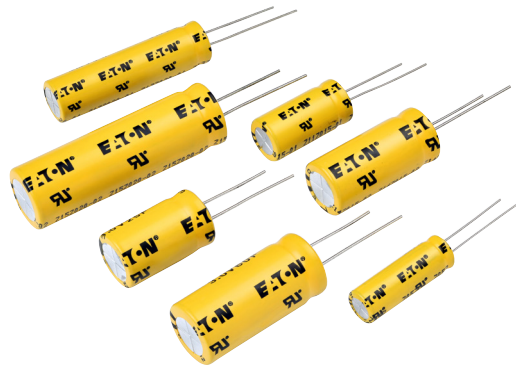


TV Supercapacitors

Cylindrical cells



Features

- 3.0 V operating voltage for high power and high energy
- Ultra low ESR for high power density
- Large capacitance for high energy density
- UL recognized

Applications

- Electric, Gas, Water smart meters
- RF radio pulse power
- Storage server
- Industrial backup / ride through
- Pulse power
- Solar capture

Description

Eaton supercapacitors are high reliability, high power, ultra-high capacitance energy storage devices utilizing electrochemical double layer capacitor (EDLC) construction combined with proprietary materials and processes. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to applications for backup power, pulse power and hybrid power systems. They can be applied as the sole energy storage or in combination with batteries to optimize cost, life time and run time. System requirements can range from a few microwatts to megawatts. 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.



Powering Business Worldwide

Ratings

| | |
|-----------------------------|---|
| Capacitance | 6 F to 100 F |
| Maximum working voltage | 3.0 V |
| Surge voltage | 3.3 V |
| Capacitance tolerance | -10% to +30% (+20 °C) |
| Operating temperature range | -40 °C to +65 °C |
| Extended temperature range | -40 °C to +85 °C (with linear voltage derating to 2.5 V @ +85 °C) |

Specifications

| Capacitance (F) | Part Number | Maximum Initial ESR ¹ (Ω) | Nominal Leakage Current ^{1,2} (μA) | Stored Energy ³ (mWh) | Peak Power ⁴ (W) | Pulse Current ⁵ (A) | Continuous Current ⁶ (A) | Typical Thermal Resistance ⁷ Rth (°C/W) | Short Circuit Current ⁸ (A) |
|-----------------|-----------------|--------------------------------------|---|----------------------------------|-----------------------------|--------------------------------|-------------------------------------|--|--|
| 6 | TV1020-3R0605-R | 0.035 | 13 | 7.5 | 64.3 | 7.4 | 2.4 | 73 | 86 |
| 10 | TV1030-3R0106-R | 0.026 | 25 | 12.5 | 86.5 | 12 | 3.7 | 40 | 115 |
| 15 | TV1325-3R0156-R | 0.024 | 35 | 18.8 | 94 | 17 | 3.4 | 53 | 125 |
| 25 | TV1625-3R0256-R | 0.018 | 60 | 31.3 | 125 | 26 | 4.2 | 47 | 167 |
| 34 | TV1245-3R0346-R | 0.016 | 75 | 42.5 | 141 | 33 | 6.5 | 22 | 188** |
| 35 | TV1635-3R0356-R | 0.015 | 90 | 43.8 | 150 | 34 | 5.1 | 39 | 200** |
| 60 | TV1840-3R0606-R | 0.013 | 135 | 75 | 173 | 51 | 6.7 | 26 | 231** |
| 100 | TV1860-3R0107-R | 0.011 | 225 | 125 | 205 | 71 | 11.7 | 10 | 273** |

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

Performance

| Parameter | Capacitance change (% of initial value) | ESR (% of maximum initial value) |
|--|---|----------------------------------|
| Lifetime: (1000 hours at maximum temperature and voltage) | ≤ 30% | ≤ 200% |
| Charge/Discharge Cycles ⁹ : (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 with current in milliamps (mA) = 8 x C x V.

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

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

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

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

6. Continuous current with a 15 °C temperature rise. Continuous current (A) = $\sqrt{\frac{W}{\text{ESR} \times R_{th}}}$

7. Thermal resistance (Rth) cell body temperature to ambient in open air in degrees C per Watt (°C/W).

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

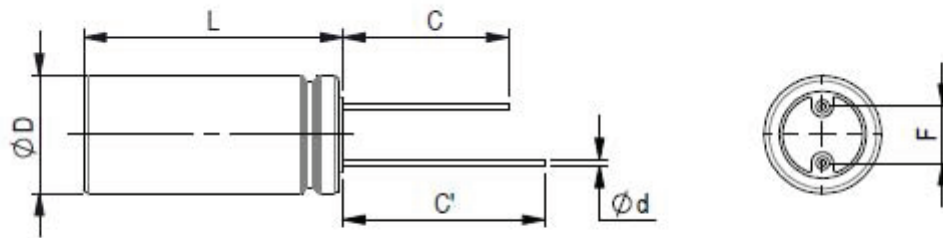
9. Cycling between rated voltage and half voltage, 3 second rest at +20 °C.

