

## Power Ring Film Capacitor 1000 $\mu$ F, 1300 Vdc

The 700D108913-643 Power Ring is a 1300Vdc, 1000  $\mu$ F DC Link Capacitor with an ESR of 314 micro-Ohms at 20kHz and an ESL of less than 5nH.



### Electrical Specifications

Part #: 700D643

Capacitance/Tolerance: 1000  $\mu$ F  $\pm$ 10%

DC Voltage Rating: 1300 Vdc

Dielectric/Construction: Metallized polypropylene.  
Single section design

Dielectric Withstand: Units 100% tested at DC potential of 1625 Volts for two minutes at 25°C

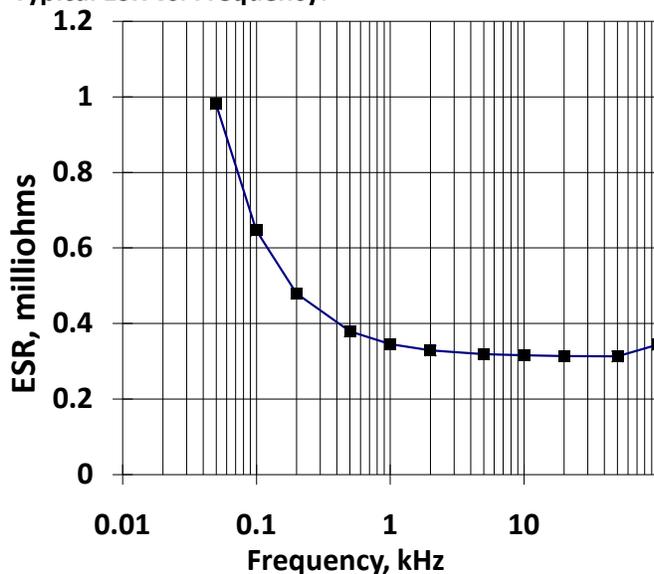
ESL: Less than 5 nH when mounted on a suitable bus structure

Operating Temperature: -40°C to +85°C hotspot temperature at full DC voltage rating

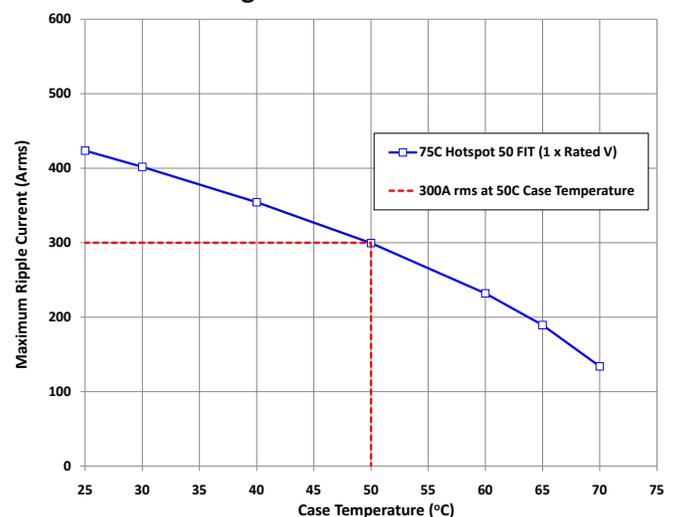
Voltage, Temperature De-rating: De-rate voltage linearly to 1100 Vdc from +85°C to +107°C, with respect to hotspot temperature

System Fault Current Rating (external to the capacitor): 10,000 Amps maximum

Typical ESR vs. Frequency:



RMS Current Rating:



Advanced Conversion reserves the right to amend design data

## Thermal Specifications

Here are two representations of “Capacitor Surface Temperature over Time” for two specific Thermal Resistances of 1°C/W and 0.5°C/W.

