

**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**

<b>ELECTRICAL</b>	<b>BCAP0650</b>	<b>BCAP1200</b>	<b>BCAP1500</b>	<b>BCAP2000</b>	<b>BCAP3000</b>
Rated Capacitance <sup>1</sup>	650 F	1,200 F	1,500 F	2,000 F	3,000 F
Minimum Capacitance, initial <sup>1</sup>	650 F	1,200 F	1,500 F	2,000 F	3,000 F
Maximum ESR <sub>DC</sub> , initial <sup>1</sup>	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 <sup>11</sup>	2.85 V	2.85 V	2.85 V	2.85 V	2.85 V
Maximum Continuous Current (ΔT = 15°C) <sup>2</sup>	54 A <sub>RMS</sub>	70 A <sub>RMS</sub>	84 A <sub>RMS</sub>	110 A <sub>RMS</sub>	130 A <sub>RMS</sub>
Maximum Continuous Current (ΔT = 40°C) <sup>2</sup>	88 A <sub>RMS</sub>	110 A <sub>RMS</sub>	140 A <sub>RMS</sub>	170 A <sub>RMS</sub>	210 A <sub>RMS</sub>
Maximum Peak Current, 1 second (non repetitive) <sup>3</sup>	600 A	1,000 A	1,200 A	1,600 A	2,200 A
Leakage Current, maximum <sup>4</sup>	1.5 mA	2.7 mA	3.0 mA	4.2 mA	5.2 mA
<b>TEMPERATURE</b>					
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
<b>PHYSICAL</b>					
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
Maximum Terminal Torque (K04)	14 Nm	14 Nm	14 Nm	14 Nm	14 Nm

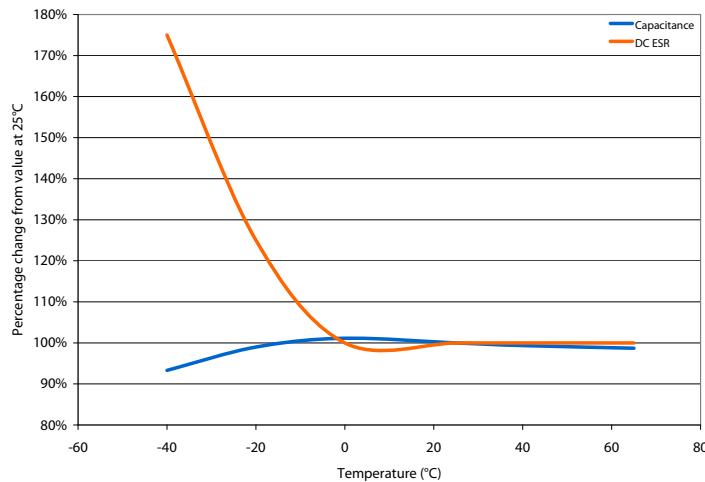
PRODUCT SPECIFICATIONS (Cont'd)

PHYSICAL (Cont'd)	BCAP0650	BCAP1200	BCAP1500	BCAP2000	BCAP3000
Vibration	ISO 16750-3, Table 14	ISO 16750-3, Table 14	ISO 16750-3, Table 14	ISO 16750-3, Table 14	ISO 16750-3, Table 14
Shock	SAE J2464	SAE J2464	SAE J2464	SAE J2464	SAE J2464
POWER & ENERGY					
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 <sup>8</sup>	0.66 Wh	1.22 Wh	1.52 Wh	2.03 Wh	3.04 Wh
LIFE					
High Temperature <sup>1</sup> (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 Temperature <sup>1</sup> (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 <sup>1,9</sup>	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 <sup>1,10</sup> (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 <sub>th</sub> , Case to Ambient), typical <sup>2</sup>	6.5°C/W	5.3°C/W	4.5°C/W	3.8°C/W	3.2°C/W
Thermal Capacitance (C <sub>th</sub> ), typical <sup>2</sup>	190 J/°C	300 J/°C	320 J/°C	410 J/°C	600 J/°C

