

XB Supercapacitors

Cylindrical snap-in



Features

- Over 10-year operating life at room temperature
- Low ESR for high power density
- Large capacitance for high energy density
- Long cycle life
- Environmentally friendly electrolyte
- UL Recognized

Applications

- Hybrid battery or fuel cell systems
- High pulse current applications
- UPS / hold-up power

Description

Eaton supercapacitors are unique, ultra-high capacitance devices utilizing electrochemical double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to specific applications that range from a few micro-amps for several days to several amps for milliseconds.



Powering Business Worldwide

Ratings

Capacitance	300 F to 600 F
Maximum working voltage	2.5 V
Surge voltage	2.85 V
Capacitance tolerance	-10% to +10% (+20 °C)
Operating temperature range	-25 °C to +70 °C

Specifications

Capacitance ¹ (F)	Part Number	Maximum ESR ¹ (mΩ) (Equivalent Series Resistance)	Max continuous current ² (A)	Peak current ³ (A)	Max leakage current ^{1,4} (mA)	Max power ⁵ (W)	Stored energy ⁶ (Wh)	Typical mass (g)
300	XB3550-2R5307-R	7	15	120	0.30	220	0.26	69
400	XB3560-2R5407-R	4.5	19	180	0.45	350	0.35	80
600	XB3585-2R5607-R	3.7	29	235	0.70	420	0.52	122

1. Capacitance, ESR and Leakage current are all measured according to IEC 62391-1 at +20 °C

2. 15 °C Temperature Rise

3. Peak Current is for 1 second = $\frac{1}{2}$ Working Voltage x Capacitance / (1 + ESR x Capacitance)

4. Leakage current measured after 72 hours, +20 °C

5. Max. Power = Working Voltage² / 4 / ESR

6. Stored energy = $\frac{1}{2}$ Capacitance x Working Voltage² / 3600

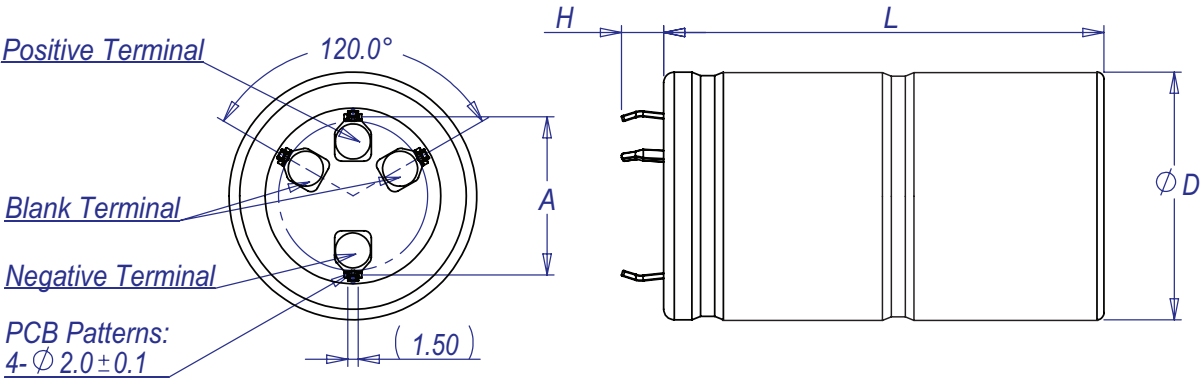
Performance

Parameter		Capacitance change (% of initial value)	ESR (% of max. initial value)
Life			
@ Maximum operating voltage and temp)	1500 hours	≤ 20%	≤ 200%
Charge/discharge cycling ¹	500,000	≤ 20%	≤ 200%
Storage Life- uncharged			
-25 °C to +70 °C	1500 hours	≤ 20%	≤ 200%
≤ 30°C	3 years	≤ 5%	≤ 10%

1. Cycling between maximum operating and 50% of maximum operating voltage at room temperature

Dimensions- mm

Dimensions - mm



Part number	D ± 1.0	L ± 1.0	H ± 1.0	A ± 0.1
XB3550-2R5307-R	35	53	6	22.5
XB3560-2R5407-R	35	63	6	22.5
XB3585-2R5607-R	35	87.5	6	22.5

Part numbering system

XB	3560		-2R5	40	7	-R
Family Code	Size reference- mm		Voltage (V) R = Decimal	Capacitance (μF)		Standard product
	Diameter	Length		Value	Multiplier	
XB=Family Code	35	60	2R5 = 2.5 V	Example: 407 = 40 x 10 ⁷ μF or 400 F		

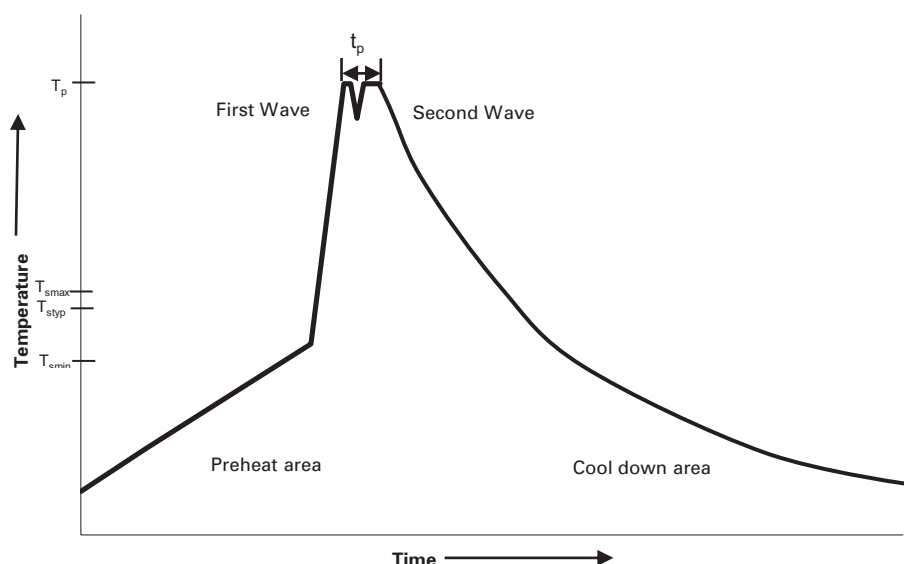
Packaging information

- Standard packaging: Bulk, 20 parts per box

Part marking

- Manufacturer
- Capacitance (F)
- Maximum operating voltage (V)
- Family code (or part number)
- Polarity

Wave solder profile



Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and soak		
• Temperature max. (T_{smax})	100 °C	100 °C
• Time max.	60 seconds	60 seconds
Δ preheat to max Temperature	160 °C max.	160 °C max.
Peak temperature (T_p)*	220 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

Manual solder

+350 °C, 4-5 seconds. (by soldering iron), generally manual, hand soldering is not recommended.

Reflow soldering

Do not use reflow soldering using infrared or convection oven heating methods.

Cleaning/Washing

Avoid cleaning of circuit boards, however if the circuit board must be cleaned use static or ultrasonic immersion in a standard circuit board cleaning fluid for no more than 5 minutes and a maximum temperature of +60 °C. Afterwards thoroughly rinse and dry the circuit boards. In general, treat supercapacitors in the same manner you would an aluminum electrolytic capacitor.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

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