Notes regarding these graphs:

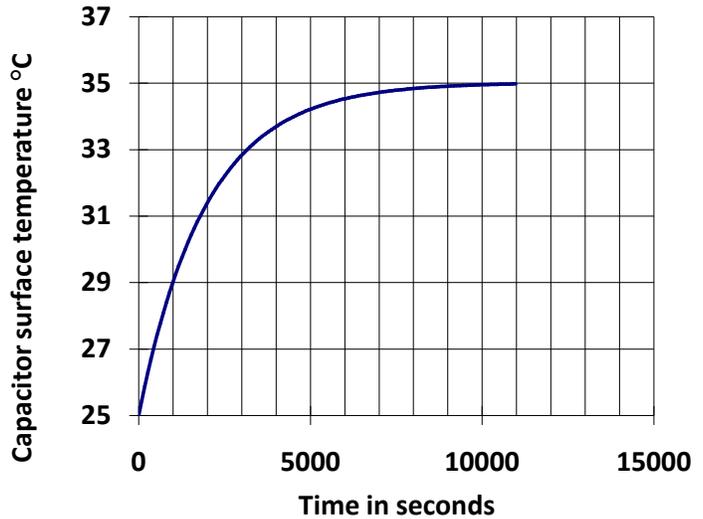
- The thermal resistance is that from capacitor to application. This is a function of the application environment, not the capacitor itself.
- The capacitor can handle extreme current for small duty ratios. Trise occurs very slowly. This is because the capacitor has a high specific heat.
- These charts can be adapted for other currents by multiplying y axis values for any time by  $(I_{app}/250)^2$
- Internal capacitor Trise is added to the capacitor surface/terminal temperature.
- Terminals are assumed to be at case temperature.

## Mechanical Specifications

<b>Dimensions:</b>	Refer to layout details
<b>Terminals:</b>	Tin plated copper, 0.032" thick
<b>Encapsulation:</b>	Molded polymer case, potted with RTV
<b>Marking:</b>	
APCS	company identification
700D643	“short form” part number
1000 $\mu$ F $\pm$ 10%	Capacitance value and tolerance
1300 Vdc	DC voltage rating
yyww-lot#-unit	12-digit serial number (date code, lot number, unit number)

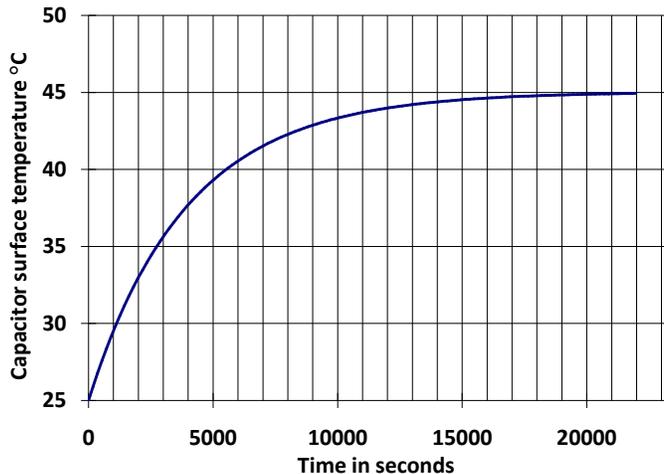
### Sample 1.

Capacitor surface temperature rise above application environment @ 250 Amps RMS current load, 10 kHz.  
Thermal resistance = 0.5°C/W:



### Sample 2.

Capacitor surface temperature rise above application environment @ 250 Amps RMS current load, 10 kHz.  
Thermal resistance = 1°C/W:

