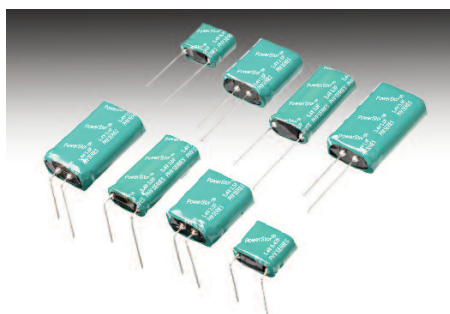


# PHV Supercapacitors

## Cylindrical pack



### Features

- Large capacitance for high energy density
- Ultra-low ESR for high power density

### Applications

- Pulse Power
- Bridging or 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.

## Ratings

|                                      |                                                           |
|--------------------------------------|-----------------------------------------------------------|
| Capacitance                          | 0.5 F to 5.0 F                                            |
| Maximum working voltage              | 5.4 V                                                     |
| Surge voltage                        | 6.0 V                                                     |
| Capacitance tolerance                | -10% to +30% (+20 °C)                                     |
| Operating temperature range          | -40 °C to +65 °C                                          |
| Extended operating temperature range | -40 °C to +85 °C (with linear derating to 4.0 V @ +85 °C) |

## Specifications

| Nominal Capacitance (F) | Vertical Part Number | Horizontal Part Number | Maximum ESR (Ω) (Equivalent Series Resistance) Measured @ 1 kHz |      | Nominal leakage current (μA) after 100 hours @ 5 V, +20 °C | Nominal dimensions (mm) | Typical mass (grams/piece) |
|-------------------------|----------------------|------------------------|-----------------------------------------------------------------|------|------------------------------------------------------------|-------------------------|----------------------------|
| 0.5                     | PHV-5R4V474-R        | PHV-5R4H474-R          | 0.300                                                           | 0.40 | 13                                                         | 8.5 x 16.8 x 14.0       | 2.6                        |
| 1.5                     | PHV-5R4V155-R        | PHV-5R4H155-R          | 0.120                                                           | 0.16 | 18                                                         | 8.5 x 16.8 x 21.5       | 3.0                        |
| 2.5                     | PHV-5R4V255-R        | PHV-5R4H255-R          | 0.075                                                           | 0.08 | 24                                                         | 10.5 x 20.8 x 22.5      | 4.5                        |
| 3.0                     | PHV-5R4V305-R        | PHV-5R4H305-R          | 0.075                                                           | 0.08 | 25                                                         | 8.5 x 16.8 x 31.5       | 4.8                        |
| 5.0                     | PHV-5R4V505-R        | PHV-5R4H505-R          | 0.065                                                           | 0.07 | 28                                                         | 10.5 x 20.8 x 32        | 6.8                        |

## Performance

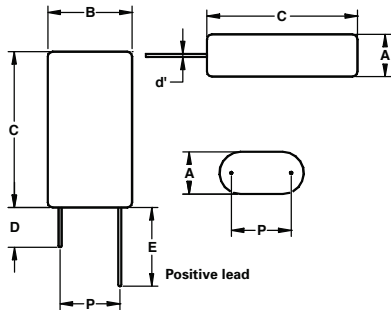
| Parameter                                                           | Capacitance change (% of initial value) | ESR (% of max. initial value) |
|---------------------------------------------------------------------|-----------------------------------------|-------------------------------|
| Life (1000 hours @ +65 °C @ 5.4 Vdc)                                | ≤ 30%                                   | ≤ 200%                        |
| Storage - Low and High Temperature (1000 hours @ -40 °C and +85 °C) | ≤ 30%                                   | ≤ 200%                        |

