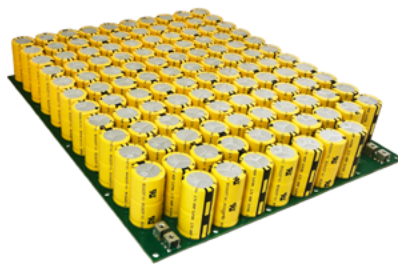


# XVM-315 Supercapacitor PCBA Module



## Description

Eaton supercapacitors are high reliability, high power, ultra-high capacitance energy storage devices utilizing electric double layer capacitor (EDLC) construction combined with proprietary materials and processes. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to applications for backup power, pulse power and hybrid power systems.

They can be applied as the sole energy storage or in combination with batteries to optimize cost, life time and run time. System requirements can range from a few watts to megawatts.

All products feature low ESR for high power density with environmentally friendly materials for a green power solution. Eaton supercapacitors are maintenance-free with design lifetimes up to 20 years\* and operating temperatures down to -40 °C and up to +85 °C.

## Features and benefits

- Energy storage module for ride-through power
- Long life energy storage, up to 20 years\*
- Easy integration into rack based system
- Wide operating temperature range
- High voltage for maximum efficiency
- High efficiency (>98%) under broad operating conditions
- High reliability, green solution
- Low operating costs and maintenance free

## Applications

- UPS Backup power
- Material handling systems
- Peak power shaving, pulse power

\* Supercapacitor lifetimes vary based on charge voltage and temperature. See Eaton's application guidelines or contact your local Eaton sales representative for more information on lifetime estimates.



Powering Business Worldwide

## Ratings

Capacitance	2.56 - 5.13 F
Maximum working voltage	315.9 V
Surge voltage	333.4 V
Capacitance tolerance	-5% to +20% (+20 °C)
Operating temperature range	-40 °C to +65 °C
Extended temperature range	-40 °C to +85 °C (with linear derating to 269.1 V @ +85 °C)

## Specifications

Capacitance <sup>1</sup> (F)	Part number	Maximum initial ESR <sup>1</sup> (Ω)	Nominal leakage current <sup>2</sup> (mA)	Stored energy <sup>3</sup> (Wh)	Peak power <sup>4</sup> (kW)	Pulse current <sup>5</sup> (A)
2.56	XVM-315R9255-R	0.53	23	35.5	47.1	171.6
3.42	XVM-315R9345-R	0.38	24	47.4	65.7	234.9
5.13	XVM-315R9515-R	0.32	25	71.1	78	306.7

## Performance

Parameter (F)	Capacitance change (% of initial value)	ESR (% of maximum initial value)
Life (1500 hours at maximum temperature and voltage)	≤ 20%	≤ 200%
Storage – 3 years (uncharged, +35 °C)	≤ 5%	≤ 10%
Charge/Discharge Cycles (500,000 at +20 °C)	≤ 30%	≤ 200%

1. Capacitance, Equivalent Series Resistance (ESR) measured according to IEC62391-1 at +20 °C, with current in milliamps (mA) = 8°C\*V

2. Leakage current at +20 °C after 72 hour charge and hold at rated voltage

3. Stored energy (Wh) =  $\frac{0.5 \times C \times V^2}{3600}$

4. Peak power (W) =  $\frac{V^2}{4 \times \text{ESR}}$

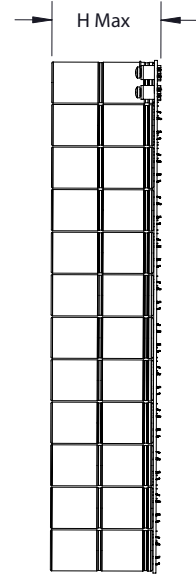
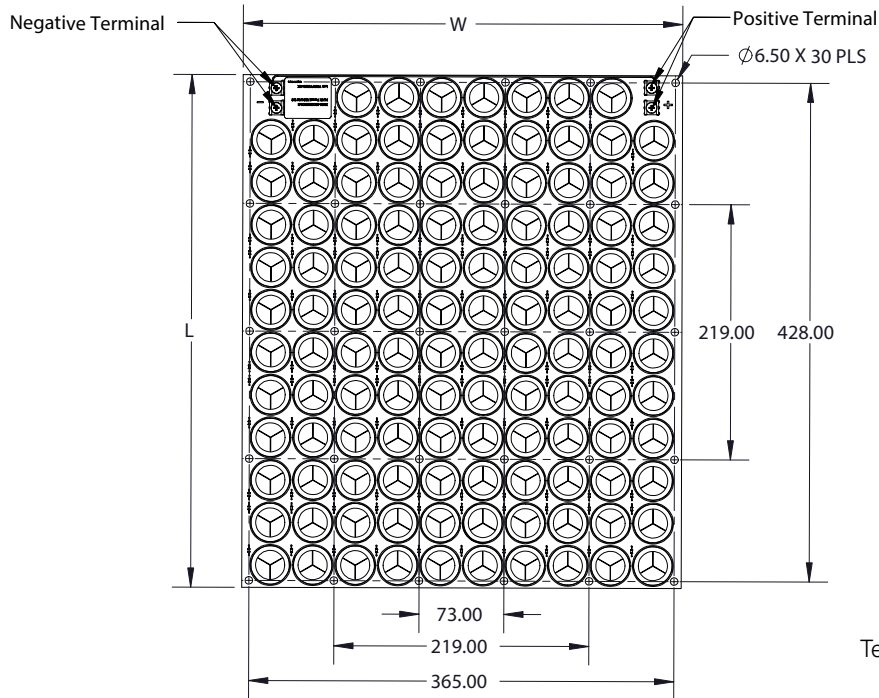
5. Pulse current in Amps (A), 1 second discharge from maximum working voltage to half rated voltage. =  $\frac{0.5 \times V \times C}{(1 + \text{ESR} \times C)}$

## Standards and certifications

Agency information	UL810a (cells)
Shock and vibration	MIL-STD 202G (Cells)
Environmental	RoHS, HF
Shipping	UN3499, <10 Wh, Non-hazardous when shipped with shorting wire

**Dimensions (mm) and mass (kg)**

Part number	L (maximum)	W (maximum)	H (maximum)	Mass (kg)
XVM-315R9255-R	440	377	60	8.6
XVM-315R9345-R	440	377	70	9.8
XVM-315R9515-R	440	377	95	13.5



Terminal screws: M5 Philslot  
Nickel-plated brass  
Maximum torque: 20 in-lb/ 2.2 N-m

**Part numbering system**

XVM	-315R9	25	5	-R
Family Code	Voltage (V) R= decimal	Capacitance (µF)		
		Value	Multiplier	
XVM = Family code	315R9 = 315.9 V	Example 255 = 2.5 x 10 <sup>5</sup> µF or 2.5 F		Standard product

**Packaging information**

- Standard packaging: 1 piece per box

**Part marking**

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

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.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

**Eaton**  
**Electronics Division**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com/electronics

© 2019 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. 10937 BU-MC19067  
September 2019

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

