

## Product Bulletin

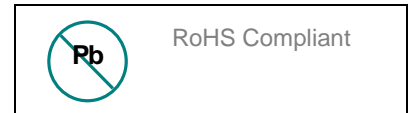
### HS1 series – High Temperature, Single Cell Supercapacitors

HS1 series supercapacitors offer a very low profile, cost-effective and high performance solution to the power delivery limitations of batteries and other current-limited energy sources in an environmentally robust package.

#### CAP-XX high temperature supercapacitors:

- Store sufficient energy to meet large power surges (high capacitance)
- Provide the power to meet peak current loads (best in class ESR)
- Offer long-life performance at up to 2.75V (low dESR & leakage current)
- Operate across a wide environmental range (-40°C to +85°C)
- The smallest and thinnest form factor for any given ESR and capacitance

CAP-XX Product Name	DC Capacitance <sup>1</sup> (± 20%) <sup>2</sup>	ESR <sup>1</sup> (± 20%) <sup>2</sup>	Maximum Thickness
HS103F	400 mF	40 mΩ	1.10 mm
HS106F	1100 mF	40 mΩ	1.20 mm



Other products available to order			
HS102F	300 mF	60 mΩ	0.90 mm
HS104F	550 mF	35 mΩ	1.20 mm
HS111F	650 mF	30 mΩ	1.40 mm
HS121F	800 mF	55 mΩ	1.00 mm
HS113F	1400 mF	35 mΩ	1.40 mm

Reduce voltage drops and DC/DC requirements in consumer and industrial devices

Extend battery life, run-time and stand-by time, particularly at low temperatures

Parameter	Minimum	Nominal	Maximum
Operating Temp	-40°C	+25°C	+85°C <sup>3</sup>
Storage Temp	-40°C	+25°C	+85°C
Operating Voltage		2.75V	
Leakage Current <sup>3</sup>		1μA	2μA
Pulse Current	30A (single pulse. +ve & -ve terminal short circuited)		
ESR change with Temp	75% of nominal @ +75°C		180% of nominal @ -20°C
Dimensions	38.5 x 16.5mm	39.0 x 17.0mm	39.5 x 17.5mm

Protect against voltage transients (e.g., drop test) and electromagnetic interference

Solve current limitations of e.g., USB, PCMCIA, PCI & CF ports, fuel cells, solar cells, etc.

#### Notes

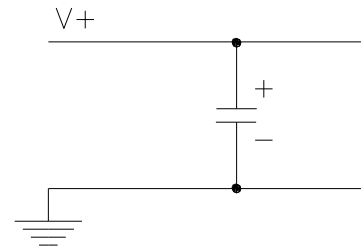
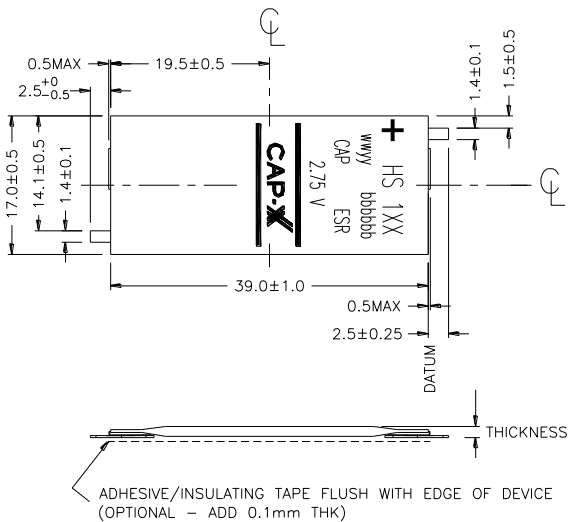
1. Capacitance will decline and ESR will rise over time, at a rate which depends on both voltage and temperature. Further information on supercapacitor ageing and lifetime is available from CAP-XX.
2. Tolerances for Capacitance and ESR are measured at +25°C
3. Leakage current is measured after 72h at voltage at +25°C

**Mounting:** Adhesive/insulating tape can be added to the underside of the product to assist with mounting as shown in the following Mechanical Drawings. The mounting tape increases the overall device thickness by 0.1mm with the release layer removed. To order this option, replace the “F” suffix with a “G” in the CAP-XX Product Name, e.g., HS103G.