## Dimensions (mm)

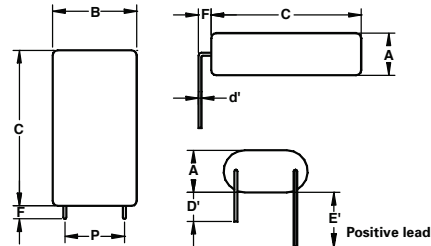
| Vertical Part Number | Horizontal Part Number | A              | B    | C    | d'     | D              | D' | E  | E' | F     | P    |
|----------------------|------------------------|----------------|------|------|--------|----------------|----|----|----|-------|------|
| PHV-5R4V474-R        | PHV-5R4H474-R          | 9.0            | 17.3 | 14.5 | 0.5    | 20             | 15 | 25 | 20 | 2.0   | 11.8 |
| PHV-5R4V155-R        | PHV-5R4H155-R          | 9.0            | 17.3 | 22.0 | 0.5    | 20             | 15 | 25 | 20 | 2.0   | 11.8 |
| PHV-5R4V255-R        | PHV-5R4H255-R          | 11.0           | 21.3 | 23.0 | 0.6    | 20             | 15 | 25 | 20 | 2.0   | 5.3  |
| PHV-5R4V305-R        | PHV-5R4H305-R          | 9.0            | 17.3 | 32.5 | 0.5    | 20             | 15 | 25 | 20 | 2.0   | 11.8 |
| PHV-5R4V505-R        | PHV-5R4H505-R          | 11.0           | 21.3 | 32.5 | 0.6    | 20             | 15 | 25 | 20 | 2.0   | 5.3  |
| <b>Tolerances</b>    |                        | <b>Maximum</b> |      |      | ± 0.02 | <b>Minimum</b> |    |    |    | ± 0.5 |      |

Note: Longer lead is positive.

### Vertical



### Horizontal



## Part numbering system

| P           | HV      | — | 5R4                     | V                              | 15                                           | 5          | -R               |
|-------------|---------|---|-------------------------|--------------------------------|----------------------------------------------|------------|------------------|
| Family Code | Version |   | Voltage (V) R = Decimal | Configuration                  | Capacitance (μF)                             |            |                  |
|             |         |   |                         |                                | Value                                        | Multiplier | Standard product |
| P= Pack     |         |   | 5R4 = 5.4 V             | V = Vertical<br>H = Horizontal | Example: 155 = 15 x 10 <sup>5</sup> or 1.5 F |            |                  |

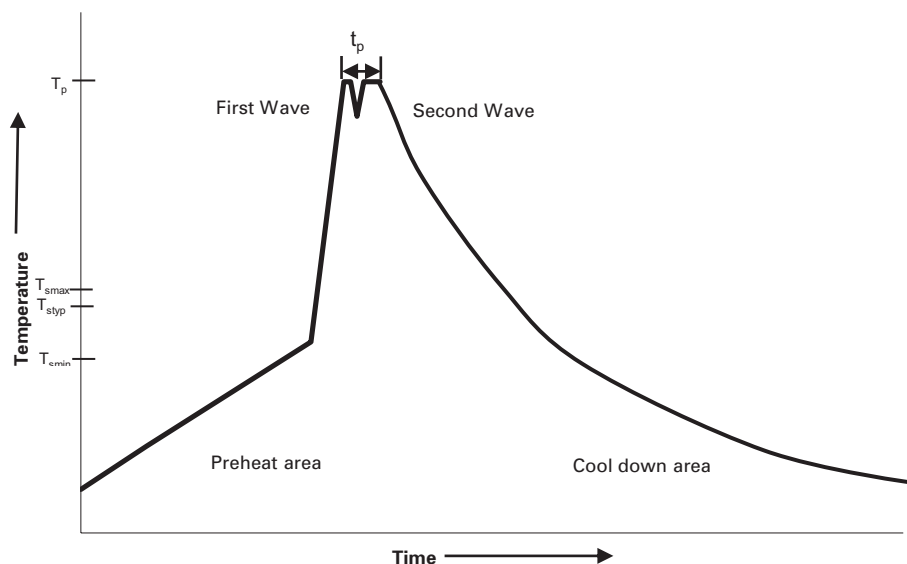
## Packaging information

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

## Part marking

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

## 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                                |
| $\Delta$ 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 ( $t_p$ )  | 10 seconds max<br>5 seconds max each wave | 10 seconds max<br>5 seconds max each wave |
| Ramp-down rate                      | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max | ~ 2 K/s min<br>~3.5 K/s typ<br>~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.

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  
[www.eaton.com/electronics](http://www.eaton.com/electronics)

© 2017 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. 4403 BU-SB13841  
June 2017

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)

[www.lifeelectronics.ru](http://www.lifeelectronics.ru)