#### Effective October 2016 Supersedes December 2011

# 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.



# Technical Data 4080 Effective October 2016

# 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

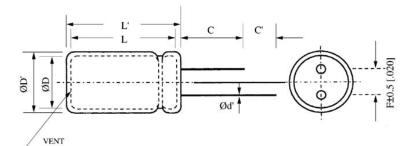
Part Number	Nominal ESR (Equivalent S Measured @ 1 kHz	(Ω) eries Resistance) 100 Hz			Typical Mass (grams/piece)
M0810-2R5105-R	0.210	0.250	8	13	1.2
M0820-2R5205-R	0.075	0.100	8	20	1.5
M1020-2R5305-R	0.035	0.050	10	20.5	2.8
M1030-2R5605-R	0.025	0.035	10	30	3.9
M1325-2R5905-R	0.020	0.030	13	26	5.6
	M0810-2R5105-R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

# 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	Ľ	F	ď	С	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 .

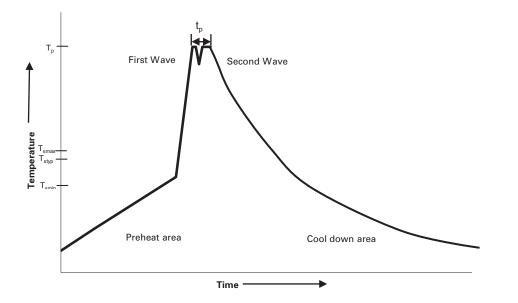
### Part numbering system

м	1325		_	2R5	90	5	-R
	Size reference				Capacitance (µF)		
Family Code	(mm)			Voltage (V) R = Decimal	Value	Multiplier	Standard product
M Family	Diameter = 13	Length = 25		2R5 = 2.5 V	Example: 905 = 9 x 10 <sup>5</sup> 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 <sub>smax</sub> )	100 °C	100 °C	
• Time max.	60 seconds	60 seconds	
$\Delta$ preheat to max Temperature	160 °C max.	160 °C max.	
Peak temperature (T <sub>P</sub> )*	220 °C – 260 °C	250 °C – 260 °C	
Time at peak temperature (t <sub>p</sub> )	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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