DATA SHEET

SCF3400

supercapacitor

The SkelCap supercapacitor series brings the benefits of our patented production technology to a form factor most commonly found in industry. These cells are developed for a variety of applications and offer very high power and excellent lifetime characteristics.

- Capacitance 3400 F
- Extreme power density
- Durable and safe aluminum casings
- German quality
- Weldable terminals
- High cycle life at >1,000,000 cycles
- High temperature tolerance
- RoHS and REACH compliant

Electrical	Value	Unit
Rated voltage	3.0	V
Rated capacitance	3400	F
Initial capacitance	>3600	F
ESR (DC 10ms ESR ≈ AC 100 Hz), rated/initial	0.12/0.10±0.2	mOhm
ESR (DC 1s ESR ≈ AC 0.1 Hz), rated/initial	0.14/0.12±0.2	mOhm
Maximum peak current, for 1 second	3.5	kA
Maximum continuous current, ΔT=40°C	308	A
Leakage current at 3.0V, 25°C and 72h, max	<8	mA
Leakage current at 3.0V, 25°C and 8h, max	<50	mA

Energy, based on rated capacitance	Value	Unit
Stored energy	4.25	Wh
Specific energy	8.27	Wh/kg
Energy density	10.9	Wh/L

Power	Value	Unit
Power, matched impedance	18.75	kW
Specific power, matched impedance	36.48	kW/kg
Power density, matched impedance	48.08	kW/L

Standards and certifications	
Vibration specifications	ISO 16750-3:2023, Table 17
Shock specifications	ISO 16750-3:2023, 4.2.2
Certifications	RoHS, REACH

Temperature and life	Value	Unit
Operating temperature range (up to 95% RH)		
Minimum	-40	°C
Maximum	+65	°C
Storage temperature range (uncharged, up to 85% RH)		
Minimum	-40	°C
Maximum	+40	°C
Life		
End of Life (EoL) ESR	200% of rated	
EoL capacitance	80% of rated	
Storage life @ RT, uncharged	5	years
Cycle life @ RT, between V_R and $V_R/2$	1,000,000	cycles

Safety	Value	Unit
Short circuit current (For informational purposes - do not use as operating current.)	21.5	kA

Physical parameters	Value	Unit
Mass, typical (±10g)	0.514	kg
Volume	0.39	L
Diameter (-0.2…+0.3mm), including label	60.4	mm
Length (±0.3mm)	138	mm
Terminal diameter, top/bottom	18/22	mm
Terminal length	3.2	mm

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(1) Maximum peak current (1 sec) = $\frac{½\ CV}{C \times ESR + 1s}$ (2) $E_{stored} = \frac{½\ CV^2}{3600}$ (3) $E_{max} = \frac{½\ CV^2}{3600 \times mass}$

(4) $E_{max} = \frac{½\ CV^2}{3600 \times volume}$ (5) $P_{max} = \frac{V^2}{4 \times ESR}$ (6) $P_{max} = \frac{V^2}{4 \times ESR \times mass}$

(7) $P_{max} = \frac{V^2}{4 \times ESR \times volume}$ (8) $I_{max} = \sqrt{\frac{\Delta T}{ESR \times R_{th}}}$

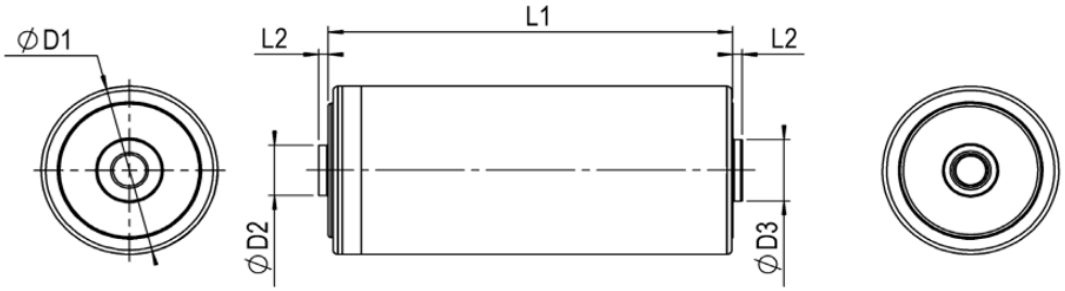
(9) The stated maximum peak current should not be exceeded during use. If the limit is to be exceeded by the customer, Skeleton must be consulted beforehand and give approval for the exceeded power load. Typical value represents the mean production sample value Rated value represents the absolute minimum capacitance or maximum ESR value of production sample.

