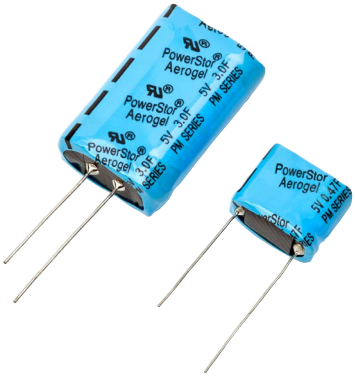
PM Supercapacitors

Cylindrical pack



Features

- Low ESR with high energy density
- 5.0 Volts
- High capacitance
- Long cycle life
- Low leakage currents
- 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 .

Powering Business Worldwide

Ratings

Capacitance	0.1 F to 3.0 F
Maximum working voltage	5.0 V
Surge voltage	5.5 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 3.9 V)

Specifications

Capacitance (F)	Vertical part number	Horizontal part number	Nominal ESR (Ω) (Equivalent Series Resistance) measured @ 1 kHz	100 Hz	Nominal leakage current (µA) after 100 hours @ 5.0 V, +20 °C	Nominal dimensions (mm)	Typical mass (grams/piece)
0.1	PM-5R0V104-R	PM-5R0H104-R	2.0	2.0	3	5.5 x 10.8 x 12.5	1.1
0.47	PM-5R0V474-R	PM-5R0H474-R	0.42	0.50	8	8.5 x 16.8 x 14.0	2.4
1.0	PM-5R0V105-R	PM-5R0H105-R	0.15	0.20	10	8.5 x 16.8 x 21.5	3.5
1.5	PM-5R0V155-R	PM-5R0H155-R	0.07	0.10	15	10.5 x 20.8 x 22.5	5.4
3.0	PM-5R0V305-R	PM-5R0H305-R	0.05	0.07	20	10.5 x 20.8 x 32	7.8

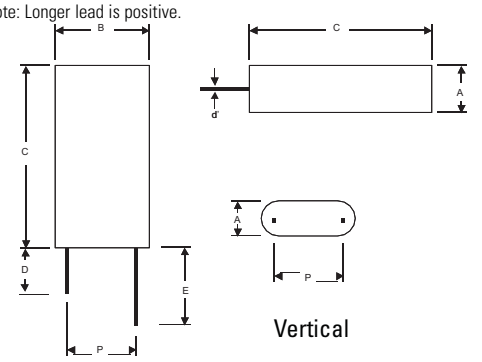
Performance

Parameter	Capacitance change (% of initial value)	ESR (% of max. initial value)
Life (1000 hours @ +60 °C @ 5 Vdc)	≤ 30%	≤ 200%
Storage - Low and High Temperature (1000 hours @ -40 °C and +60 °C)	≤ 30%	≤ 200%

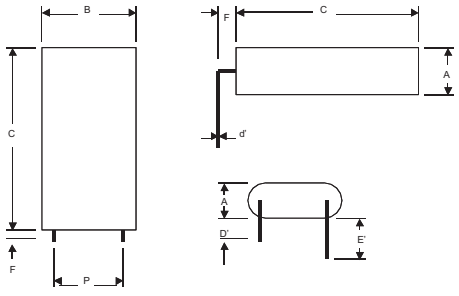
Dimensions (mm)

Vertical part number	Horizontal part number	A	B	C	d'	D	D'	E	E'	F	P
PM-5R0V104-R	PM-5R0H104-R	6.0	11.3	13.0	0.5	20	15	25	20	2.0	7.3
PM-5R0V474-R	PM-5R0H474-R	9.0	17.3	14.5	0.5	2.0	15	25	20	2.0	11.8
PM-5R0V105-R	PM-5R0H105-R	9.0	17.3	22.0	0.5	20	15	25	20	2.0	11.8
PM-5R0V155-R	PM-5R0H155-R	11.0	21.3	23.0	0.6	20	15	25	20	2.0	5.3
PM-5R0V305-R	PM-5R0H305-R	11.0	21.3	32.5	0.6	20	15	25	20	2.0	5.3
Tolerances		**Maximum**			**±0.02**	**Minimum**				**±0.5**	

Note: Longer lead is positive.



Vertical



Horizontal

Part marking

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

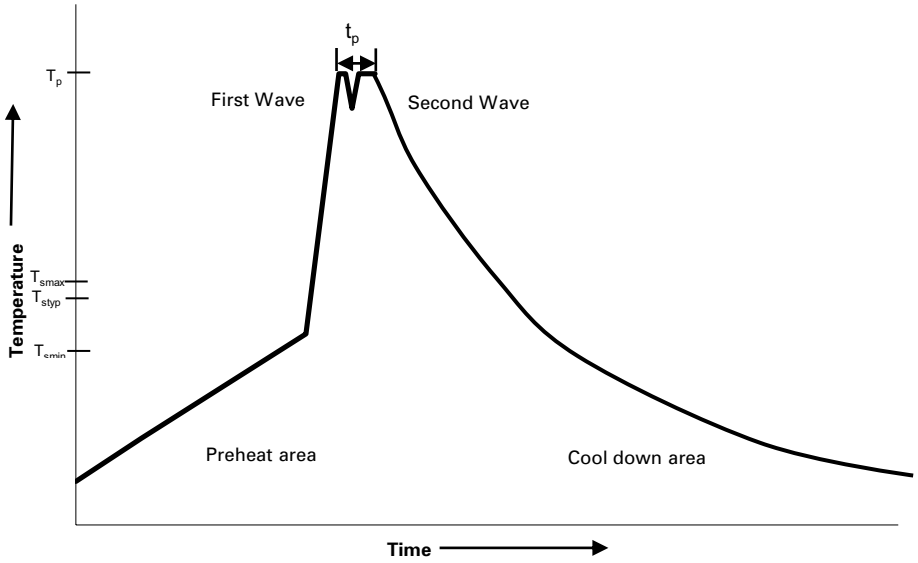
Part numbering system

P	M	–	5	R	0	V	47		–	R
Family code			Voltage (V) R = Decimal			Configuration	Capacitance (µF)			Standard product
							Value	Multiplier		
P = Pack	M = Version		5R0 = 5.0 V			V = Vertical H = Horizontal	Example: 474 = 47 x 10^4 µF or 0.47F			

Packaging information

- Standard packaging: Bulk, 100 units per package
- Large, 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.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/electonics

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Eaton:

PM-5R0H155-R PM-5R0H305-R PM-5R0V155-R PM-5R0V305-R PM-5R0H305T-R PM-5R0V104-R PM-5R0H104-R PM-5R0H105-1 PM-5R0H105-R PM-5R0H474-R PM-5R0V105-R PM-5R0V474-R