



# DSF Series Supercapacitors

*Higher Voltage, Low ESR  
Supercapacitors...  
1.5 to 600 Farads!*

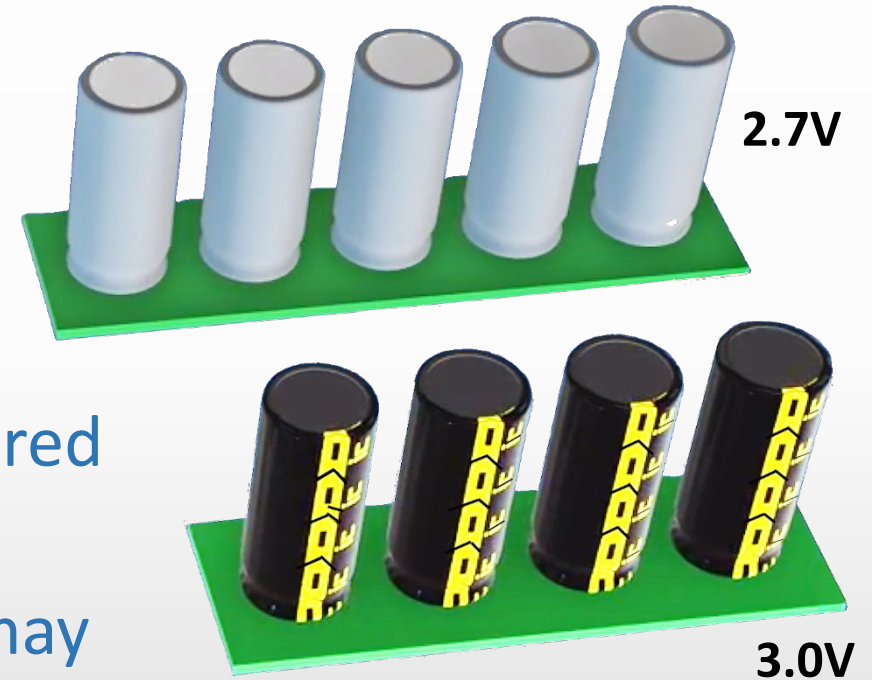
## DSF Series Supercapacitors offer higher voltage for higher power



- 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!

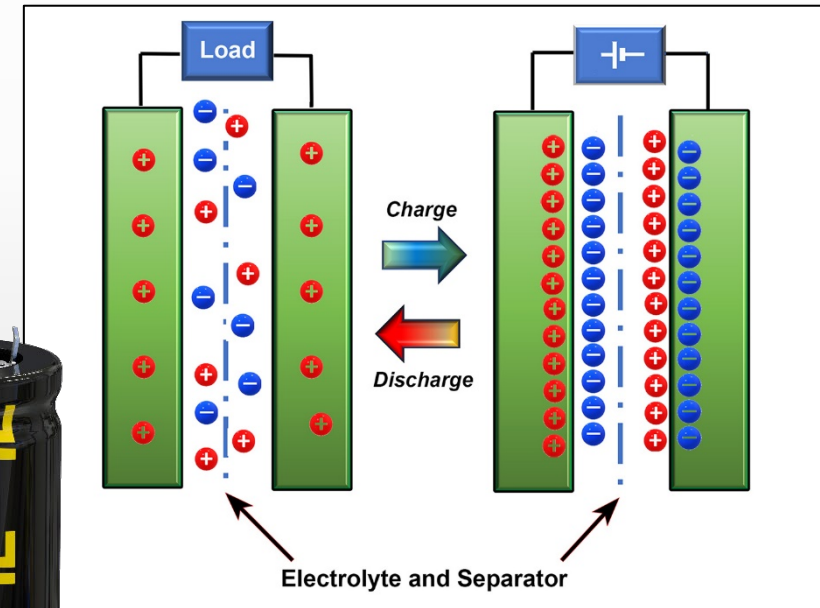
- Bank in series or parallel for even higher voltage or capacitance.
- Because of its higher voltage and power density, fewer DSF capacitors may be required in banks, saving space and cost.
- Graphic shows how fewer DSF capacitors may be required, compared to other supercaps.
- Energy density is 24%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



# Like other supercapacitors, the DSF Series offers far greater capacity than conventional electrolytics

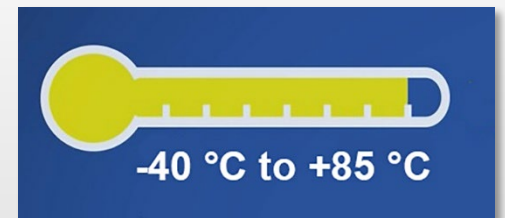
Compared to electrolytics or rechargeable batteries, the DSF Series is...