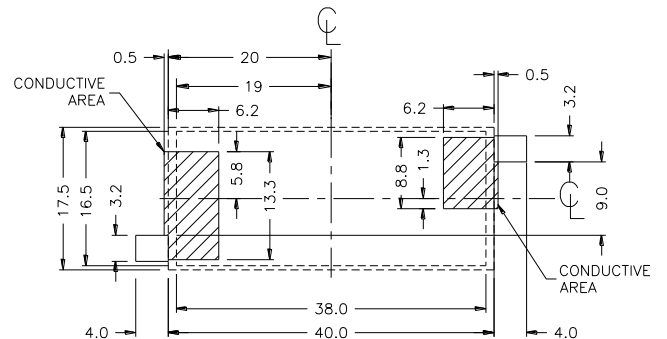
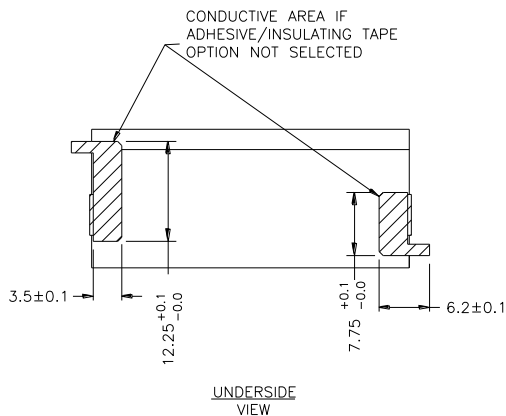
# Power Management Redefined

## Mechanical & Electrical Drawings



PLEASE CONTACT CAP-XX FOR FURTHER INFORMATION

SUGGESTED CONNECTION DETAILS FOR SINGLE CELL SUPERCAP



### SUGGESTED PAD LAYOUT

THE PAD SIZE SHOWN IS BASED ON CAP-XX MANUFACTURING TOLERANCES. THE FINAL PAD SIZE SHOULD ALLOW FOR CUSTOMER MANUFACTURING (PLACEMENT) TOLERANCES.

For further information on all CAP-XX products and applications, please contact us at

**Asia Pacific:**  
9/12 Mars Rd  
Lane Cove, NSW 2066 Australia  
T: +61 2 9420 0690  
F: +61 2 9420 0692  
E: [asiasales@cap-xx.com](mailto:asiasales@cap-xx.com)  
W: [www.cap-xx.com](http://www.cap-xx.com)

**Americas:**  
1709 Crooked Pine Dr.  
Myrtle Beach, SC 29575 USA  
T: +1 843 215 2854  
F: +1 843 215 4419  
E: [americasales@cap-xx.com](mailto:americasales@cap-xx.com)  
W: [www.cap-xx.com](http://www.cap-xx.com)

**Europe, Middle East, Africa:**  
55B Battersea Rise  
London SW11 1HH United Kingdom  
T: +44 7879 690 231  
E: [europesales@cap-xx.com](mailto:europesales@cap-xx.com)  
W: [www.cap-xx.com](http://www.cap-xx.com)

## Product Bulletin

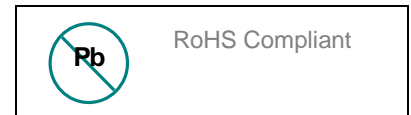
### HS2 series – High Temperature Dual Cell Supercapacitors

HS2 series supercapacitors offer a cost-effective and high performance solution to the power delivery limitations of batteries and other current-limited energy sources in an environmentally robust, low profile package.

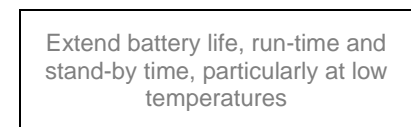
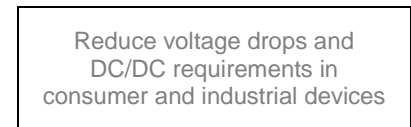
#### CAP-XX high temperature supercapacitors:

- Store sufficient energy to meet large power surges (high capacitance)
- Provide the power to meet peak current loads (best in class ESR)
- Offer long-life performance at up to 5.5V (low dESR & leakage current)
- Operate across a wide environmental range (-40°C to +85°C)
- The smallest and thinnest form factor for any given ESR and capacitance

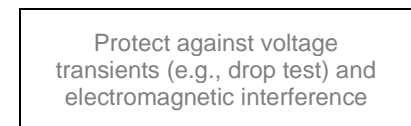
CAP-XX Product Name	DC Capacitance <sup>1</sup> (± 20%) <sup>2</sup>	ESR <sup>1</sup> (± 20%) <sup>2</sup>	Maximum Thickness
HS203F	200 mF	85 mΩ	2.15 mm
HS206F	550 mF	80 mΩ	2.40 mm



Other products available to order			
HS202F	160 mF	115 mΩ	1.90 mm
HS204F	250 mF	65 mΩ	2.50 mm
HS211F	300 mF	55 mΩ	2.90 mm
HS221F	400 mF	105 mΩ	2.00 mm
HS213F	700 mF	65 mΩ	2.90 mm



Parameter	Minimum	Nominal	Maximum
Operating Temp	-40°C	+25°C	+85°C <sup>3</sup>
Storage Temp	-40°C	+25°C	+85°C
Operating Voltage		5.5V	
Leakage Current <sup>3</sup>		1µA	2µA
Pulse Current	30A (single pulse. +ve & -ve terminal short circuited)		
ESR change with Temp	75% of nominal @ +75°C		180% of nominal @ -20°C
Dimensions	38.5 x 16.5mm	39.0 x 17.0mm	39.5 x 17.5mm