Safety and Certifications

| | |
|---------------------|--|
| Regulatory | UL810a, RoHS, REACH |
| Shock and vibration | MIL-STD 202G |
| Warnings | Do not overvoltage, do not reverse polarity |
| Shipping | No restrictions, per UN3499 with all cells <0.3 watt-hours |

Dimensions (mm) and Mass (g)

| Part Number | ØD maximum | L maximum | F ±0.5 | Ød ±0.02 | C minimum | C' minimum | Mass (typical) |
|-----------------|------------|-----------|--------|----------|-----------|------------|----------------|
| TV1020-3R0605-R | 10.5 | 22.3 | 5 | 0.6 | 20 | 25 | 2.3 |
| TV1030-3R0106-R | 10.5 | 31.5 | 5 | 0.6 | 20 | 25 | 3.2 |
| TV1325-3R0156-R | 13.5 | 28.4 | 5 | 0.6 | 20 | 25 | 4.5 |
| TV1625-3R0256-R | 16.5 | 28.4 | 7.5 | 0.8 | 20 | 25 | 7.3 |
| TV1245-3R0346-R | 12.9 | 49 | 5 | 0.6 | 20 | 25 | 8 |
| TV1635-3R0356-R | 16.5 | 38 | 7.5 | 0.8 | 20 | 25 | 9.3 |
| TV1840-3R0606-R | 18.5 | 42 | 7.5 | 0.8 | 20 | 25 | 13 |
| TV1860-3R0107-R | 18.5 | 60.5 | 7.5 | 0.8 | 20 | 25 | 20 |



Longer lead is positive

Part numbering system

| TV | 1860 | -3R0 | 60 | 6 | -R |
|------------------|--------------------------------|----------------------------|---|------------|----------------|
| Family code | Size reference (mm) | Voltage (V) R = decimal | Capacitance (µF) Value | Multiplier | RoHS compliant |
| TV = Family Code | Diameter = 18 Length = 60 | 3R0 = 3.0 V | Example 606= 60 x 10 ⁶ µF o r 60 F | | |

