

2.7V 310 & 350F ULTRACAPACITOR CELLS

FEATURES AND BENEFITS

- Up to 500,000 duty cycles or 10 year life*
- Low internal resistance
- High power performance
- 310F and 350F capacitance values
- Radial terminals for PCB mounting

TYPICAL APPLICATIONS

- Wind turbine pitch control
- Automotive subsystems
- Small UPS systems
- Consumer and industrial electronics
- Medical equipment
- Portable tools



PRODUCT SPECIFICATIONS

ELECTRICAL

	BCAP0310	BCAP0350
Rated Capacitance ¹	310 F	350 F
Minimum Capacitance, initial ¹	310 F	350 F
Maximum ESR _{DC} , initial ¹	2.2 mΩ	3.2 mΩ
Test Current for Capacitance and ESR _{DC} ¹	31 A	35 A
Rated Voltage	2.70 V	2.70 V / 2.50 V

POWER & ENERGY

Usable Specific Power, P _d ⁴	6,600 W/kg	4,600 W/kg
Impedance Match Specific Power ⁵	14,000 W/kg	9,500 W/kg
Specific Energy, E _{max} ⁶	5.2 Wh/kg	5.9 Wh/kg
Stored Energy ^{7,11}	0.31 Wh	0.35 Wh

SHOCK & VIBRATION

Vibration Specification	IEC 60068.2.6, SAE J2380	IEC 60068.2.6, SAE J2380
Shock Specification	IEC 60068.2.27, SAE J2464	IEC 60068.2.27, SAE J2464

SAFETY

Short Circuit Current, typical (Current possible with short circuit from rated voltage. Do not use as an operating current.)	1,200 A	840 A
Certifications	UL810a, RoHS	UL810a, RoHS

THERMAL

Thermal Resistance (R _{ca} , Case to Ambient), typical ⁸	10.9°C/W	10.9°C/W
Thermal Capacitance (C _{th}), typical ⁸	60 J/°C	60 J/°C
Maximum Continuous Current (ΔT = 15°C) ⁸	25 A _{RMS}	21 A _{RMS}
Maximum Continuous Current (ΔT = 40°C) ⁸	41 A _{RMS}	34 A _{RMS}

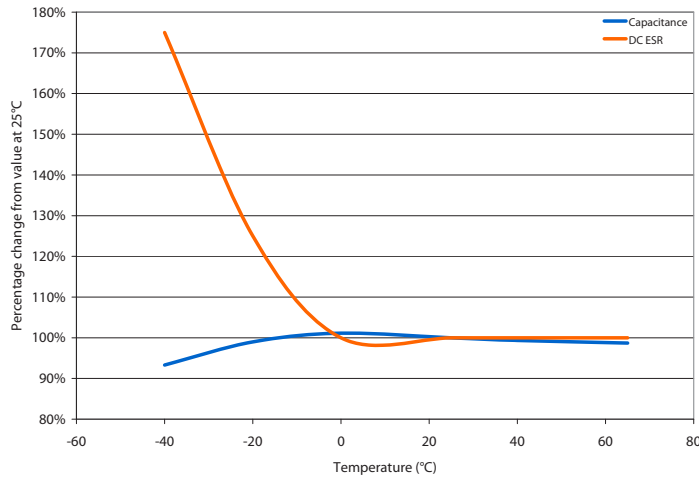
*Results may vary. Additional terms and conditions, including the limited warranty, apply at the time of purchase. See the warranty details for applicable operating and use requirements.

TYPICAL CHARACTERISTICS

TEMPERATURE	BCAP0310	BCAP0350
Operating temperature (Cell case temperature)		
Minimum	-40°C	-40°C
Maximum	65°C	65°C / 70°C
Storage temperature range (Stored uncharged)		
Minimum	-40°C	-40°C
Maximum	70°C	70°C
ELECTRICAL		
Absolute Maximum Voltage ²	2.85 V	2.85 V
Absolute Maximum Current	250 A	170 A
Leakage Current at 25°C, maximum ³	0.45 mA	0.30 mA
LIFE*		
DC Life at High Temperature ¹ (at Rated Voltage & Maximum Operating Temperature)	1,500 hours	1,500 hours
Capacitance Change (% decrease from minimum initial value)	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%
Projected DC Life at 25°C ¹ (held continuously at Rated Voltage)	10 years	10 years
Capacitance Change (% decrease from minimum initial value)	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%
Projected Cycle Life at 25°C ^{1,9,10}	500,000 cycles	500,000 cycles
Capacitance Change (% decrease from minimum initial value)	20%	20%
ESR Change (% increase from maximum initial value)	100%	100%
Test Current	31 A	35 A
Shelf Life (Stored uncharged at 25°C)	4 years	4 years
PHYSICAL		
Mass, typical	60 g	60 g
Terminals	Radial Tab	Radial Tab

