

Product Usage Guideline

Supercapacitors should not be used in the following conditions:

1. Exceeding nominal temperature and rated voltage:

- a. **Operating beyond the specified temperature and voltage** can lead to electrolyte decomposition, increased heat, reduced capacity, and higher internal resistance, ultimately shortening lifespan. To enhance longevity, maintain temperatures and voltages within recommended limits.
- b. **Inverse voltage or AC voltage loading.**

2. Ambient temperature impacts supercapacitor lifespan:

A 10°C increase in operating temperature can reduce the lifespan of supercapacitors by half. Therefore, strive to operate them in cooler environments below the maximum rated temperature. Consider not only the ambient temperature but also heat from internal components (like power transistors and resistors) and self-generated heat due to ripple currents. Avoid placing heat-generating components near supercapacitors.

3. Ensure correct installation according to positive and negative markings.

4. Avoid using or storing supercapacitors in the following environments:

- a. Areas exposed to water, saltwater, oil, condensation, or gaseous oil/salt.
- b. Locations with harmful gases (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia).
- c. Areas splashed with acidic or alkaline solvents.
- d. Direct sunlight or dusty environments.
- e. Locations subject to excessive vibration or shock.

5. Prevent overheating during soldering: for a 1.6 mm printed circuit board, solder at 260°C for no more than 5 seconds.

6. Do not attempt to wire under the supercapacitor: if necessary, take appropriate protective measures.

7. When operating beyond rated conditions: Such as over-voltage or exceeding temperature limits, the pressure valve may activate, causing electrolyte spillage. Design systems to accommodate potential abnormal conditions.

8. Consider voltage drops during rapid charging and discharging: Internal impedance can cause voltage drops (IR drops) at the start of these processes; design accordingly.

9. For large-capacity power-type products (10F or more): A terminal short circuit during charging can result in hundreds of amperes of current flow, posing a danger. Avoid installing or dismantling the product while energized.

10. Do not immerse capacitors in molten solder: Only apply solder to the capacitor's lead pins, avoiding contact with heat-shrink tubing.

11. Avoid bending pins excessively: After installation, do not twist or force the capacitors into a tilted position.

12. Consider voltage equalization when using supercapacitors in series.



13. Storage recommendations: Do not store in areas with relative humidity above 85% or containing toxic gases. Ideal long-term storage is in environments ranging from -30°C to 50°C with relative humidity below 60%.

14. Dispose of waste products responsibly: Follow local laws and regulations or guidelines set by public organizations, and entrust disposal to a licensed industrial waste company.

15. For additional inquiries regarding supercapacitors: Consult Hongda Capacitors or refer to the relevant technical data in the operating instructions.