



**THE DATASHEET OF
S501LF357V2R7A**



Overview

KEMET S501 Series Supercapacitors use a proprietary electrode design to deliver a very high power density. This product features high power performance of up to 350 F capacity in a single ended, board mountable, snap-in termination construction.

Applications

Typical applications include automotive subsystems, backup power/UPS, handheld/portable devices, hybrid energy storage, hybrid drivetrains, windmill pitch control, emergency lighting, medical devices, power correction, engine starting, and renewable energy.

Benefits

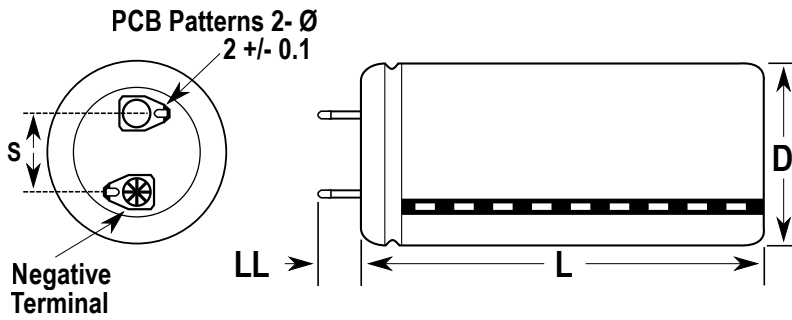
- Board mountable
- Solderable
- High power
- High rate cycling
- Long life
- Operating temperature range of -40°C to +65°C
- High cycle life > 500,000 cycles
- RoHS Compliant
- Made in USA



Part Number System

| S501 | DC | 107 | V | 2R7 | A |
|-------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------------------------------|
| Series | Size Code (D x L) | Capacitance Code (µF) | Capacitance Tolerance | Rated Voltage (VDC) | Termination Code |
| Supercapacitor, Snap-In Termination | DC = 22 x 45 LF = 35 x 60 LI = 35 x 69 LR = 35 x 89 | First two digits represent significant figures. Third digit specifies number of zeros. | V = -5/+10% W = -0/+20% | 2R7 = 2.7 | A = 2 pin, 10 mm lead spacing, 5.9 mm terminal length U = 4 pin standard snap-in style |

Dimensions – Millimeters



| Part Number | D | | L | | S | | LL | |
|----------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| | Nominal | Tolerance | Nominal | Tolerance | Nominal | Tolerance | Nominal | Tolerance |
| S501DC107W2R7A | 22 | +1.0/-0 | 45 | +/-2.0 | 10 | +/-0.1 | 5.9 | +/-1.0 |
| S501LF357V2R7A | 35 | +1.0/-0 | 59 | +/-2.0 | 10 | +/-0.1 | 5.9 | +/-1.0 |
| S501LF357V2R7U | 35 | +0.6/-0.3 | 62 | +/-1.0 | 23 | +/-0.1 | 5.9 | +/-1.0 |

Performance Characteristics

| Item | Performance Characteristics |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage | 2.7 VDC |
| Surge Voltage | 2.85 VDC |
| Capacitance Range | 100 – 350 F |
| Capacitance Tolerance | -5/+10%; [100 F -0/+20%] |
| Temperature Range | -40°C to +65°C |
| Storage Temperature Range | -40°C to +70°C |
| Life, DC | 10 years, rated voltage, 25°C |
| | $\Delta C < 20\%$ decrease, ESR < 100% increase |
| Life, Endurance | 1,000 hours, rated voltage, 65°C |
| | $\Delta C < 20\%$ decrease, ESR < 100% increase |
| Life, Shelf | 1,000 hours, no voltage, 70°C |
| | $\Delta C < 20\%$ decrease, ESR < 100% increase |
| Life, Cycle | > 500,000 cycles, rated to half rated voltage, 25°C |
| | $\Delta C < 20\%$ decrease, ESR < 100% increase |
| Standards Compliance | RoHS, UL810a, BS EN 60068-2-6,27,29, IEC 60068-2-14, SAE J2464, J2390, J1455, ASTM B117, IP65, MIL-STD-810 B, Test Methods 516.3-5, 514.3-1, 509.2-1 |

Approvals

| Series | Test Type | Test Standard | Date completed (or estimated) |
|--------|-------------------------|-------------------------|-------------------------------|
| S501 | Vibration | IEC 60068-2-6 | May 2013 |
| | | SAE J2380 | |
| | | ISO 16750-3 | |
| | Mechanical shock | IEC 60068-2-27 | |
| | Underwriters Laboratory | UL-810A ¹ | by Partnumber |
| | SAE Safety And Abuse | SAE J24645 ² | pending 12/31/2013 |

¹ UL-810A includes the following tests: Short Circuit, Abnormal Charge, Heating, Crush, Impact, Shock, Vibration

² SAE J2464 Includes the following tests: Nail Penetration, Crush, Thermal Stability, Thermal Shock, Short Circuit, Overcharge, Forced Vent

Environmental Compliance

All KEMET supercapacitors are RoHS Compliant.