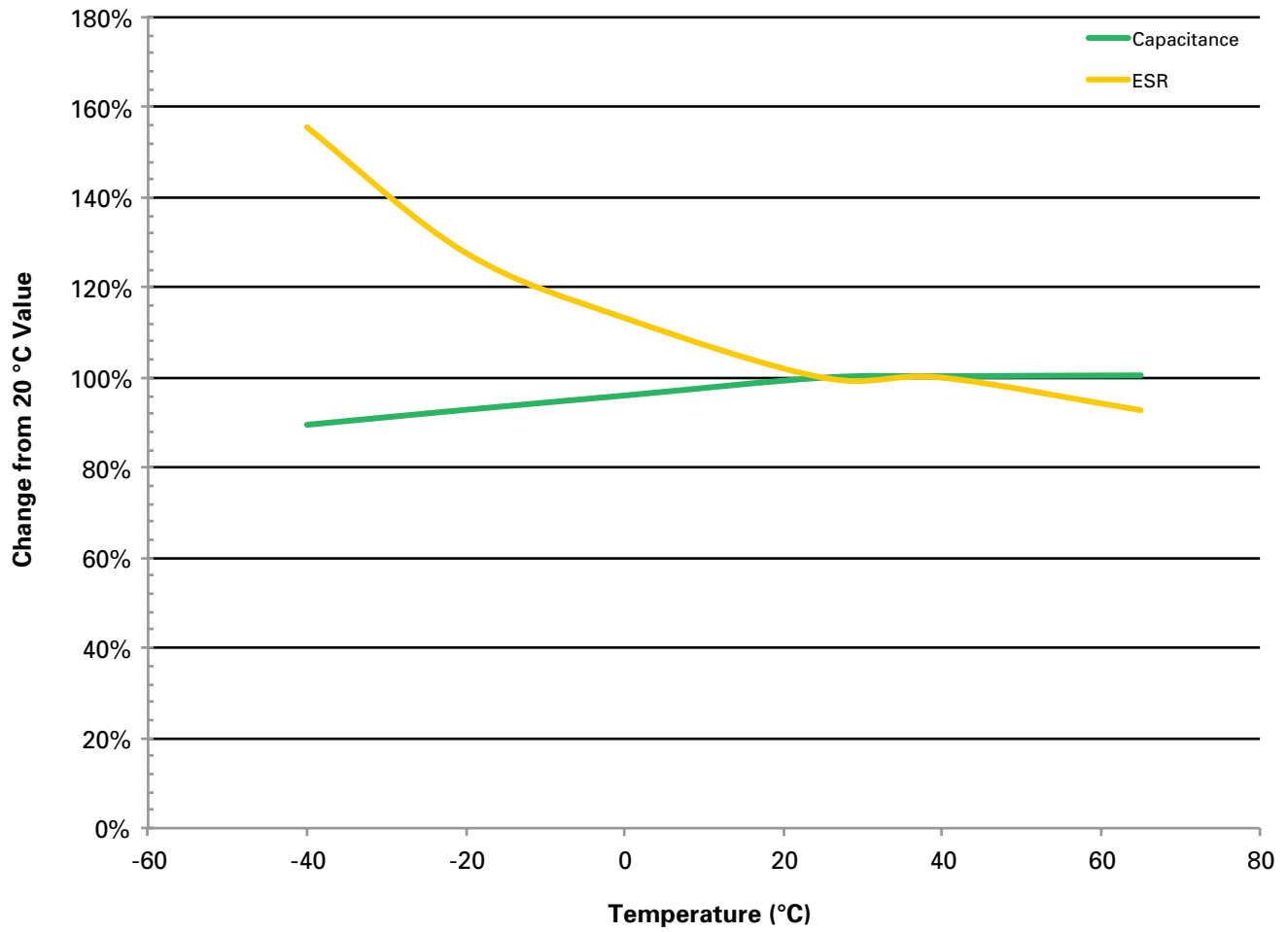
Packaging information

- Standard packaging: Bulk, 100 parts per bag (10 mm–13 mm diameter)
- 16 mm–18 mm diameter products: Bulk package quantity varies by size.

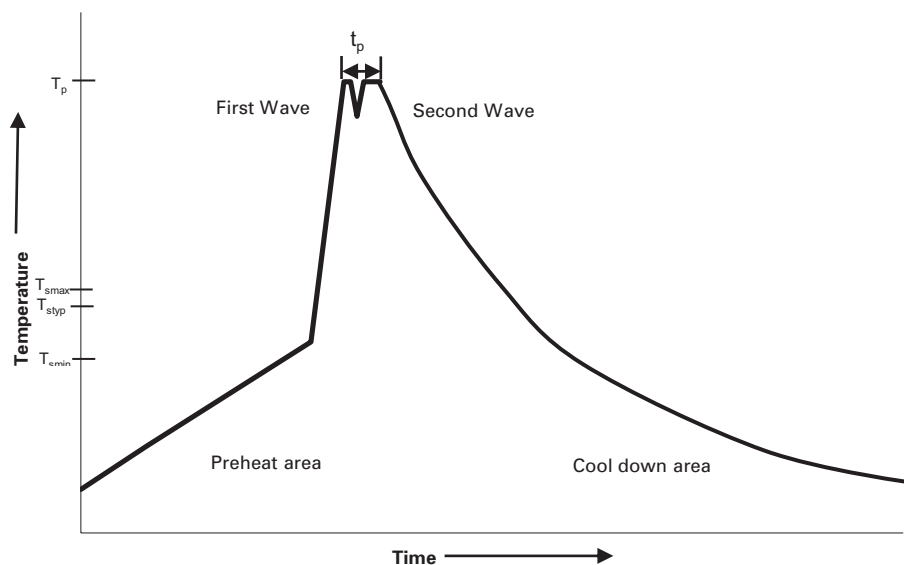
Part marking

- Eaton logo
- Capacitance value (F)
- Max operating voltage (V)
- TV Supercapacitors
- Polarity mark
- UL recognition Ru symbol
- date code ywwyddnn
 - y=year code for cell build (z=2016)
 - ww=work week for cell build
 - y=year code for electrode (z=2016)
 - ddd=serial day of year for electrode build
 - nn=number of lot in the day

Temperature vs. Capacitance and ESR



Wave solder profile



| Profile Feature | Standard SnPb Solder | Lead (Pb) Free Solder |
|-------------------------------------|--|---|
| Preheat and soak | • Temperature max. (T_{smax}) • Time max. | 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.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

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

© 2016 Eaton
All Rights Reserved
Printed in USA
Publication No. 10554 BU-MC16106
August 2016

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкуренспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru