

All products feature low ESR for high power density with environmentally friendly materials for a green power solution. Eaton supercapacitors are maintenance-free with design lifetimes up to 20 years* and operating temperatures down to -40 °C and up to +85 °C.



Ratings

Capacitance	3.0 F to 5.0 F
Working voltage ⁹	6.0 V
Surge voltage ⁹	6.3 V
Capacitance tolerance	-10% to +30% (+20 °C)
Operating temperature range	-40 °C to +65 °C
Extended operating temperature range	-40 °C to +85 °C (with linear voltage derating to 5.0 V @ +85 °C)

Specifications

Capacitance ¹ (F)	Vertical part number	Horizontal part number	Maximum initial ESR ¹ (mΩ)	Continuous current ⁶ (A)	Peak current ⁵ (A)	Nominal leakage current ² (uA)	Peak power ⁴ (W)	Stored energy ³ (mWh)	Short circuit current ^{7,8,9} (A)
3.0	PTV-6R0V305-R	PTV-6R0H305-R	100	2.4	7.3	25	120	15	80
5.0	PTV-6R0V505-R	PTV-6R0H505-R	72	3.7	11.8	80	160	25	109

** Repeated short circuit current will permanently damage the leads.

Performance

Parameter	Capacitance change (% of initial value)	ESR (% of maximum initial value)
Lifetime: (1000 hours, maximum rated voltage, maximum operating temperature)	≤ 30%	≤ 200%
Charge/Discharge Cycles ⁸ : (500,000 at +20 °C)	≤ 30%	≤ 200%
Storage: (3 years, uncharged, <+35 °C)	≤ 5%	≤ 10%

1. Capacitance, Equivalent Series Resistance (ESR) and Leakage current are measured according to IEC62391-1

2. Leakage current at +20 °C after 72 hour charge and hold.

3. Stored Energy (mWh) = $\frac{0.5 \times V^2 \times C}{3600} \times 1000$

4. Peak Power (W) = $\frac{V^2}{4 \times ESR}$

5. Pulse current for 1 second from full rate voltage to half voltage.(A) = $\frac{0.5 \times V \times C}{(1 + ESR \times C)}$

6. Continuous current with a 15 °C temperature rise. Continuous current (A) = $\sqrt{\frac{\Delta T}{ESR \times Rth}}$

7. Short circuit current is for safety information only. Do not use as operating current.

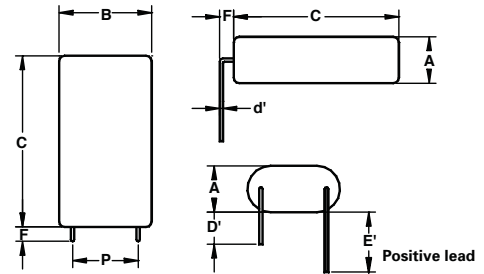
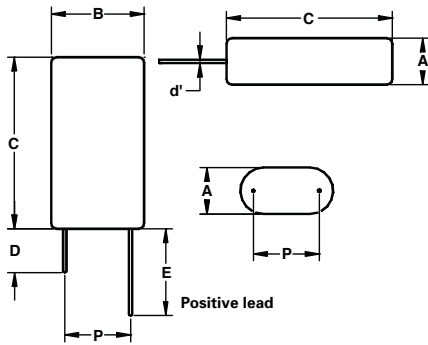
8. Cycling between rated voltage and half voltage, 3 second rest at +20 °C.

9. Voltage testing and verification of product under end application conditions is recommended

Safety and certifications

Agency information	UL recognized: File MH46887
Shock and vibration	MIL-STD 202G
Environmental compliance	RoHS, REACH, lead free, halogen free
Warnings	Do not overvoltage, do not reverse polarity
Shipping	No restrictions, per UN3499 with all cells <10 watt-hours

Vertical part number	Horizontal part number	A	B	C	d'	D	D'	E	E'	F	P
PTV-6R0V305-R	PTV-6R0H305-R	11	21.3	23.0	0.6	20	15	25	20	2.0	5.3
PTV-6R0V505-R	PTV-6R0H505-R	11	21.3	32.5	0.6	20	15	25	20	2.0	5.3
Tolerances		Maximum			± 0.02	Minimum				± 0.5	



Part numbering system

PTV		-6R0	V	30	5	-R
Type	Family code	Voltage (V) R = decimal	Configuration	Capacitance (μF) Value	Multiplier	Standard product
P = Pack	TV= Product family	6R0 = 6.0 V	V= Vertical H= Horizontal	Example 305= 30 x 10 ⁵ μF or 3.0 F		

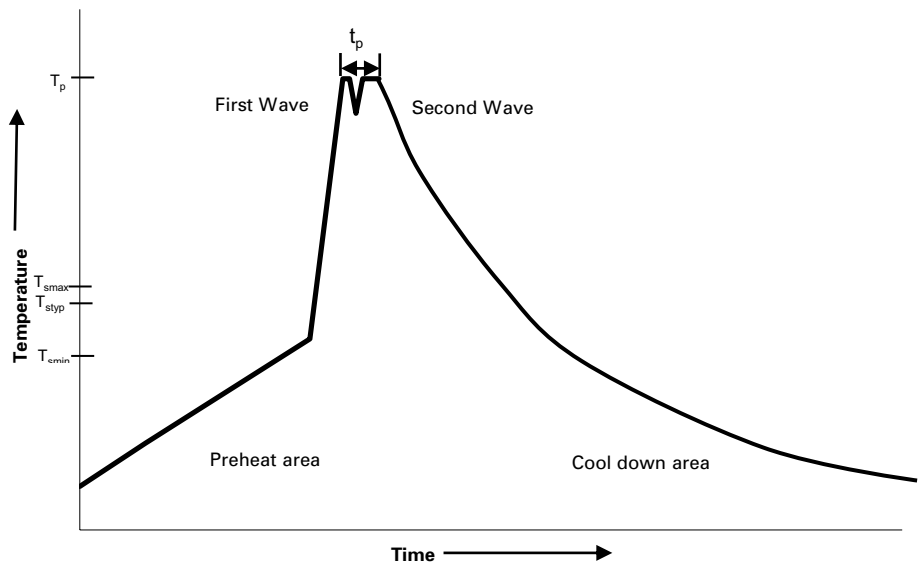
Packaging information

- Standard packaging: Bulk, 20 parts per box

Part marking

- Manufacturer
- Capacitance value (F)
- Working voltage (V)
- Family code or part number
- Polarity mark
- .

Wave solder profile



Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak <ul style="list-style-type: none">• Temperature max. (T_{smax})• Time max.	100 °C 60 seconds	100 °C 60 seconds
Δ 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

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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