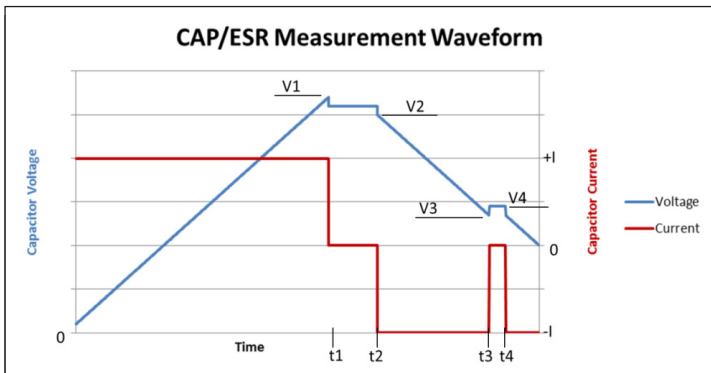
*Results may vary. Additional terms and conditions, including the limited warranty, apply at the time of purchase. See the warranty details for applicable operating and use requirements.

ESR AND CAPACITANCE VS TEMPERATURE

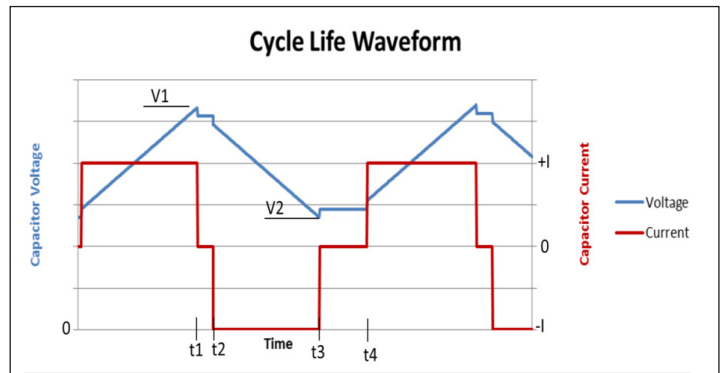


NOTES

1. Capacitance and ESR_{DC} measured at 25°C using specified test current per waveform below.
2. Absolute maximum voltage, non-repeated. Not to exceed 1 second.
3. After 72 hours at rated voltage. Initial leakage current can be higher.
4. Per IEC 62391-2, $P_d = \frac{0.12V^2}{ESR_{DC} \times \text{mass}}$
5. $P_{\text{max}} = \frac{V^2}{4 \times ESR_{DC} \times \text{mass}}$
6. $E_{\text{max}} = \frac{\frac{1}{2} CV^2}{3,600 \times \text{mass}}$
7. $E_{\text{stored}} = \frac{\frac{1}{2} CV^2}{3,600}$
8. $\Delta T = I_{RMS}^2 \times ESR \times R_{ca}$
9. Cycle using specified test current per waveform below.
10. Cycle life varies depending upon application-specific characteristics. Actual results will vary.
11. Per United Nations material classification UN3499, all Maxwell ultracapacitors have less than 10 Wh capacity to meet the requirements of Special Provisions 361. Both individual ultracapacitors and modules composed of those ultracapacitors shipped by Maxwell can be transported without being treated as dangerous goods (hazardous materials) under transportation regulations.



$V1 = V_{\text{rated}}$ $t2 - t1 = 15 \text{ seconds}$ $\text{Capacitance} = I \times (t3 - t2) / (V2 - V3)$
 $V3 = 0.5 \times V_{\text{rated}}$ $t4 - t3 = 5 \text{ seconds}$ $\text{ESR} = (V4 - V3) / I$



$V1 = V_{\text{rated}}$ $t2 - t1 = 5 \text{ seconds (I=0)}$
 $V2 = 0.5 \times V_{\text{rated}}$ $t4 - t3 = 15 \text{ seconds (I=0)}$

