

# B Supercapacitors

## Cylindrical cells



### 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

- High specific capacitance
- Very low ESR
- Low leakage currents
- Long cycle life
- UL Recognized

### Applications

- Main power
- Hybrid battery packs
- Hold-up power
- Pulse power

### Ratings

Capacitance	0.22 F to 2.2 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

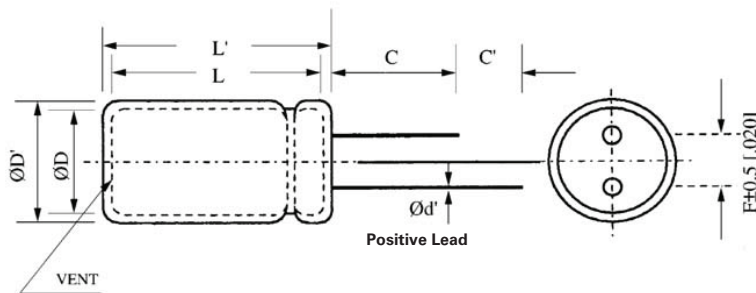
Capacitance (F)	Part Number	Maximum ESR ( $\Omega$ ) (Equivalent Series Resistance) Measured @ 100 Hz	Nominal leakage current ( $\mu$ A) after 72 hours @ +20 °C	Nominal dimensions (mm) (diameter x length)		Typical Mass (grams/piece)
0.22	B0510-2R5224-R	2.0	2.0	5	11	0.54
1.0	B0810-2R5105-R	0.50	4.0	8	13	1.2
1.5	B1010-2R5155-R	0.30	7.0	10	14	1.9
2.2	B0820-2R5225-R	0.20	9.0	8	20	1.5

### Performance

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

### Dimensions (mm)

Part Number	D	D'	L	L'	F	d'	C	C'
B0510-2R5224-R	5.0	5.5	11.5	12.0	2.0	0.50	20.0	5.0
B0810-2R5105-R	8.0	8.5	13.0	13.5	3.5	0.50	20.0	5.0
B1010-2R5155-R	10.0	10.5	14.3	14.8	5.0	0.60	20.0	5.0
B0820-2R5225-R	8.0	8.5	20.5	21.0	3.5	0.50	20.0	5.0
<b>Tolerances</b>	<b>Maximum</b>				<b><math>\pm 0.5</math></b>	<b><math>\pm 0.02</math></b>	<b>Minimum</b>	



### Part marking

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

### Part numbering system

B	1010	—	2R5	15	5	-R
Family Code	Size reference (mm)		Voltage (V) R = Decimal	Capacitance ( $\mu$ F)		
				Value	Multiplier	Standard product
B Family	Diameter = 10	Length = 10	2R5 = 2.5 V	Example: 155 = 15 x 10 <sup>5</sup> $\mu$ F or 1.5 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 ( $t_p$ )	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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Printed in USA  
Publication No. 4390 BU-SB101087  
June 2017

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