

3V 3000F Supercapacitor Cells

- 3V DC output
- 3000F Capacitance
- High cycle life of 1 million cycles
- Very high power density
- Laser-weldable posts



ELECTRICAL SPECIFICATIONS

TYPE	C60W-3P0-3000
Rated Voltage V_R	3.0 V
Surge Voltage V_S^1	3.1 V
Rated Capacitance C^2	3000 F
Capacitance Tolerance ³	-0%/+20%
ESR ²	≤0.15 mΩ
Leakage Current I_L^4	<12 mA
Self-discharge Rate ⁵	<20 %
Constant Current $I_{MCC}(\Delta T = 15^\circ C)^6$	176 A
Max Current I_{Max}^7	3.1 kA
Short Current I_S^8	20.0 kA
Stored Energy E^9	3.75 Wh
Energy Density E_d^{10}	7.5 Wh/kg
Usable Power Density P_d^{11}	14.4 kW/kg
Matched Impedance Power P_{dMax}^{12}	30.0 kW/kg

THERMAL CHARACTERISTICS

Type	C60W-3P0-3000
Working Temperature	-40~65 °C
Storage Temperature ¹³	-40~70 °C
Thermal Resistance R_{Th}^{14}	3.2 K/W
Thermal Capacitance C_{th}^{15}	584 J/K

LIFETIME CHARACTERISTICS

TYPE	C60W-3P0-3000
DC Life at High Temperature ¹⁶	1500 hours
DC Life at RT ¹⁷	10 years
Cycle Life ¹⁸	1,000,000 cycles
Shelf Life ¹⁹	4 years

SAFETY & ENVIRONMENTAL SPECIFICATIONS

TYPE	C60W-3P0-3000
Safety	RoHS, REACH and UL810A
Vibration	ISO16750 Table 12 IEC 60068-2-64 (Table A.5/A.6)
Shock	IEC 60068-2-27

PHYSICAL PARAMETERS

TYPE	C60W-3P0-3000
Mass M	500 g
Terminals(leads) ²⁰	Weldable
Dimensions ²¹ Height	138 mm
Diameter	60 mm



NOTES:

TYPE	C60W-3P0-3000
<p>1. Surge voltage VS: Absolute maximum voltage, non-repetitive. The duration must not exceed 1 second.</p> <p>2. Rated capacity C: the rated capacity test method is as shown in Figure 1. The test current is 100 C multiple current, i.e. 0.075 A/F. if the calculated test current is greater than 100 A, 100 A is</p>	<p>18. Cycle life: Charge and discharged the capacitor in the range between VR and VR /2. 5 seconds waiting period between charge and discharge. The constant test current is 0.075 A/F (if the calculated current >100A, then apply 100A).</p> <p>19. Storage life: within the storage temperature range, keep the discharge state, no load (cell voltage < 0.2 V).</p> <p>20. Leading end: Φ14 mm*3 mm.</p> <p>21. Dimensions C60W-3P0-3000</p>
<p>used.</p> <p>3. Capacitance tolerance: Typical capacity is 105% of rated capacity.</p> <p>4. Leakage current measurement procedure: 1) Charge the capacitor to the VR with a constant current (0.075 A/F, if the calculated current is >100A, then apply 100A). 2) Hold the voltage at VR for 72h. 3) The current to maintain VR after 72 h is the leakage current.</p> <p>5. Self-discharge rate measurement procedure: 1) Charge the capacitor to VR with a constant current (0.075 A/F, if the calculated current >100A, then apply 100A). 2) Hold the voltage at VR for 3h. 3) Floating for 72h. 4) Measure the voltage after 72 h.</p> <p>6. Max constant working current: $I_{MCC} = \sqrt{\Delta T / (ESR * R_{Th})}$ the working current of the supercapacitor in static air depends on the natural convection heat dissipation of the shell and the Joule heat balance.</p> <p>7. Max current: $I_{Max} = 0.5C * VR (\Delta t + ESR * C)$, discharge from VR to VR /2 in 1 second.</p> <p>8. Short current: $I_s = VR / ESR$ Each parameter adopts SI system unit or its conversion unit, This current can't be used as working current.</p> <p>9. Stored energy: $E = 0.5C * V^2 / 3600$.</p> <p>10. Energy density: $E_d = E / M$</p> <p>11. Usable power density: $P_d = 0.12V_R^2 / (ESR * M)$.</p> <p>12. Impedance match power density: $P_{dMax} = 0.25V_R^2 / (ESR * M)$</p> <p>13. Storage temperature: discharged state (cell voltage < 0.2 V).</p> <p>14. Thermal resistance: $R_{Th} = 1 / (h * A)$, where h=10 W/(m²*K), A=surface area.</p> <p>15. Thermal capacitance: For the whole capacitor.</p> <p>16. DC Life at High Temperature: 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.</p> <p>17. DC Life at RT: 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.</p>	<p>22. Standard marking</p> <p>23. Name of manufacturer, part number, serial number Rated voltage and capacitance, negative and positive terminals, warning marking Stored energy in watt-hours.</p> <p>24. Mounting recommendations:</p> <p>25. Recommended welding depth is not less than 1.8 mm. 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.</p> <p>26. The contents of this document are subject to change without notice. GMCC accepts no liability for the accuracy or credibility of the values and information contained in this document.</p>