

2.7V 3400F ULTRACAPACITOR CELL

FEATURES AND BENEFITS

- DuraBlue® Shock and Vibration Technology
- Up to 1,000,000 duty cycles or 10 year DC life*
- High power and energy
- Up to 17.8 kW/kg of Specific Power¹
- Up to 7.1 Wh of Stored Energy¹
- Laser-weldable or threaded terminals

TYPICAL APPLICATIONS

- High shock and vibration environments
- Hybrid vehicles
- Rail
- Heavy industrial equipment



PRODUCT SPECIFICATIONS

ELECTRICAL	BCAP3400
Rated Voltage	2.70 V
Rated Capacitance, initial ²	3,400 F
Typical Capacitance, initial ²	3,615 F
Maximum ESR _{DC} , initial ² , rated value, 5 sec	0.28 mΩ
Typical ESR _{DC} , initial (100 msec) ^{1,2}	0.20 mΩ
Typical ESR _{DC} , initial ^{1,2} , 5 sec	0.22 mΩ
POWER & ENERGY	
Minimum Usable Specific Power, P _d ³	7.4 kW/kg
Typical Usable Specific Power, P _d ^{1,3}	8.5 kW/kg
Minimum Impedance Match Specific Power, P _{max} ⁴	15.5 kW/kg
Typical Impedance Match Specific Power, P _{max} ^{1,4}	17.8 kW/kg
Minimum Specific Energy, E _{max} ⁵	6.7 Wh/kg
Typical Specific Energy, E _{max} ^{1,5}	7.1 Wh/kg
Minimum Stored Energy, E _{stored} ^{6,12}	3.44 Wh
Typical Stored Energy, E _{stored} ^{1,6,12}	3.66 Wh

SHOCK & VIBRATION	
Vibration Specification	ISO 16750-3, Table 12
Shock Specification	IEC 60068-2-27

SAFETY	
Short Circuit Current, typical (Current possible with short circuit from rated voltage. Do not use as an operating current.)	12,000 A
Certifications	UL810a, RoHS, REACH

THERMAL	
Thermal Resistance (R _{ca} , Case to Ambient), typical	3.2°C/W
Thermal Capacitance (C _{th}), typical	640 J/°C
Maximum Continuous Current (ΔT = 15°C) ⁷	130 A _{RMS}
Maximum Continuous Current (ΔT = 40°C) ⁷	210 A _{RMS}

TYPICAL CHARACTERISTICS

TEMPERATURE	BCAP3400
Operating temperature range (Cell case temperature)	
Minimum	-40°C
Maximum	65°C

ELECTRICAL	
Absolute Maximum Voltage ⁸	2.85 V
Absolute Maximum Current	2,600 A
Leakage Current at 25°C, maximum ⁸	10 mA

LIFE*	
DC Life at High Temperature ^{2,10} (held continuously at Rated Voltage & Maximum Operating Temperature)	1,500 hours

Capacitance Change (% decrease from rated value)	20%
ESR Change (% increase from rated value)	100%

Projected DC Life at 25°C ^{2,10} (held continuously at Rated Voltage)	10 years
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Capacitance Change (% decrease from rated value)	20%
ESR Change (% increase from rated value)	100%

Projected Cycle Life at 25°C ^{2,9,11}	1,000,000 cycles
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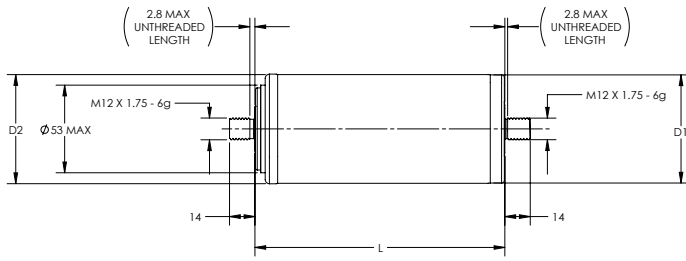
Capacitance Change (% decrease from rated value)	20%
ESR Change (% increase from rated value)	100%

Shelf Life (Stored uncharged at 25±10°C)	4 years
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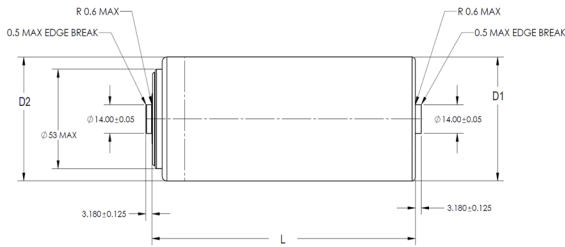
PHYSICAL	
Mass, typical	513 g
Terminals	Weldable/Threaded

*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 P270 K04



BCAP3400 P270 K05



Part Description	Dimensions (mm)			Package Quantity
	L (±0.3mm)	D1 (±0.2mm)	D2 (±0.7mm)	
BCAP3400 P270 K04/05	138	60.4	60.7	15

MOUNTING RECOMMENDATIONS

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

NOTES

1. Typical values represent mean values of a production sample.
2. Capacitance and ESR_{DC} 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. $\Delta T = I_{RMS}^2 \times ESR \times R_{ca}$
8. Absolute maximum voltage, non-repeated. Not to exceed 1 second.
9. Cycle using specified test current per waveform in document 1014032.
10. Test per document 1013804.
11. Cycle life varies depending upon application-specific characteristics. Actual results will vary.
12. 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).

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.

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