

# XV Supercapacitor

## Cylindrical snap-in



### Features and benefits

- Over 10-year operating life at room temperature
- Ultra low ESR for high power density
- Large capacitance for high energy density
- Long cycle life
- 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 microamps for several days to several amps for milliseconds.

## Specifications

Capacitance	300 F to 600 F
Working voltage	2.7 V
Surge voltage	2.85 V
Capacitance tolerance	-5% to +10%
Operating temperature range	-40 °C to +65 °C
Extended operating temperature range	-40 °C to +85 °C (with voltage derating to 2.3 V @ +85 °C)

## Standard Product<sup>1</sup>

Capacitance (F)	Part Number	Max. initial DC ESR (mΩ) (Equivalent Series Resistance)	Max continuous current <sup>2</sup> (A)	Peak current <sup>3</sup> (A)	Max leakage current <sup>4</sup> (mA)	Max power <sup>5</sup> (W)	Stored energy <sup>6</sup> (Wh)	Typical mass (g)
300	XV3550-2R7307-R	4.5	20	160	0.60	410	0.30	62
400	XV3560-2R7407-R	3.2	26	220	0.85	570	0.41	72
600	XV3585-2R7607-R	2.6	33	320	1.30	790	0.60	108

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 =  $1/2 \text{ Working Voltage} \times \text{Capacitance} / (1 + \text{DC ESR} \times \text{Capacitance})$

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

5. Max. Power =  $\text{Working Voltage}^2 / 4 / \text{DC ESR}$

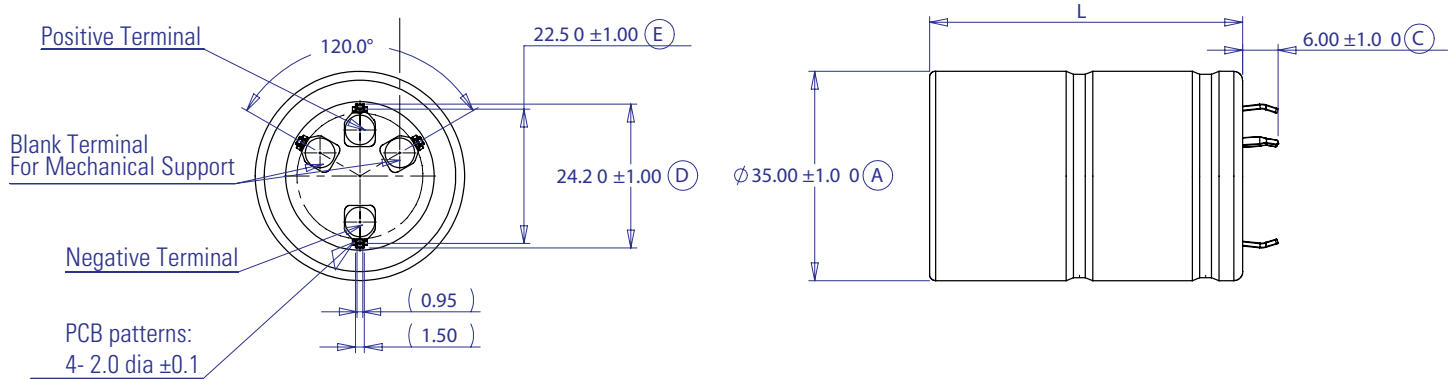
6. Stored energy =  $1/2 \text{ Capacitance} \times \text{Working Voltage}^2 / 3600$

## Performance

Parameter		Capacitance Change (% of initial value)	ESR (% of max. initial value)
Life			
@ Max. operating voltage and temp)	1500 hours	≤ 20%	≤ 200%
Charge/discharge cycling <sup>1</sup>	500,000	≤ 20%	≤ 200%
Storage Life- uncharged			
-40 °C to +65 °C	1500 hours	≤ 20%	≤ 200%
≤ 30 °C	3 years	≤ 5%	≤ 10%

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

**Dimensions (mm)**



Part Number	L ± 1.0
XV3550-2R7307-R	53
XV3560-2R7407-R	63
XV3585-2R7607-R	87.5

**Part Numbering System**

XV	3560	-	2R7	40	7	-R
Family Code	Size reference- mm Diameter      Length		Voltage (V) R = Decimal	Capacitance (µF) Value      Multiplier		Standard product
XV = Family Code	35      60		2R7= 2.7 V	Example: 407= 40 x 10 <sup>7</sup> µF or 400 F		

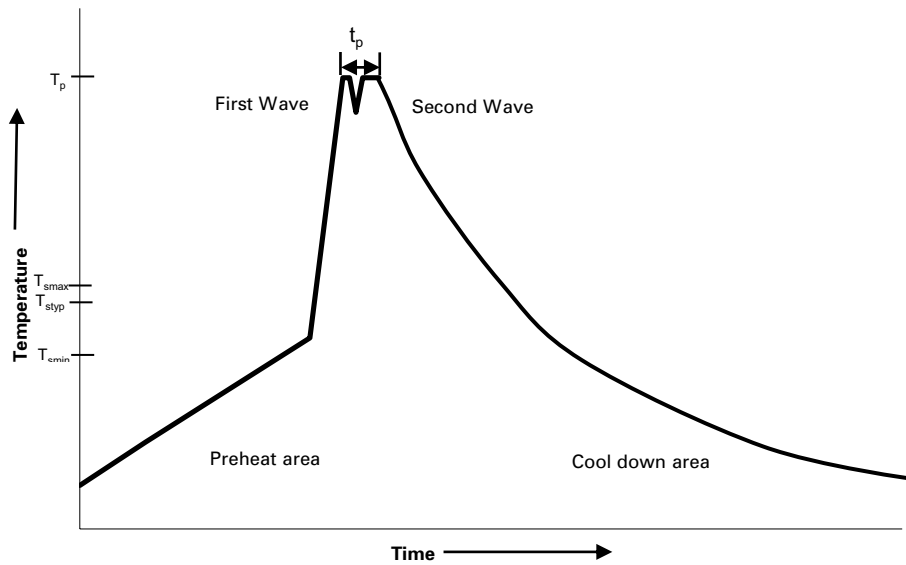
**Packaging Information**

- Standard packaging: 20 pieces per box

**Part Marking**

- Manufacturer
- Capacitance (F)
- Max operating voltage (V)
- Series code (or part number)
- Polarity

### Wave solder profile



Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and soak	<ul style="list-style-type: none"> <li>• Temperature max. (<math>T_{smax}</math>)</li> <li>• Time max.</li> </ul>	<ul style="list-style-type: none"> <li>100 °C</li> <li>60 seconds</li> </ul>
$\Delta$ 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 ( $t_p$ )	<ul style="list-style-type: none"> <li>10 seconds max</li> <li>5 seconds max each wave</li> </ul>	<ul style="list-style-type: none"> <li>10 seconds max</li> <li>5 seconds max each wave</li> </ul>
Ramp-down rate	<ul style="list-style-type: none"> <li>~ 2 K/s min</li> <li>~3.5 K/s typ</li> <li>~5 K/s max</li> </ul>	<ul style="list-style-type: none"> <li>~ 2 K/s min</li> <li>~3.5 K/s typ</li> <li>~5 K/s max</li> </ul>
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.

### 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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