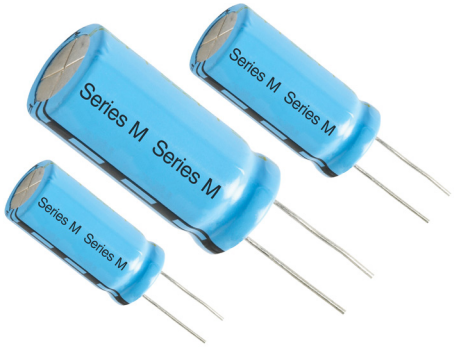
M Supercapacitors
Cylindrical cells



Features

- 2.5 Volts
- Low ESR
- High capacitance long cycle life
- Low ESR with high energy density
- Low leakage current
- UL recognized

Applications

- Pulse Power
- Bridge 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.

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Ratings

Capacitance	1.0 F to 9.0 F
Maximum working voltage	2.5 V
Surge voltage	3.0 V
Capacitance tolerance	-20% to +80% (+20 °C)
Operating temperature range	-40 °C to +60 °C
Extended temperature range	-40 °C to +85 °C (Maximum working voltage 2.0 V)

Specifications

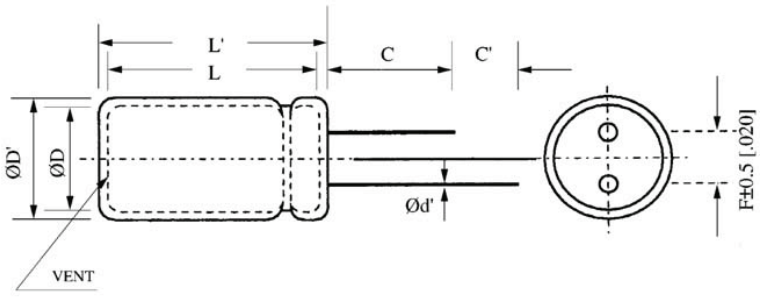
Capacitance (F)	Part Number	Nominal ESR (Ω) (Equivalent Series Resistance) Measured @ 1 kHz	100 Hz	Nominal dimensions (mm) (diameter x length)		Typical Mass (grams/piece)
1	M0810-2R5105-R	0.210	0.250	8	13	1.2
2	M0820-2R5205-R	0.075	0.100	8	20	1.5
3	M1020-2R5305-R	0.035	0.050	10	20.5	2.8
6	M1030-2R5605-R	0.025	0.035	10	30	3.9
9	M1325-2R5905-R	0.020	0.030	13	26	5.6

Performance

Parameter	Capacitance change (% of initial value)	ESR (% of max. initial value)
Life (1000 hours @ +60 °C @ 2.5 Vdc)	≤ 30%	≤ 200%
Storage - Low and High Temperature (1000 hours @ -40 °C and +60 °C)	≤ 30%	≤ 200%

Dimensions (mm)

Part Number	D	D'	L	L'	F	d'	C	C'
M0810-2R5105-R	8.0	8.5	13.0	13.5	3.5	0.50	20.0	5.0
M0820-2R5205-R	8.0	8.5	20.5	21.0	3.5	0.50	20.0	5.0
M1020-2R5305-R	10.0	10.5	21.8	22.3	5.0	0.60	20.0	5.0
M1030-2R5605-R	10.0	10.5	31.0	31.5	5.0	0.60	20.0	5.0
M1325-2R5905-R	13.0	13.5	27.9	28.4	5.0	0.60	20.0	5.0
Tolerances	**Maximum**				**±0.5**	**±0.02**	**Minimum**	



Part marking

- Manufacturer
- Capacitance (F)
- Nominal working voltage (V)
- Family code (or part number)
- Polarity

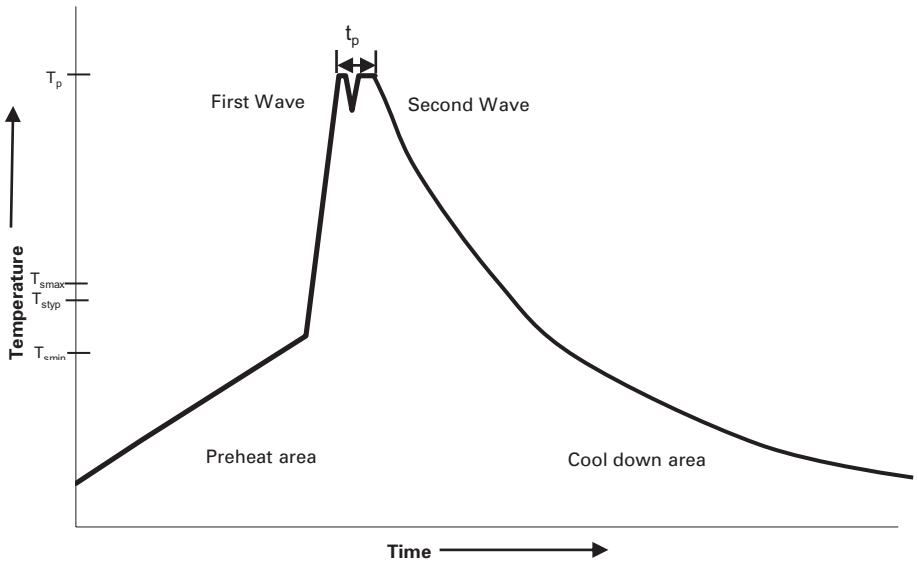
Part numbering system

M	1325		—	2R5	90	5	-R
Family Code	Size reference (mm)			Voltage (V) R = Decimal	Capacitance (µF)		
					Value	Multiplier	Standard product
M Family	Diameter = 13	Length = 25		2R5 = 2.5 V	Example: 905 = 9 x 10^5 µF or 9.0 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	• 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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M0510-2R5204-R M0810-2R5105-R M0820-2R5205-R M1020-2R5305-R M1030-2R5605-R M1325-2R5905-R