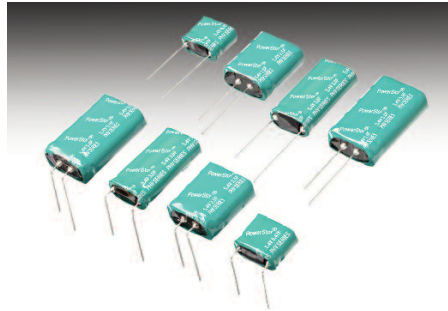


PHV Supercapacitors

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) |
|-------------------------|----------------------|------------------------|---|------------|---|-------------------------|----------------------------|
| | | | Vertical | Horizontal | | | |
| 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 |

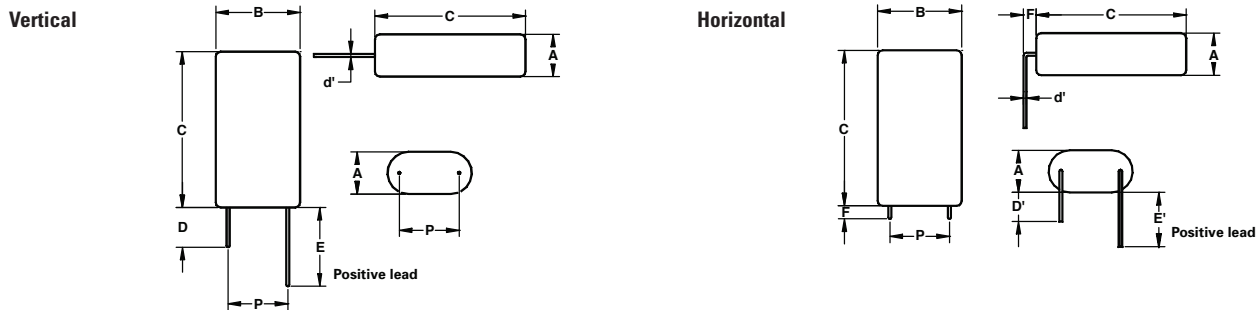
Performance

| 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 |
| Tolerances | | Maximum | | | ± 0.02 | Minimum | | | | ± 0.5 | |

Note: Longer lead is positive.



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 H = Horizontal | Example: 155 = 15 x 10 ⁵ or 1.5 F | | |

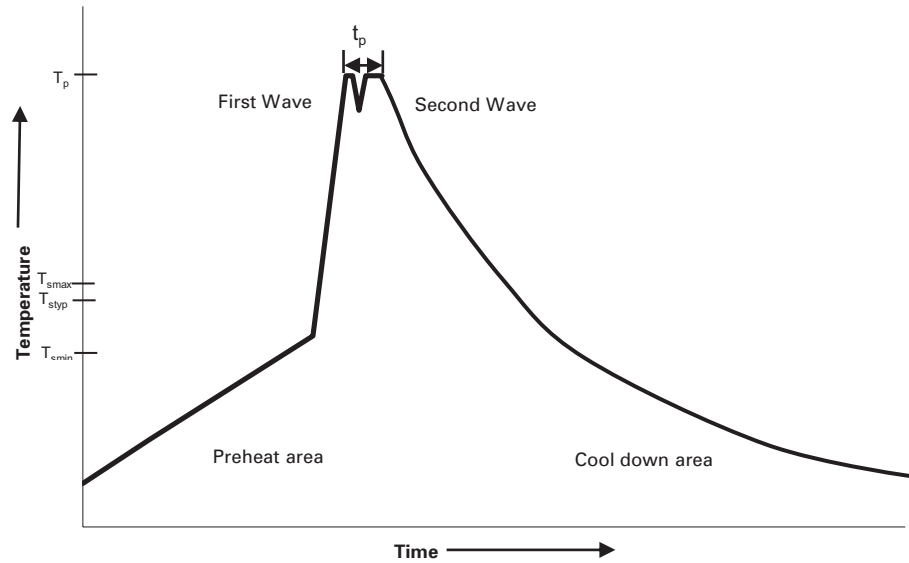
Packaging information

- 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 | <ul style="list-style-type: none"> Temperature max. (T_{smax}) Time max. | <ul style="list-style-type: none"> 100 °C 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) | <ul style="list-style-type: none"> 10 seconds max 5 seconds max each wave | <ul style="list-style-type: none"> 10 seconds max 5 seconds max each wave |
| Ramp-down rate | <ul style="list-style-type: none"> ~ 2 K/s min ~3.5 K/s typ ~5 K/s max | <ul style="list-style-type: none"> ~ 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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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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