MOUNTING RECOMMENDATIONS

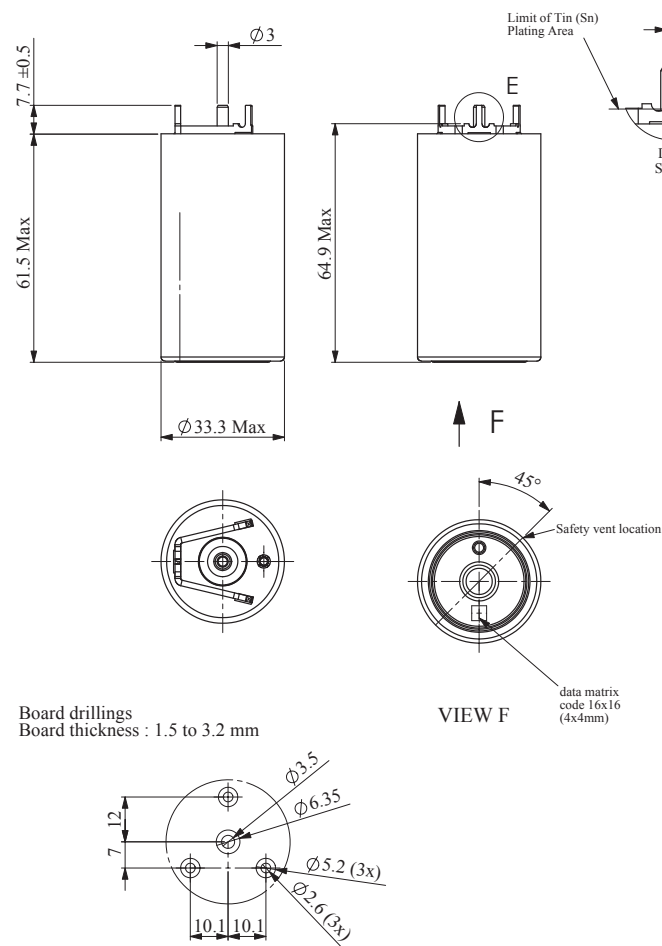
Do not reverse polarity. Please refer to document number 1008238, available at maxwell.com for soldering recommendations.

MARKINGS

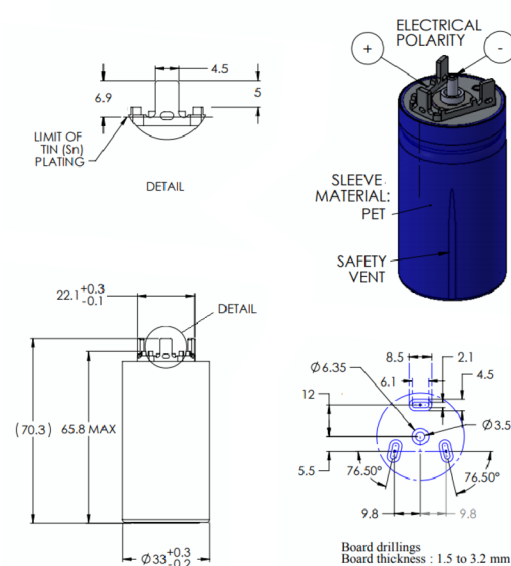
Products are marked with the following information: Rated capacitance, rated voltage, product number, name of manufacturer, positive terminal, warning marking, serial number.

NOTE: Center Pin is negative terminal.

