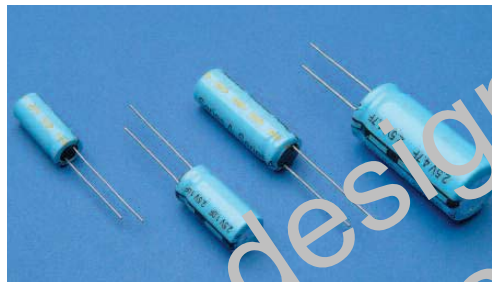




# A Supercapacitors

## Cylindrical cells



### Features

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

### Applications

- Pulse power
- Hold-up power
- DC/DC conversion
- Hybrid battery packs
- Valve / solenoid actuation

### 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 microamps for several days to several amps for millisecond.



Powering Business Worldwide

Not for new designs  
HV family data sheet  
4376 recommended for  
new designs

### 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

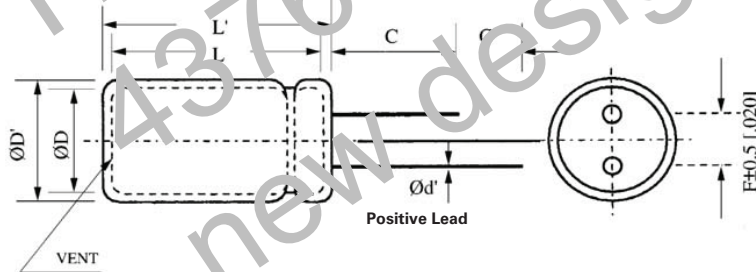
Capacitance (F)	Part Number	Nominal ESR ( $\Omega$ ) (Equivalent Series Resistance) Measured @ 1 kHz	Nominal dimensions (mm) (diameter x length)		Typical Mass (grams/piece)
0.47	A0820-2R5474-R	0.150	8	20	1.8
1.0	A1020-2R5105-R	0.090	10	20.5	2.6
1.5	A1030-2R5155-R	0.060	10	30	3.8
4.7	A1635-2R5475-R	0.025	16	35	10.7

### Performance

Parameter	Capacitance change (% of initial value)	ESR (% of max. initial value)
Life (1000 hours @ +70 °C @ 2.5 Vdc)	$\leq 10\%$	$\leq 300\%$
Storage - Low and High Temperature (1000 hours @ -25 °C and +70 °C)	$\leq 30\%$	$\leq 300\%$

### Dimensions (mm)

Part Number	D	D'	L	L'	E	d'	C	C'
A0820-2R5474-R	8.0	8.5	20.5	21.0	3.0	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

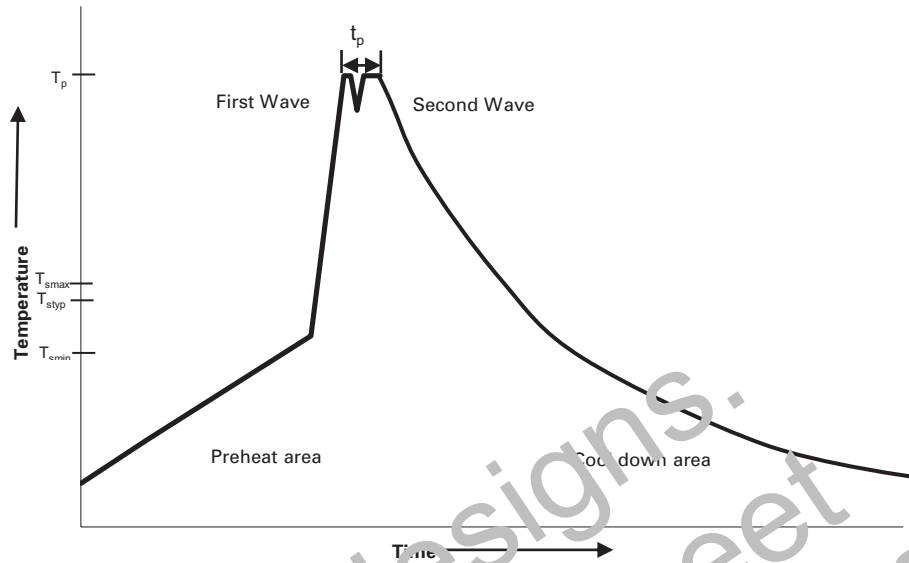
### Part numbering system

A	1020	—	2R5	10	5	-R
Family Code	Size reference (mm)		Voltage (V) R = Decimal	Capacitance ( $\mu$ F)		
				Value	Multiplier	Standard product
A Family	Diameter = 10	Length = 20	2R5 = 2.5 V	Example: 105 = 10 x 10 <sup>5</sup> $\mu$ F 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 Sn/Pb 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>Temperature max. (<math>T_{smax}</math>)</li> <li>Time max.</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 ( $t_p$ )	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 board, 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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