Table 1 – Ratings & Part Number Reference

| Part Number | S501DC107W2R7A | S501LF357V2R7A | S501LF357V2R7U |
|---------------------------------------|----------------|----------------|----------------|
| Electrical | | | |
| Capacitance (F) | 100 | 350 | 350 |
| Capacitance Tolerance | -0/+20% | -5/+10% | -5/+10% |
| Rated Voltage (V) | 2.7 | 2.7 | 2.7 |
| Surge Voltage (V) | 2.85 | 2.85 | 2.85 |
| ESR, DC \leq (m Ω) [10ms] | 4.2 | 3.2 | 2.7 |
| ESR, AC 1 kHz \leq (m Ω) | 3.6 | 3.1 | 2.4 |
| Inductance \pm 30 (nH) | 120 | 150 | 150 |
| 72 Hour Leakage \leq (mA) | 0.27 | 1 | 1 |
| Cycling | | | |
| Current, Peak [1s] (A) | 95 | 223 | 243 |
| Continuous Current (A)* | 13 | 24 | 24 |
| Current, Short Circuit (A) | 643 | 844 | 750 |
| Thermal | | | |
| Resistance, Thermal ($^{\circ}$ C/W) | 22 | 11 | 10 |
| Energy/Power | | | |
| Maximum Stored Energy (Wh) | 0.1 | 0.35 | 0.35 |
| Energy Density (Wh/kg) | 5.1 | 5.4 | 5.4 |
| Energy Density (Wh/L) | 5.9 | 6.2 | 5.9 |
| Power Density (kW/kg) | 21.7 | 8.6 | 10.2 |
| Power Density (kW/L) | 25.5 | 10 | 11.2 |
| Maximum Power (kW/kg) | 10.4 | 4.1 | 4.9 |
| Physical | | | |
| Case Size | DC | LF | LF |
| D x L (mm) | 22 x 45 | 35 x 59 | 35 x 62 |
| Weight (kg) | 0.02 | 0.066 | 0.066 |
| Volume (L) | 0.017 | 0.057 | 0.06 |
| Volume of ACN (L) | 0.008 | 0.027 | 0.027 |

*Rated current = continuous current with 20°C temperature rise.

Mounting

Do not scratch or file the lead terminals. The terminals are plated with metal and the removal of the plated material will cause poor solderability.

Do not overheat when soldering. Solder temperature lower than 260°C and time shorter than 5 seconds are recommended. For hand soldering, tip temperature should be no higher than 350°C (662°F) for a maximum contact time of 3 seconds. Only the snap-in terminals should come into contact with liquid solder or iron. Excessive heat on the snap-in terminal boards can cause damage to seals, shrink sleeve, and electrodes resulting in shortened life or premature part failure.

IMPORTANT! DO NOT DEFORM, PULL or TWIST the terminals. The terminals are attached to the electrodes in the interior of the aluminum casing and are tightly embedded in the rubber-plug sealing the casing. Repeated or forceful bending, pulling, or twisting of the terminal may create a path opening along the terminal in the rubber for electrolyte to leak out. The electrolyte leakage may not only shorten the useful life of the product, but it may also cause corrosion and/or short-circuit of neighboring circuitry. If deforming the terminal is unavoidable or essential to the assembly process, please use needle-nose pliers to bend the lead wire while holding the base of the same terminal using another needle-nose pliers so that the force applied to the wire is not transmitted to the rubber seal.

KEMET recommends utilizing a PC board when connecting the cells to the circuit or electronic devices. In addition, avoid placing exothermic components near the supercapacitor or on the opposite side of the PC board.

Please maintain a minimum distance of 3 mm between the bottom surface (opposite terminals) of the cell and other components/housings in order to allow for unimpeded venting of gas through the safety vent.

Packaging Quantities

| Part Number | Capacitance (F) | Rated Voltage | Package Type | Package Quantity | Box Weight | Box Length | Box Width | Box Height |
|----------------|-----------------|---------------|-------------------------------|------------------|-----------------|----------------|---------------|--------------|
| S501DC107W2R7A | 100 | 2.7 | Box with Cardboard Separators | 128 | 7 lbs (3.2 kgs) | 15.0" (381 mm) | 8.0" (203 mm) | 3.5" (89 mm) |
| S501LF357V2R7A | 350 | 2.7 | | 50 | 8 lbs (3.7 kgs) | 15.0" (381 mm) | 8.0" (203 mm) | 3.5" (89 mm) |
| S501LF357V2R7U | 350 | 2.7 | | 50 | 9 lbs (4.1 kgs) | 15.0" (381 mm) | 8.0" (203 mm) | 3.5" (89 mm) |

Standard Marking

- KEMET logo
- Rated capacitance
- Rated voltage
- Product number
- Negative terminal marking
- Energy in Wh

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