### ESR AND CAPACITANCE VS TEMPERATURE



### NOTES

1. Capacitance and ESR<sub>DC</sub> measured at 25°C per Document Number 1007239 available at [www.maxwell.com](http://www.maxwell.com).
2. Per Maxwell Document 1007239 available at [www.maxwell.com](http://www.maxwell.com).
3. Maximum Peak current (1 sec) =  $\frac{1/2 CV}{C \times ESR_{DC} + 1}$
4. After 72 hours at 25°C and rated voltage. Initial leakage current can be higher.
5. Per IEC 62391-2,  $P_d = \frac{0.12V^2}{ESR_{DC} \times mass}$
6.  $P_{max} = \frac{V^2}{4 \times ESR_{DC} \times mass}$
7.  $E_{max} = \frac{1/2 CV^2}{3,600 \times mass}$
8.  $E_{stored} = \frac{1/2 CV^2}{3,600}$
9. Cycle per Document Number 1007239 available at [www.maxwell.com](http://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.

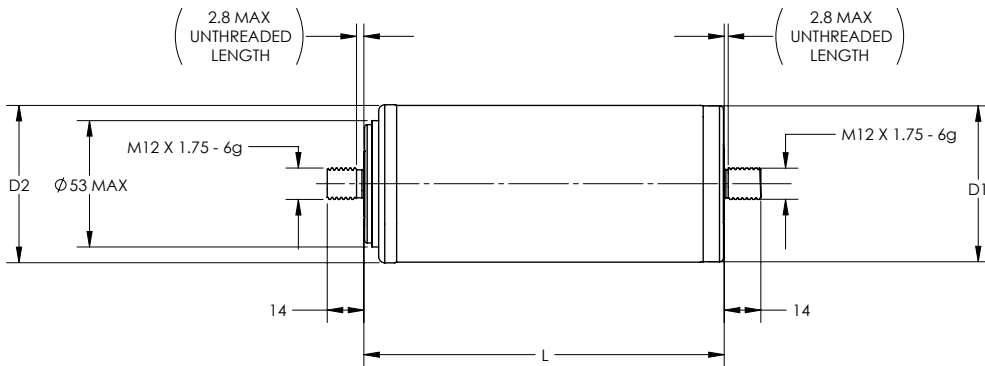
### MOUNTING RECOMMENDATIONS

Do not reverse polarity. Please refer to document number 1016419, available at [maxwell.com](http://maxwell.com) for welding recommendations.

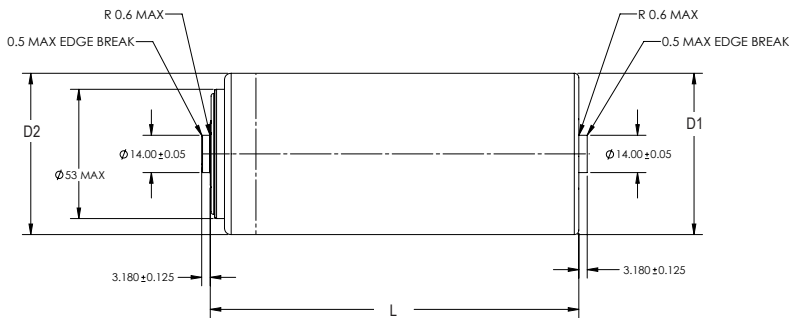
### MARKINGS

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

BCAPxxxx P270 K04



BCAPxxxx P270 K05



Part Description	Dimensions (mm)			Package Quantity
	L (±0.3mm)	D1 (±0.2mm)	D2 (±0.7mm)	
BCAP0650 P270 K04/05	51.5	60.4	60.7	30
BCAP1200 P270 K04/05	74	60.4	60.7	30
BCAP1500 P270 K04/05	85	60.4	60.7	30
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.



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