

3.0V 600F Supercapacitor

- 3.0V DC output
- 600F Capacitance
- Cycle life of 1 million cycles
- High power density
- Solderable terminals for PCB mounting



ELECTRICAL SPECIFICATIONS

TYPE	C35S-3R0-0600
Rated Voltage V_R	3.00 V
Surge Voltage V_S^1	3.10 V
Rated Capacitance C^2	600 F
Capacitance Tolerance ³	-0% / +20%
DC ESR ²	$\leq 1.4 \text{ m}\Omega$
Leakage Current I_L^4	$\leq 1.5 \text{ mA}$
Self-discharge Rate ⁵	$\leq 20\%$
Max Constant Current $I_{MCC}(\Delta T = 15^\circ\text{C})^6$	34 A
Max Current I_{Max}^7	474 A
Short Current I_S^8	2.0 kA
Stored Energy E^9	0.75 Wh
Energy Density E_d^{10}	7.2 Wh/kg
Usable Power Density P_d^{11}	6.9 kW/kg
Matched Impedance Power P_d^{12}	14.4 kW/kg

THERMAL CHARACTERISTICS

TYPE	C35S-3R0-0600
Working Temperature	-40~65°C
Storage Temperature ¹³	-40~70°C
Thermal Resistance R_{th}^{14}	8.6 K/W
Thermal Capacitance C_{th}^{15}	110 J/K

SAFETY&ENVIRONMENTAL CHARACTERISTICS

TYPE	C35S-3R0-0600
Safety	RoHS, REACH and UL810A
Vibration	ISO16750 Table 12 IEC 60068-2-64(table A.5/A.6)
Shock	IEC 60068-2-27

LIFETIME CHARACTERISTICS

TYPE	C35S-3R0-0600
Accelerated aging life ¹⁶	1500 hours
Designed Life ¹⁷	10 years
Cycle Life ¹⁸	1,000,000 cycles
Shelf Life ¹⁹	4 years

PHYSICAL PARAMETERS

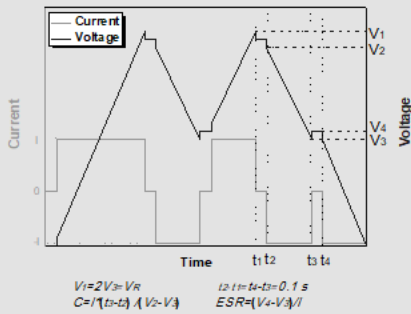
TYPE	C35S-3R0-0600
Mass M	104 g
Terminals ²⁰	Solderable
Dimensions ²¹ Height	87.7 mm
Diameter	35 mm

NOTES:

TYPE

C35S-3R0-0600

- Surge voltage V_S : Absolute maximum voltage, non-repetitive. The duration must not exceed 1 second.
- Rated capacity C: the rated capacity test method is as shown in Figure 1. The test current is 100 C multiple current, i.e. 0.1 A/F. if the calculated test current is greater than 100 A, 100 A is used.



- Capacitance tolerance: The actual capacity is 100%~120% of the rated capacitance.
- Leakage current test procedure: 1) Charge the capacitor to the V_R with a constant current (0.1 A/F, if the calculated current is >100A, then apply 100A). 2) Hold the voltage at V_R for 72h. 3) The current to maintain V_R after 72 h is the leakage current.
- Self-discharge rate test procedure: 1) Charge the capacitor to V_R with a constant current (0.1 A/F, if the calculated current >100A, then apply 100A). 2) Hold the voltage at V_R for 3h. 3) Floating for 72h. 4) Measure the voltage after 72 h.
- Max constant working current: $I_{MCC} = \sqrt{\Delta T / (ESR * R_{th})}$, which depends on the natural convection heat dissipation of the shell and the Joule heat balance in static air.
- Max current: $I_{Max} = 0.5C * V_R / (\Delta t + ESR * C)$, that discharge from V_R to $V_R/2$ in 1 second.
- Short current: $I = V_R / ESR$, each parameter adopts SI system unit or its conversion unit, This current can't be used as working current.
- Stored energy: $E = 0.5C * V^2 / 3600$.
- Energy density: $E_d = E / M$.
- Usable power density: $P_d = 0.12V_R^2 / (ESR * M)$.
- Impedance match power density: $P_d = 0.25V_R^2 / (ESR * M)$.
- Storage temperature: Storage at discharged state (cell voltage < 0.2 V).
- Thermal resistance: $R_{Th} = 1 / (h * A)$, where $h = 10 \text{ W}/(\text{m}^2 * \text{K})$, A=Externalsurface area.

- Thermal capacitance: For the whole capacitor.
- Accelerated aging life: Under the maximum working temperature of the supercapacitor (65 °C), it is constant at its rated voltage for 1500h, the capacity is kept above 80% of the rated capacity under normal temperature, and the internal resistance is below 200% of the rated internal resistance.
- Designed Life: keep the supercapacitor at its rated voltage. The life criterion is that the capacity is kept above 80% of the rated capacity, and the internal resistance is below 200% of the rated internal resistance.
- Cycle life: Charge and discharged the capacitor in the range between V_R and $V_R/2$ with 0.1 seconds rest. The constant test current is 0.1 A/F (if the calculated current >100A, then apply 100A).
- Shelf Life: within the storage temperature range, keep the discharge state, no load (cell voltage < 0.2 V).
- Leading end: Tinned terminal, can weld PCB board.
- Dimensions C35S-3R0-0600



- Standard marking
- +Name of manufacturer, part number, serial number.
- +Rated voltage and capacitance, negative and positive terminals, warning marking.
- +Stored energy in watt-hours.
- Mounting recommendations:
- +Provide sufficient distance between cells to meet the insulation strength.
- +Keep enough space around the explosion-proof tank and keep the top clean and avoid mechanical damage.
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