



## Ultracapacitors

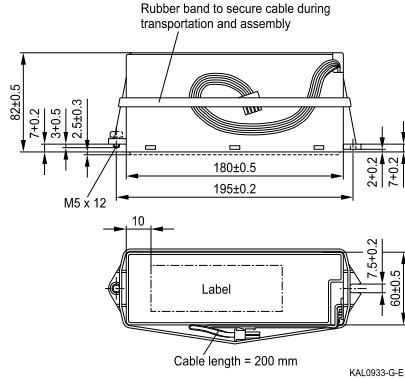
The following products presented in this data sheet are being withdrawn.

| Ordering Code   | Substitute Product | Date of Withdrawal | Deadline Last Orders | Last Shipments |
|-----------------|--------------------|--------------------|----------------------|----------------|
| B48611A5903Q012 |                    | 2006-09-26         | 2006-12-31           | 2007-03-31     |

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at [www.epcos.com/sales](http://www.epcos.com/sales).

**Features**

- Cable connector
- Passive cell voltage balancing
- Case material polyethylene, black
- Power type
- 12 serial single cells of 110 F
- Maintenance-free
- Short-circuit-proof
- Fast-acting blowout fuse 20 A

**Dimensional drawing**


Dimensions in mm

**Electrical specifications**

|                                 |   |                          |         |        |
|---------------------------------|---|--------------------------|---------|--------|
| Rated capacitance               | ( $T_A = 25\text{ °C}$ ; DCC) <sup>1)</sup>                           | $C_R$                    | 9       | F      |
| Tolerance of $C_R$              |   |                          | -10/+30 | %      |
| Rated voltage                   | ( $T_A = 25\text{ °C}$ )  | $V_R$                    | 28      | V      |
| Capacity                        |   |                          | 70      | mAh    |
| Specific power                  | ( $P_{\text{spez}} = 0.12 \cdot V_R^2 / \text{ESR}_{\text{DC}} / m$ ) |                          | 1.0     | kW/kg  |
| Specific power                  | ( $P_{\text{spez}} = 0.12 \cdot V_R^2 / \text{ESR}_{\text{DC}} / v$ ) |                          | 0.9     | kW/l   |
| Stored energy                   | ( $V = V_R$ )   | E                        | 3528    | J      |
| Specific energy                 | ( $V = V_R$ )   |                          | 1.3     | Wh/kg  |
| Specific energy                 | ( $V = V_R$ )   |                          | 1.1     | Wh/l   |
| Surge voltage                   |   | $V_{\text{surge}}$       | 32      | V      |
| Maximum series resistance       | ( $T_A = 25\text{ °C}$ ; 1 kHz)                                       | ESR                      | 60      | mΩ     |
| Maximum series resistance       | ( $T_A = 25\text{ °C}$ ; 50 mHz)                                      | $\text{ESR}_{\text{DC}}$ | 120     | mΩ     |
| Mass                            |   | m                        | 0.75    | kg     |
| Volume                          |   | v                        | 0.9     | l      |
| Operating temperature range     |   | $T_{\text{op}}$          | -30/+70 | °C     |
| Storage temperature             | ( $V = 0\text{ V}$ )  | $T_{\text{st}}$          | -40/+70 | °C     |
| Lifetime (hours) <sup>2)</sup>  | ( $T_A = 25\text{ °C}$ ; $V = V_R$ )                                  |                          | 90000   | h      |
| Lifetime (cycles) <sup>3)</sup> | ( $T_A = 25\text{ °C}$ ; $I = 10\text{ A}$ )                          |                          | 500000  | cycles |

1) DCC: discharging with constant current.

 2) Requirements:  $|\Delta C/C_R| \leq 30\%$ ,  $\text{ESR} \leq 2$  times of specified limit,  $I_{\text{leak}} \leq 2$  times of initial value.

 3) Requirements:  $|\Delta C/C_R| \leq 30\%$ ,  $\text{ESR} \leq 2$  times of specified limit,  $I_{\text{leak}} \leq 2$  times of initial value (1 cycle: charging to  $V_R$ , 30 s rest, discharging to  $V_R/2$ , 30 s rest).

## Cautions and warnings

### Transportation of hazardous substances

Any shipment of UltraCaps from customers, whatever the means of transportation, must be provided with a declaration of hazardous substances and packed accordingly if the quantity of electrolyte per item packed exceeds 0.5 liters. We will be glad to assist you in clarifying details.

For transportation on streets in Europe detailed regulations are given in ADR/RID / UN 1648 Acetonitrile. Customers outside the European Union should refer to their local regulations. For transportation by sea freight please refer to IMDG regulations, for transportation by air freight please refer to IATA regulations.

### Waste regulations

UltraCaps must be disposed of according to the European waste catalog, code number 160213 "Waste from electrical and electronic products ". In addition, we request customers to consult their refuse disposal facilities and local or national authorities.

Users outside of the European Union should refer to the waste disposal regulations of their own particular country.

### Warning

- Do not put into fire!
- Do not open the capacitor!
- To avoid health and fire hazards, do not operate the capacitor beyond the voltage or temperature limits given in the data sheet. Any excess may also result in a reduction of lifetime.

## Important Notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as “hazardous”)**. Useful information on this will be found in our Material Data Sheets on the Internet ([www.epcos.com/material](http://www.epcos.com/material)). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.  
We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available.
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