# PB Supercapacitors Cylindrical pack











### **Features**

- 5.0 Volts
- Low Equivalent Series Resistance (ESR)
- · High capacitance
- · Long cycle life
- Low leakage currents
- · UL recognized

## **Applications**

- · Bridge or hold-up power
- · Memory backup
- · Battery swap out

# Description

Eaton PowerStor supercapacitors are unique, ultrahigh 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.



# Ratings

Capacitance	0.1 F to 1.0 F				
Maximum working voltage	5.0 V				
Surge voltage	6.0 V				
Capacitance tolerance	-20% to +80% (+20 °C)				
Operating temperature range	- 25 °C to +70 °C extended to +85 °C				

## **Specifications**

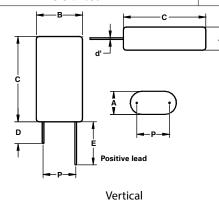
Nominal Capacitance (F)	Vertical Part Number	Horizontal Part Number	Maximum Initial ESR (Ω) (Equivalent Series Resistance) Measured @ 100 Hz	Nominal leakage current (μΑ) after 72 hours @ +20 °C	Nominal dimensions (mm)	Typical mass (grams/piece)
0.1	PB-5R0V104-R	PB-5R0H104-R	4.0	3	5.5 x 10.8 x 12.5	1.1
0.47	PB-5R0V474-R	PB-5R0H474-R	1.0	7	8.5 x 16.8 x 14.0	2.4
1.0	PB-5R0V105-R	PB-5R0H105-R	0.5	12	8.5 x 16.8 x 21.5	3.5

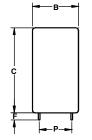
## **Performance**

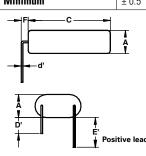
Parameter	Capacitance change (% of initial value)	ESR (% of max. initial value)
Life (1000 hours @ +70 °C, 5.0 Vdc or +85 °C, 4.2 Vdc)	≤ 30%	≤ 300%
Storage - Low and High Temperature (1000 hours @ -25 °C to +70 °C)	≤ 30%	≤ 300%

# Dimensions (mm)

Vertical Part Number	Horizontal Part Number	Α	В	С	ď	D	D'	E	E'	F	P
PB-5R0V104-R	PB-5R0H104-R	6.0	11.3	13.0	0.5	20	15	25	20	2.0	7.3
PB-5R0V474-R	PB-5R0H474-R	9.0	17.3	14.5	0.5	20	15	25	20	2.0	11.8
PB-5R0V105-R	PB-5R0H105-R	9.0	17.3	22.0	0.5	20	15	25	20	2.0	11.8
Tolerances			Maximum	' 1	± 0.02		Min	imum	1	± 0.5	







Horizontal

# Part numbering system

Р	В	_	5	R	0	v	47	4	-R
			Voltage (V) R = Decimal			Capacitance (μF)			
Family Code	Version				Configuration	Value	Multiplier	Standard product	
P Family	B-High capacitance		5R0 = 5	.0 V		V = Vertical H = Horizontal	Example: 474 = 47 x 474 or 0.47 F		

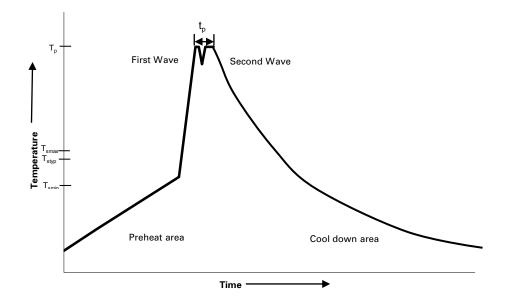
# **Packaging information**

- Standard packaging: Bulk, 100 units per bag
- Larger bulk packages available on request

# Part marking

- Manufacturer
- Capacitance (F)
- Max 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 <sub>smax</sub> )	100 °C	100 °C	
• Time max.	60 seconds	60 seconds	
$\Delta$ preheat to max Temperature	160 °C max.	160 °C max.	
Peak temperature (Tp)*	220 °C − 260 °C	250 °C − 260 °C	
Time at peak temperature (t <sub>p</sub> )	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.

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