PHV Supercapacitors Cylindrical pack









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.

Features

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

Applications

- · Pulse Power
- · Bridging or hold-up power



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 | Maximuı (Ω) (Equi Resistan @ 1 kHz | valent Series ce) Measured | 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

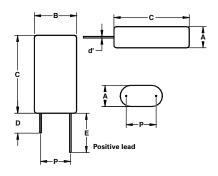
| Parameter | Capacitance change (% of initial value) | ESR (% of max. initial value) |
|---|--|----------------------------------|
| Life (1000 hours @ +65 °C @ 5.4 Vdc) | ≤ 30% | ≤ 200% |
| Storage - Low and High Temperature (1000 hours @ -40 °C and +85 °C) | ≤ 30% | ≤ 200% |

Dimensions (mm)

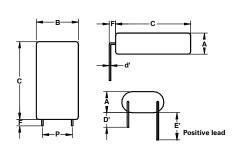
| Vertical Part Number | Horizontal Part Number | Α | В | С | ď | D | D' | E | E' | F | P |
|----------------------|------------------------|-------|------|------|--------|--------|----|----|----|-------|------|
| PHV-5R4V474-R | PHV-5R4H474-R | 9.0 | 17.3 | 14.5 | 0.5 | 20 | 15 | 25 | 20 | 2.0 | 11.8 |
| 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 | | Maxim | ım | | ± 0.02 | Minimu | ım | | | ± 0.5 | |

Note: Longer lead is positive.





Horizontal



Part numbering system

| Р | HV | _ | 5R4 | v | 15 | 5 | -R |
|-------------|---------|---|-------------------------|--------------------------------|--|------------|------------------|
| | | | | | Capacitance (µF) | | |
| Family Code | Version | | Voltage (V) R = Decimal | Configuration | Value | Multiplier | Standard product |
| P= Pack | | | 5R4 = 5.4 V | V = Vertical H = Horizontal | Example: $155 = 15 \times 10^5$ or 1.5 F | | |

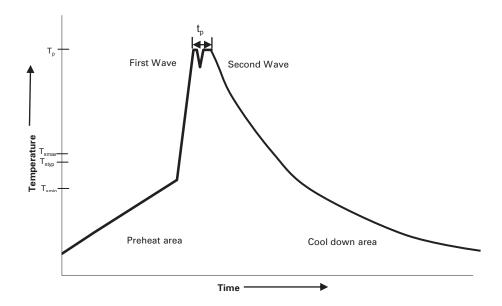
Packaging information

- 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 • Temperature max. (T _{smax}) | 100 °C | 100 °C |
| • Time max. | 60 seconds | 60 seconds |
| Δ 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 _p) | 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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