- 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

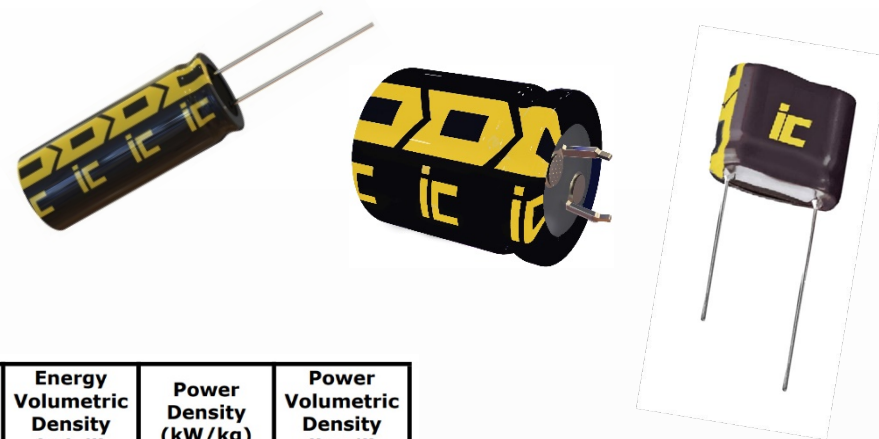
<b>Operating Temperature Range</b>	<b>-40°C to +85°C</b>	
<b>Storage Temperature</b>	<b>+5°C to +35°C</b>	
<b>Capacitance Tolerance @ 20°C</b>	<b>-10% +30%</b>	
<b>Voltage (Vdc) (+65°C/+85°C)</b>	<b>3.0V / 2.5V</b>	
<b>Life Time</b>	<b>1500 hours with rated voltage applied at rated temperature</b>	
	<b>Capacitance change</b>	±30% of initially measured values
	<b>ESR</b>	<200% of initially specified values*
	<b>Leakage current</b>	≤100% specified maximum value
<b>Shelf Life</b>	<b>1000 hours with no voltage applied at 60°C</b>	
	<b>Capacitance change</b>	±30% of initially measured values
	<b>ESR</b>	<200% of initially specified values
<b>Life Cycles</b> ( 25°C) 1 cycle= Charge to WVDC for 20s, constant voltage charging for 10s, discharge to ½ WVDC for 20s, rest for 10s	<b>500,000 cycles</b>	
	<b>Capacitance change</b>	±30% of initially measured values
	<b>ESR change</b>	<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