Standard Markings

+ Name of manufacturer, part number, serial number, rated voltage
+ Rated capacitance, negative and positive terminals, warning marking
+ Total energy in watt-hours
+ Electrolyte material used

Notes

+ Testing instructions available on www.skeletontech.com
+ All information provided on this data sheet and all subsequent supercapacitors sales and testing are subject to Standard Terms of Service (ToS) available on www.skeletontech.com, document *General Terms of Sale for Skeleton Technologies GmbH*.



Dimensions

D1	60.4 +/- 0.3mm (incl. label)
L2	3.2 +/- 0.2mm
L1	138.0 +/- 0.3mm
D2	18.0 +/- 0.03m
D3	22.0 +/- 0.03mm

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DATA SHEET

SCX5000

supercapacitor

The SkelCap supercapacitor series brings the benefits of our patented production technology to a form factor most commonly found in industry. These cells are developed for a variety of applications and offer very high power and excellent lifetime characteristics.

- Capacitance 5000 F
- Extreme power density
- Durable and safe aluminum casings
- German quality
- Weldable terminals
- High cycle life at >1,000,000 cycles
- High temperature tolerance
- RoHS

Electrical	Value	Unit
Rated voltage	3.0	V
Rated capacitance	5000	F
Initial capacitance, typical	5200	F
DC 10ms ESR, rated	0.14	mOhm
DC 1s ESR, rated	0.20	mOhm
ESR (IEC62391-1), rated	0.20	mOhm
Maximum peak current, for 1 second [1, 9]	3.8	kA

Energy, based on rated capacitance	Value	Unit
Stored energy [2]	6.3	Wh
Specific energy [3]	11.1	Wh/kg
Energy density [4]	16.0	Wh/L

Power	Value	Unit
Nominal power, calculated from 10ms ESR (for comparison)		
Power, matched impedance [5]	16.1	kW
Specific power, matched impedance [6]	28.4	kW/kg
Power density, matched impedance [7]	41.2	kW/L
Nominal power, calculated from 1s ESR (for engineering)		
Power, matched impedance [5]	11.2	kW
Specific power, matched impedance [6]	19.9	kW/kg
Power density, matched impedance [7]	28.9	kW/L

Temperature and life	Value	Unit
Operating temperature range		
Minimum	-40	°C
Maximum	+65	°C
Storage temperature range (uncharged)		
Minimum	-40	°C
Maximum	+50	°C
Life		
End of Life (EoL) ESR	200% of rated	
EoL capacitance	80% of rated	
Storage life @ RT, uncharged	10	years
Cycle life @ RT, between V_R and $V_R/2$	1,000,000	cycles

Safety	Value	Unit
Short circuit current (For informational purposes - do not use as operating current.)	21.4	kA

Physical parameters	Value	Unit
Mass, typical (±3-6g)	0.565	kg
Volume	0.390	L
Diameter (-0.2…+0.3mm), including label, D1	60.2	mm
Length (±0.3mm), L1	138	mm
Terminal diameter, D2	12	mm
Terminal length, L2	3.2	mm

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Standards and certifications	
Vibration specifications	ISO 16750-3, Table 12, Table 14
Certifications	RoHS

Thermal (based on DC 1s ESR)	Value	Unit
Thermal resistance given ΔT = 30°C, R_{th}	30	°C/W
Thermal capacitance, C_{th}, typical	634	J/°C
Max continuous current [10], ΔT = 15°C [8]	158	A
Max continuous current [10], ΔT = 30°C [8]	224	A
Max continuous current [10], ΔT = 40°C [8]	258	A

(1) Maximum peak current (1 sec) = $\frac{½\ CV}{C \times ESR + 1s}$ (2) $E_{stored} = \frac{½\ CV^2}{3600}$ (3) $E_{max} = \frac{½\ CV^2}{3600 \times mass}$

(4) $E_{max} = \frac{½\ CV^2}{3600 \times volume}$ (5) $P_{max} = \frac{V^2}{4 \times ESR}$ (6) $P_{max} = \frac{V^2}{4 \times ESR \times mass}$

(7) $P_{max} = \frac{V^2}{4 \times ESR \times volume}$ (8) $I_{max} = \sqrt{\frac{\Delta T}{ESR \times R_{th}}}$

(9) The stated maximum peak current should not be exceeded during use. If the limit is to be exceeded by the customer, Skeleton must be consulted beforehand and give approval for the exceeded power load. Typical value represents the mean production sample value Rated value represents the absolute minimum capacitance or maximum ESR value of production sample.
*Power values calculated using DC 10ms ESR ≈ AC 100Hz.

Standard Markings

+ Name of manufacturer, part number, serial number, rated voltage
+ Rated capacitance, negative and positive terminals, warning marking
+ Total energy in watt-hours
+ Electrolyte material used

Notes

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