

3.0V 3200F Supercapacitor

- 3.0V DC output
- 3200F Capacitance
- Cycle life of 1 million cycles
- High power density
- Threaded terminals



ELECTRICAL SPECIFICATIONS

TYPE	C60T-3R0-3200
Rated Voltage V_R	3.0 V
Surge Voltage V_S^1	3.1 V
Rated Capacitance C^2	3200 F
Capacitance Tolerance ³	-0%/+20%
DC ESR ²	≤ 0.29 m Ω
Leakage Current I_L^4	<12 mA
Self-discharge Rate ⁵	<20%
Max Constant Current $I_{MCC}(\Delta T = 15^\circ C)^6$	126 A
Max Current I_{Max}^7	2.49 KA
Short Current I_S^8	10.3 kA
Stored Energy E^9	4.0 Wh
Energy Density E_d^{10}	7.8 Wh/kg
Usable Power Density P_d^{11}	7.3 kW/kg
Matched Impedance Power P_d^{12}	15.2 kW/kg

THERMAL CHARACTERISTICS

TYPE	C60T-3R0-3200
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}	570 J/K

LIFETIME CHARACTERISTICS

TYPE	C60T-3R0-3200
Accelerated aging life ¹⁶	1500 hours
Designed Life ¹⁷	10 years
Cycle Life ¹⁸	1,000,000 cycles
Shelf Life ¹⁹	4 years

SAFETY&ENVIRONMENTAL CHARACTERISTICS

TYPE	C60T-3R0-3200
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	C60T-3R0-3200
Mass M	510g
Terminals ²⁰	Threaded terminals
Dimensions ²¹ Height	138 mm
Diameter	60 mm

NOTES:

1. Surge voltage V_S : Absolute maximum voltage, non-repetitive. The duration must not exceed 1 second.
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. 0.1 A/F, if the calculated test current is greater than 100 A, 100 A is used.
3. Capacitance tolerance: The actual capacity is 100%~120% of the rated capacity.
4. 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.
5. 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.
6. Max constant working current: $I_{MCC} = \sqrt{\Delta T / (ESR * R_{Tr})}$, which depends on the natural convection heat dissipation of the shell and the Joule heat balance in static air..
7. Max current: $I_{Max} = 0.5C * V_R / (\Delta t + ESR * C)$, that discharge from V_R to $V_R/2$ in 1 second.
8. Short current: $I_s = V_R / ESR$, each parameter adopts SI system unit or its conversion unit, This current can't be used as working current.
9. Stored energy: $E = 0.5C * V^2 / 3600$.
10. 能量密度: $E_d = E / M$
Energy density: $E_d = E / M$
11. Usable power density: $P_d = 0.12V_R^2 / (ESR * M)$.
12. Impedance match power density: $P_d = 0.25V_R^2 / (ESR * M)$
13. Storage temperature: Storage at discharged state (cell voltage < 0.2 V).
14. Thermal resistance: , where $h=10 \text{ W}/(m^2 * K)$, A=External surface area.
15. Thermal capacitance: For the whole capacitor.
16. 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.
17. 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.
18. Cycle life: Charge and discharged the capacitor in the range between V_R and $V_R/2$ with 5 seconds rest. The constant test current is 0.1 A/F (if the calculated current >100A, then apply 100A).
19. Shelf Life: within the storage temperature range, keep the discharge state, no load (cell voltage < 0.2 V).
20. Leading end: threaded terminals, M12*1.5mm pitch, 10-14 N•m torque recommended.
21. Dimensions C60T-3R0-3200
22. Standard marking
23. Name of manufacturer, part number, serial number.
Rated voltage and capacitance, negative and positive terminals, warning marking.
Stored energy in watt-hours.
24. Mounting recommendations:
25. 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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