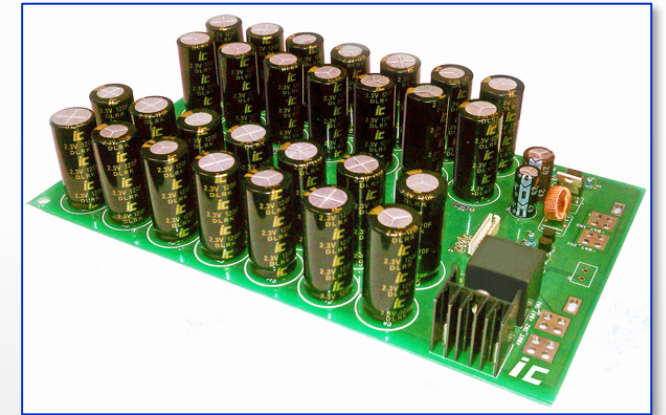
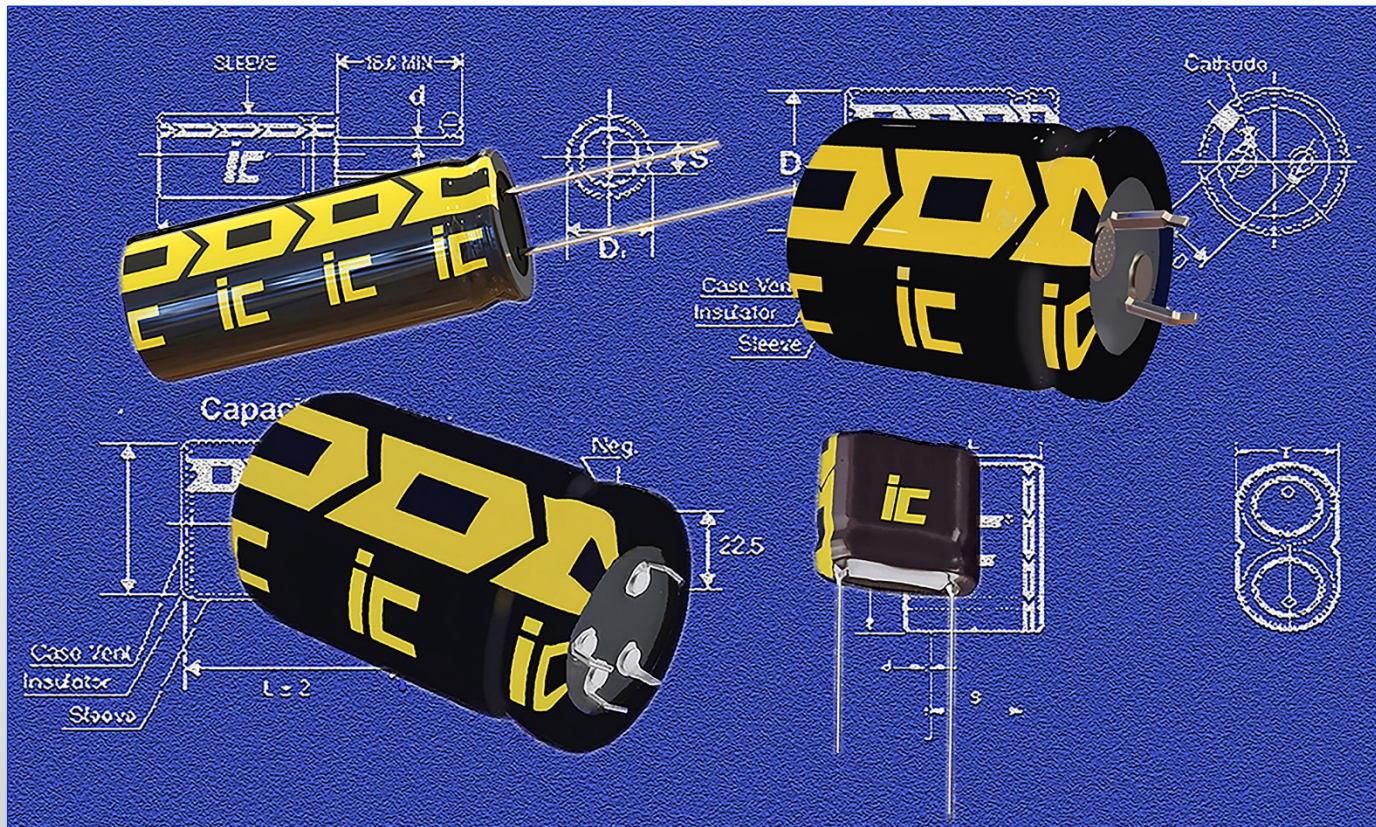


