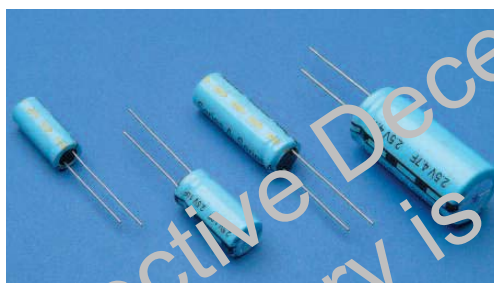


# A Supercapacitors

## Cylindrical cells

RoHS



### 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

- Very low ESR
- Low leakage current
- Long cycle life
- High usable capacity

### Applications

- Pulsed power
- Hold-up power
- DC/DC converters
- Hybrid battery packs
- Valve / solenoid actuation

## Ratings

|                             |                       |
|-----------------------------|-----------------------|
| Capacitance                 | 0.47 F to 4.7 F       |
| Maximum working voltage     | 2.5 V                 |
| Surge voltage               | 3.0 V                 |
| Capacitance tolerance       | -20% to +80% (+20 °C) |
| Operating temperature range | -25 °C to +70 °C      |

## Specifications

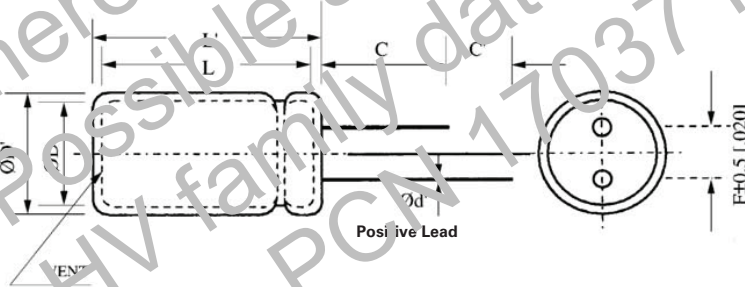
| Capacitance (F) | Part Number    | Nominal ESR ( $\Omega$ )<br>(Equivalent Series Resistance)<br>Measured @<br>1 kHz | Nominal dimensions (mm)<br>(diameter x length) | Typical Mass<br>(grams/piece) |
|-----------------|----------------|---|--|-------------------------------|
| 0.47            | A0820-2R5474-R | 0.150   | 8 20   | 1.8                           |
| 1.0             | A1020-2R5105-R | 0.090   | 10 20.3  | 2.6                           |
| 1.5             | A1030-2R5155-R | 0.060   | 10 30  | 3.8                           |
| 4.7             | A1635-2R5475-R | 0.025   | 16 35  | 10.7                          |

## Performance

| Parameter   | Capacitance change<br>(% of initial value) | ESR<br>(% of max. initial value) |
|---|--|----------------------------------|
| Life (1000 hours @ +70 °C @ 2.5 Vdc)                                | ≤ 30%                                      | ≤ 300%                           |
| Storage - Low and High Temperature (1000 hours @ -25 °C and +70 °C) | ≤ 30%                                      | ≤ 300%                           |

## Dimensions (mm)

| Part Number       | D              | D    | L    | L'   | F           | d            | C              | C   |
|-------------------|----------------|------|------|------|-------------|--------------|----------------|-----|
| A0820-2R5474-R    | 8.0            | 8.5  | 20.5 | 21.0 | 3.5         | 0.50         | 20.0           | 5.0 |
| A1020-2R5105-R    | 10.0           | 10.5 | 21.8 | 22.3 | 5.0         | 0.60         | 20.0           | 5.0 |
| A1030-2R5155-R    | 10.0           | 10.5 | 31.0 | 31.5 | 5.0         | 0.60         | 20.0           | 5.0 |
| A1635-2R5475-R    | 16.0           | 16.5 | 37.5 | 38.0 | 7.5         | 0.80         | 20.0           | 5.0 |
| <b>Tolerances</b> | <b>Maximum</b> |      |      |      | <b>±0.5</b> | <b>±0.02</b> | <b>Minimum</b> |     |



## Part marking

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

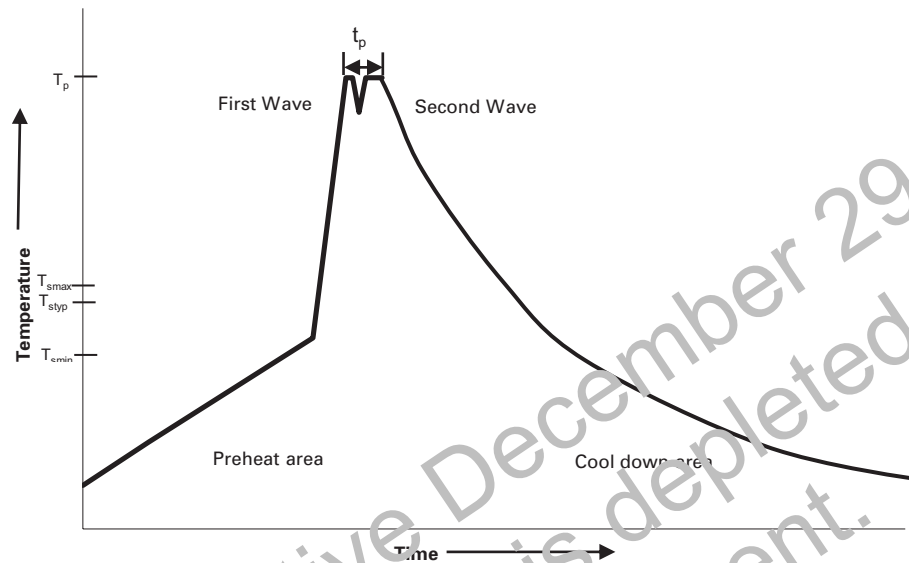
## Part numbering system

| A           | 1020                   | —           | 2R5                     | 10  | 5          | -R               |
|-------------|------------------------|-------------|-------------------------|---|------------|------------------|
| Family Code | Size reference<br>(mm) |             | Voltage (V) R = Decimal | Capacitance (μF)                                |            |                  |
|             |                        |             |                         | Value   | Multiplier | Standard product |
| A Family    | Diameter = 10          | Length = 20 | 2R5 = 2.5 V             | Example: 105 = 10 x 10 <sup>5</sup> μF or 1.0 F |            |                  |

## Packaging information

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

## Wave solder profile



| Profile Feature                     | Standard SnPb Solder  | Lead (Pb) Free Solder   |
|-------------------------------------|---|---|
| Preheat and soak                    | <ul style="list-style-type: none"> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time max.</li> </ul> | <ul style="list-style-type: none"> <li>100 °C</li> <li>60 seconds</li> </ul>                              |
| $\Delta$ 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 ( $t_p$ )  | <ul style="list-style-type: none"> <li>10 seconds max.</li> <li>5 seconds max each wave</li> </ul>            | <ul style="list-style-type: none"> <li>10 seconds max.</li> <li>5 seconds max each wave</li> </ul>        |
| Ramp-down rate                      | <ul style="list-style-type: none"> <li>~ 2 K/s min</li> <li>~ 3.5 K/s typ</li> <li>~ 5 K/s max</li> </ul>     | <ul style="list-style-type: none"> <li>~ 2 K/s min</li> <li>~ 3.5 K/s typ</li> <li>~ 5 K/s max</li> </ul> |
| Time 25 °C to 25 °C                 | 4 minutes   | 4 minutes   |

### Manual solder

+250 °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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