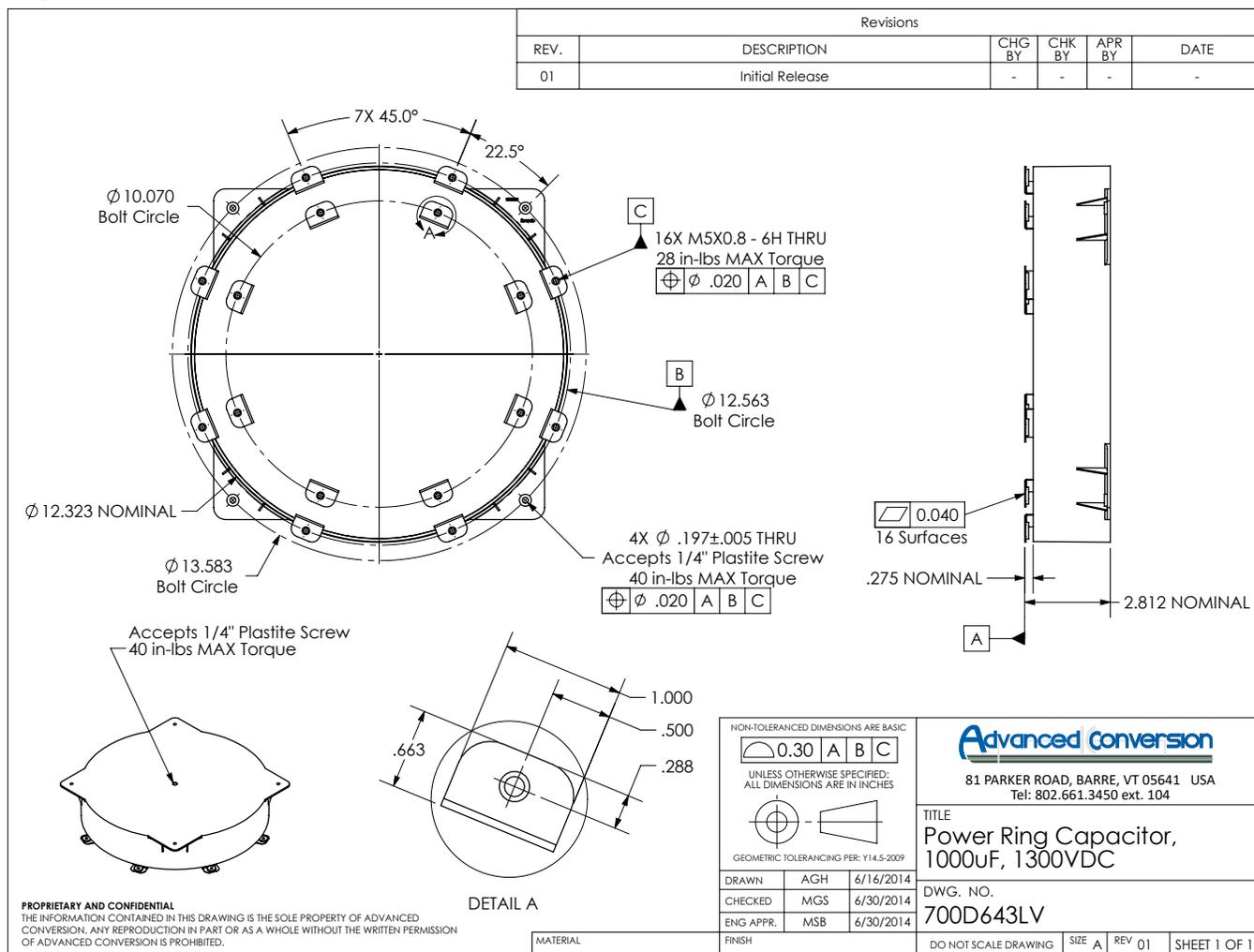


### Mechanical Mounting and Additional Thermal Notes:

This capacitor is optimized for extremely low self inductance when connected to a suitable laminar bus structure. The capacitor internal heating is VERY small, and other bus structure heat sources are very likely significantly higher than the heat added to the bus by the capacitor. Capacitor dissipation is approximately 12.5W at 200Arms, from 1-100kHz. It is highly recommended to use infrared thermal imaging from a system cold start to determine the location and relative magnitude of thermal input to the bus. The capacitor may well function as a thermal conduit for

bus structure heat, and it will be very possible that the capacitor internal hot spot is less than the terminal temperature. Thermal contour maps are available for some representative conditions.

### Layout Details:



Contact Advanced Conversion to discuss your specific requirements.

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**At the Leading Edge of Film Capacitor Technology**