP2000 P270 K04/05	102	60.4	60.7	15
BCAP3000 P270 K04/05	138	60.4	60.7	15

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: 7511941, 7492574, 7307830, 6.842.330, 6.631.074, 6.804.108, 6.813.139, 7.352.558, 7.295.423, 7.090.946, 7.508.651, 7.492.571, 7.342.770, 6.643.119, 7.384.433, 7.147.674, 7.317.609, 7.495.349, 7.102.877.



Maxwell Technologies, Inc.
Global Headquarters
 5271 Viewridge Court, Suite 100
 San Diego, CA 92123
 USA
 Tel: +1 858 503 3300
 Fax: +1 858 503 3301



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



Maxwell Technologies, GmbH
 Brucker Strasse 21
 D-82205 Gilching
 Germany
 Tel: +49 (0)8105 24 16 16
 Fax: +49 (0)8105 24 16 19



Maxwell Technologies, Inc.
Shanghai Representative Office
 13E, CR Times Square
 500 Zhangyang Road, Pudong
 Shanghai 200122, P.R. China
 Tel: +86 21 5836 8780
 Fax: +86 21 5836 8790