WVDC	Capacitance (F)	IC PART NUMBER	MAX Current (A) (1 Sec.)	Maximum Continuous Current (A) ( $\Delta T=15^{\circ}C$ )	Short Circuit Current (A)	ESR AC 1 kHz (m $\Omega$ )	DC ESR (m $\Omega$ ) 20°C	Max stored energy (mWh)	LC (mA), (72 hrs)	Energy Density (Wh/kg)	Energy Volumetric Density (Wh/l)	Power Density (kW/kg)	Power Volumetric Density (kW/l)
3	3.0	<a href="#">DSF305Q3R0</a>	3.1	1.4	20	80	150	3.75	0.014	2.67	3.71	5.14	6.6
3	5.0	<a href="#">DSF505Q3R0</a>	4.5	2.2	23	70	130	6.25	0.02	2.97	3.98	3.95	5.29
3	7.0	<a href="#">DSF705Q3R0</a>	6.7	2.4	38	55	80	8.75	0.03	3.8	4.46	5.86	6.88
3	10.0	<a href="#">DSF106Q3R0</a>	9.4	3.4	50	40	60	12.5	0.045	3.9	5.29	5.625	7.62
3	25.0	<a href="#">DSF256Q3R0</a>	20	4.4	86	25	35	31.25	0.1	4.46	6.21	4.4	6.13
3	50.0	<a href="#">DSF506Q3R0</a>	35.7	7.1	136	15	22	62.5	0.15	4.88	6.14	3.83	4.82
3	100.0	<a href="#">DSF107Q3R0</a>	68.2	8.3	250	8	12	125	0.3	5.95	7.31	4.29	5.26
3	110.0	<a href="#">DSF117Q3R0</a>	59.8	6.3	188	10	16	137.5	0.21	6.25	9.005	3.07	4.421
3	200.0	<a href="#">DSF207Q3R0</a>	100	10	300	6	10	250	0.7	6.94	7.07	3	3.06
3	350.0	<a href="#">DSF357Q3R0</a>	236	18.9	857	3	3.5	437.5	1	6.73	7.58	4.75	5.35
3	400.0	<a href="#">DSF407Q3R0</a>	250	18.9	857	3	3.5	500	1	7.35	8.66	4.96	5.85
3	470.0	<a href="#">DSF477Q3R0</a>	267	18.9	857	3	3.5	587.5	1.3	8.05	10.18	4.23	5.35
3	600.0	<a href="#">DSF607Q3R0</a>	290	20	857	3	3.5	750	1.5	9.15	11.14	4.12	5.35
6	1.5	<a href="#">DSF155Q6R0HAE</a>	3.1	1.4	20	180	320	7.5	0.013	2.5	2.52	16.6	16.8
6	2.5	<a href="#">DSF255Q6R0JBE</a>	4.5	2.2	23	160	280	12.5	0.018	3.1	2.51	14.1	11.3
6	3.5	<a href="#">DSF355Q6R0JBF</a>	6.7	2.4	38	130	180	17.5	0.025	3.5	3	13.8	11.9
6	5.0	<a href="#">DSF505Q6R0JBG</a>	9.4	3.4	50	100	140	25	0.04	3.57	3.62	12.9	13

- Up to 110F in a radial-leaded package.
- 100 to 600F types are snap-ins.

# Configurations and termination options

DSF has four lead configurations, which vary by voltage and capacitance: radial, two-pin snap in, four-pin snap in and dual pack.



*High-Voltage, High-Capacity  
Custom Module Example*



# DSF Series potential applications

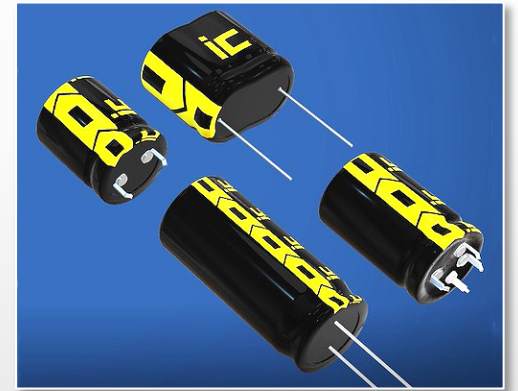
- Industrial
  - Factory automation and robotics
  - Cranes, elevators
  - Mechanical actuator power
- Transportation
  - Forklift trucks
  - Personal electric vehicles
- Energy/Lighting
  - Smart utility meters
  - UPS systems and emergency lighting
  - Solar lights and energy storage
  - Power conversion
- 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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