#### Notes

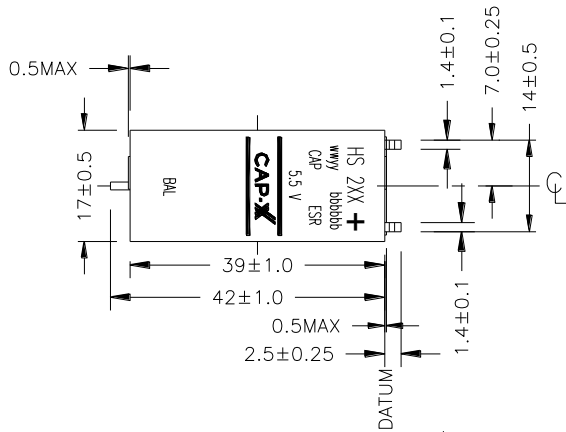
1. Capacitance will decline and ESR will rise over time, at a rate which depends on both voltage and temperature. Further information on supercapacitor ageing and lifetime is available from CAP-XX.
2. Tolerances for Capacitance and ESR are measured at +25°C
3. Leakage current is measured after 72h at voltage at +25°C

**Mounting:** Adhesive/insulating tape can be added to the underside of the product to assist with mounting as shown in the following Mechanical Drawings. The mounting tape increases the overall device thickness by 0.1mm with the release layer removed. To order this option, replace the “F” suffix with a “G” in the CAP-XX Product Name, e.g., HS203G.

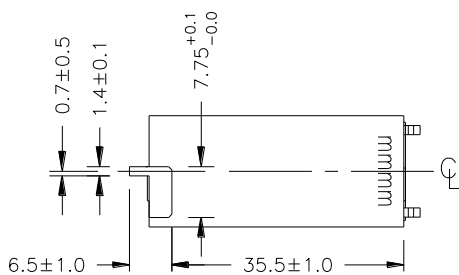


# Power Management Redefined

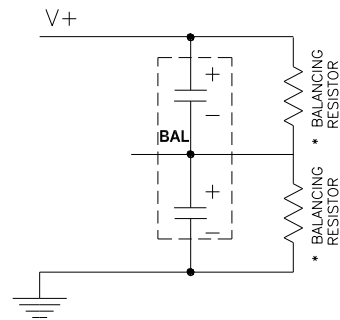
## Mechanical & Electrical Drawings



ADHESIVE/INSULATING TAPE FLUSH WITH EDGE OF DEVICE  
(OPTIONAL - ADD 0.1mm THK)

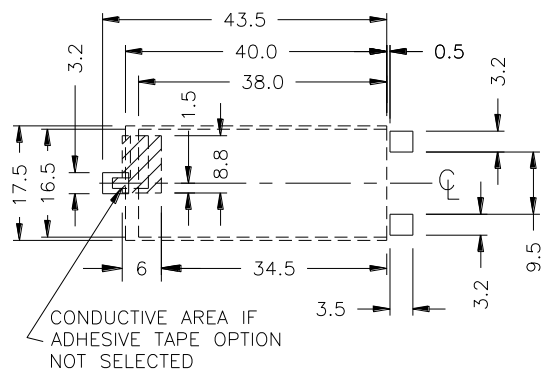


UNDERSIDE VIEW



PLEASE CONTACT CAP-XX FOR FURTHER INFORMATION

SUGGESTED CONNECTION DETAILS FOR 2 - CELL SUPERCAP



SUGGESTED PAD LAYOUT

THE PAD SIZE SHOWN IS BASED ON CAP-XX MANUFACTURING TOLERANCES. THE FINAL PAD SIZE SHOULD ALLOW FOR CUSTOMER MANUFACTURING (PLACEMENT) TOLERANCES.

For further information on all CAP-XX products and applications, please contact us at

<p><b>Asia Pacific:</b> 9/12 Mars Rd Lane Cove, NSW 2066 Australia T: +61 2 9420 0690 F: +61 2 9420 0692 E: <a href="mailto:asiasales@cap-xx.com">asiasales@cap-xx.com</a> W: <a href="http://www.cap-xx.com">www.cap-xx.com</a></p>	<p><b>Americas:</b> 1709 Crooked Pine Dr. Myrtle Beach, SC 29575 USA T: +1 843 215 2854 F: +1 843 215 4419 E: <a href="mailto:americasales@cap-xx.com">americasales@cap-xx.com</a> W: <a href="http://www.cap-xx.com">www.cap-xx.com</a></p>	<p><b>Europe, Middle East, Africa:</b> 55B Battersea Rise London SW11 1HH United Kingdom T: +44 7879 690 231 E: <a href="mailto:europesales@cap-xx.com">europesales@cap-xx.com</a> W: <a href="http://www.cap-xx.com">www.cap-xx.com</a></p>
--	--	--