DSF Series Supercapacitors

Higher Voltage, Low ESR Supercapacitors...
1.5 to 600 Farads!
DSF Series Supercapacitors offer higher voltage for higher power

- Rated for 3 WVDC, or 6 WVDC for dual pack, as compared to typical supercaps, which have a single device rating of 2.5-2.7 WVDC.
- Higher full-rated operating voltage results in greater energy densities, which leads to space savings.
- High current handling—up to 20 amps.
- Ideal for a variety of energy-storage applications.
Use fewer devices in capacitor banks!

- Bank in series or parallel for even higher voltage or capacitance.
- Because of its higher voltage and power density, fewer DSF capacitors may be required in banks, saving space and cost.
- Graphic shows how fewer DSF capacitors may be required, compared to other supercaps.
- Energy density is 24% greater than a 2.7V device.
Like other supercapacitors, the DSF Series offers far greater capacity than conventional electrolytics.

Compared to electrolytics or rechargeable batteries, the DSF Series is:

- An electric double-layer capacitor (EDLC), with very large storage capabilities and low ESR.
- Designed around an activated carbon anode and cathode, with an organic electrolyte.
- Especially suitable for short, high-power output and energy storage applications.
- Instant charging, with long life energy storage.
DSF Series supercapacitors offer high performance plus cost savings

- Values from 1.5 to 600 Farads
- 3.0 or 6.0 WVDC Max
- Low ESR and high current handling
- -40 °C to +85 °C operating temperature
  (-40 °C to 65 °C at 3.0 WVDC)
- Operating life: 10 years with 500,000 cycles
- Performance does not degrade with each cycle
- Value priced
### DSF Series key specifications summary

<table>
<thead>
<tr>
<th>Operating Temperature Range</th>
<th>-40°C to +65°C (-40 to +85°C @ 2.5V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-40°C to +70°C</td>
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<tr>
<td>Capacitance Tolerance @ 20°C</td>
<td>+30%/-10% (Q tolerance)</td>
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</table>

<table>
<thead>
<tr>
<th>Voltage</th>
<th>WVDC</th>
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<tr>
<td></td>
<td>SVDC</td>
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</table>

**Life Time**

- 1500 hours with rated voltage applied at 65°C
- Capacitance change: ±30% of initially measured values
- ESR: <200% of initially specified values
- Leakage current: <100% specified maximum value

**Shelf Life**

- 1000 hours with no voltage applied at 60°C
- Capacitance change: ±30% of initially measured values
- ESR: <200% of initially specified values

**Life Cycles**

- (25°C) 1 cycle= Charge to WVDC for 20s, constant voltage charging for 10s, discharge to 1/2 WVDC for 20s, rest for 10s
- 500,000 cycles
- Capacitance change: ±30% of initially measured values
- ESR change: <200% of initially specified values

*ESR change < 4x at 85°C

- 6 volt rated caps are radials, internally constructed of two devices in series.
Choose from 17 different SKUs...1.5 to 600 Farads

<table>
<thead>
<tr>
<th>WVDC</th>
<th>Capacitance (F)</th>
<th>IC PART NUMBER</th>
<th>MAX Current (A) (1 Sec.)</th>
<th>Maximum Continuous Current (A) (ΔT=15°C)</th>
<th>Short Circuit Current (A)</th>
<th>ESR AC 1 kHz (mΩ)</th>
<th>DC ESR (mΩ) 20°C</th>
<th>Max stored energy (mWh)</th>
<th>LC (mA) (72 hrs)</th>
<th>Energy Density (Wh/kg)</th>
<th>Energy Volumetric Density (Wh/l)</th>
<th>Power Density (kW/kg)</th>
<th>Power Volumetric Density (kW/l)</th>
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- Up to 110F in a radial-leaded package.
- 100 to 600F types are snap-ins.
DSF has four lead configurations, which vary by voltage and capacitance: radial, two-pin snap in, four-pin snap in and dual pack.
DSF Series potential applications

• Industrial
  • Factory automation and robotics
  • Cranes, elevators
  • Mechanical actuator power

• Transportation
  • Forklift trucks
  • Personal electric vehicles

• Energy/Lighting
  • Smart utility meters
  • UPS systems and emergency lighting
  • Solar lights and energy storage
  • Power conversion

• IoT
  • Energy harvesting/storage

• Memory Backup Circuits
DSF Series performance summary

DSF Supercapacitors provide very high capacitance and energy storage, higher operating voltages, higher current and low cost.

- Standard values from 1.5 to 600 Farads at 3.0 or 6.0 WVDC
- -40 °C to +85 °C operation (-40 °C to 65 °C at 3.0 WVDC)
- Low ESR with high current handling
- 10 year/500,000 cycle life exceeds typical end-product life
- Unlike batteries, performance does not degrade with each charge/discharge cycle
- Very compact size and high energy density aids product design flexibility
- Bank in series or parallel for higher capacitance or voltage

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