BCAP0350 E270 T11



BCAP0350 E270 T13

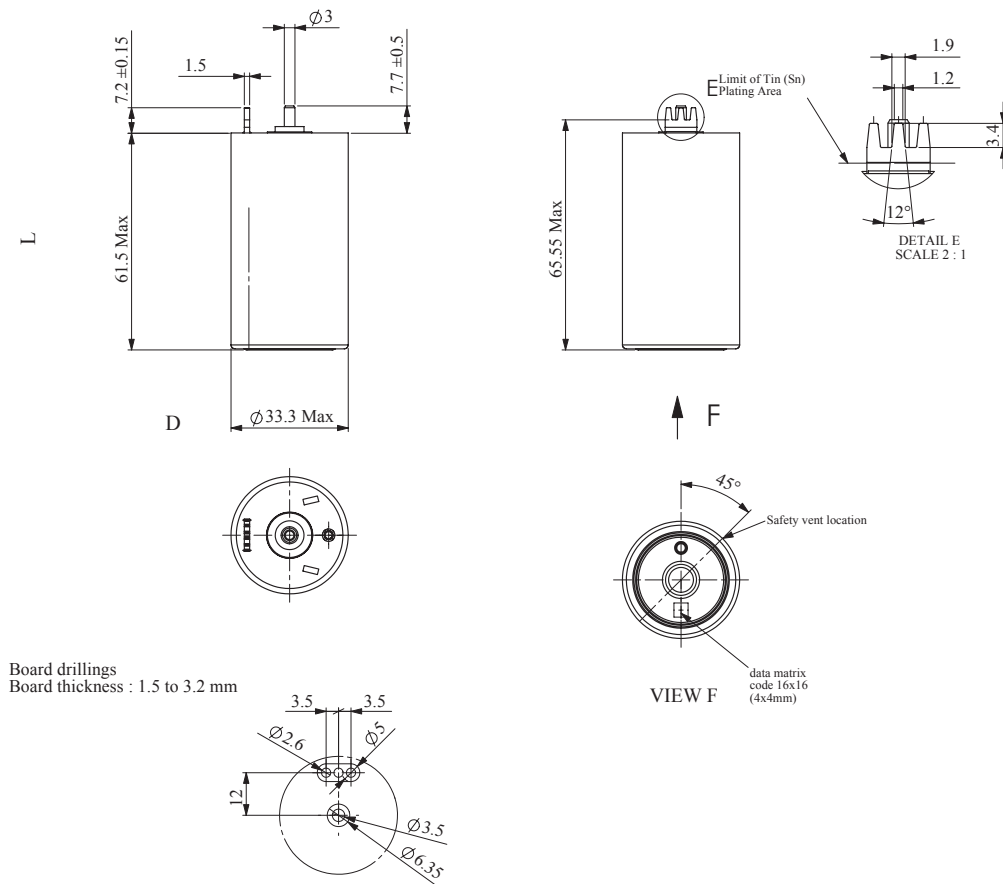


Board drillings
Board thickness : 1.5 to 3.2 mm

Board drillings
Board thickness : 1.5 to 3.2 mm

Part Description	Dimensions (mm)		Package Quantity
	L (max)	D (max)	
BCAP0350 E270 T11/13	61.5	33.3	250

BCAP0310 P270 T10



Part Description	Dimensions (mm)		Package Quantity
	L (max)	D (max)	
BCAP0310 P270 T10	61.5	33.3	250

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. Products and related processes may be covered by one or more U.S. or international patents and pending applications. Please see www.maxwell.com/patents for more information.

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, GmbH
 Leopoldstrasse 244
 80807 Munich
 Germany
 Tel: +49 (0)89 4161403 0
 Fax: +49 (0)89 4161403 99

Maxwell Technologies
Shanghai Trading Co., Ltd.
 Room 1005, 1006, and 1007
 No. 1898, Gonghexin Road,
 Jin An District, Shanghai 2000072,
 P.R. China
 Tel: +86 21 3852 4000
 Fax: +82 21 3852 4099

Maxwell Technologies
Korea Co., Ltd.
 17, Dongtangiheung-ro
 681 Beon-gil, Giheung-gu,
 Yongin-si, Gyeonggi-do 17102
 Republic of Korea
 Tel: +82 31 289 0721
 Fax: +82 31 286 6767

MAXWELL TECHNOLOGIES, MAXWELL, MAXWELL CERTIFIED INTEGRATOR, ENABLING ENERGY'S FUTURE, DURABLU, NESSCAP, XP, BOOSTCAP, D CELL and their respective designs and/or logos are either trademarks or registered trademarks of Maxwell Technologies, Inc., and/or its affiliates, and may not be copied, imitated or used, in whole or in part, without the prior written permission Maxwell Technologies, Inc. All contents copyright © 2019 Maxwell Technologies, Inc. All rights reserved. No portion of these materials may be reproduced in any form, or by any means, without prior written permission from Maxwell Technologies, Inc.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Supercapacitors](#) / [Ultracapacitors](#) category:

Click to view products by [Maxwell](#) manufacturer:

Other Similar products are found below :

[C-TEC1225 P](#) [LX055105A](#) [SCCY73B407SLBLE](#) [CDCL3000C0-002R85STB](#) [MDCM0058C0-0016R0TBZ](#) [FE0H473ZF](#) [MAL223551012E3](#)
[MAL223551014E3](#) [MAL223551015E3](#) [MAL223551016E3](#) [MAL223551006E3](#) [MAL223551007E3](#) [MAL223551001E3](#) [MAL223551008E3](#)
[MAL219612474E3](#) [MAL219632473E3](#) [DRE10/2.5](#) [DRL106S0TI25RRDAP](#) [DRL226S0TK25RR](#) [106DCN2R7M](#) [SCCT30B156SRB](#)
[SCMR14C474MSBA0](#) [SCMR22C155MSBA0](#) [FT0H225ZF](#) [GW209F](#) [TV1020-3R0605-R](#) [SCCX50B207VSB](#) [PAS0815LS2R5105](#)
[HVZ0E475NF](#) [SCMR18F105PSBA0](#) [FT0H565ZF](#) [FE0H224ZF](#) [FCS0H473ZFTBR24](#) [SCCT30E156SRB](#) [MAL222090006E3](#)
[SCCY68B407SSBLE](#) [CPH3225A-2K](#) [SCMT22C505PRBA0](#) [207DCN2R7M](#) [DB5U307W35050HA](#) [DB5U407W35060HA](#) [DGH505Q5R5](#)
[DGH505Q2R7](#) [DGH705Q2R7](#) [DGH506Q2R7](#) [DGH357Q2R7](#) [DGH335Q2R7](#) [DGH256Q2R7](#) [DGH255Q5R5](#) [DGH207Q2R7](#)