SKELETON TECHNOLOGIES

SkelCap

supercapacitor

SCA0300 and SCH0350

PCB-mountable ultracapacitors

SkelCap
supercapacitor

The SkelCap PCB-mountable supercapacitors are Skeleton's answer for the D33 L61 form factor - small ultracapacitor cells with excellent power density, low ESR, and long lifetime.

+ Capacitance 300 F
+ Extreme power density
+ Durable and safe aluminum casings
+ PCB solderable terminals
+ High cycle life >1,000,000 cycles
+ RoHS & UL810A compliant
+ In accordance with AEC-Q200

Note: Polarity of the cell is stated as following: center terminal for "-", can and 3-pillar PCB frame for "+".

RoHS

General Specifications*

	Value	Unit
Rated voltage V_R	2.85	V
Surge voltage V_s	3.0	V
Specific energy	5.3	Wh/kg
Nominal specific power	32	kW/kg
Practical specific power	20	kW/kg

Standards and certifications

Vibration Specification	ISO 16750-3, Table 12
Shock Resistance	IEC60068-2-27 Shock Test
Certifications	RoHS, UL 810A
Standards	REACH, UL 810A, AEC-Q200*

**Tested according AEC-Q200 requirements, modified to match ultracapacitor properties*

General

	Value	Unit
Product code	3710041	
Rated capacitance	300	F
DC 10ms ESR rated	1.0	mΩ
DC 1s ESR rated	1.60	mΩ
Maximum peak current, for 1 second [1, 9]	0.29	kA
Leakage current (At 2.85 V, 25 °C and 72 hours, max)	1.5	mA

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		
Lifetime @ V_R and +65 °C Capacitance decrease 20% against rated value; 1s ESR increase 100% against rated value	1500	Hours
Storage life @ RT, uncharged	10	Years
Cyclelife @ RT, between V_R and $V_R/2$	1,000,000	Cycles

Power

	Value	Unit
Nominal power, calculated from 10 ms ESR (for comparison)		
Specific power, matched impedance [6]	32	kW/kg
Power density, matched impedance [7]	38	kW/L
Practical power, calculated from 1 s ESR (for engineering)		
Power, matched impedance [5]	1.3	kW
Specific power, matched impedance [6]	20	kW/kg
Power density, matched impedance [7]	24	kW/L

Safety

Short circuit current (For informational purposes - do not use as operating current.)	3	kA

Physical parameters

	Value	Unit
Mass. Typical	0.064	kg
Volume	0.053	L
Diameter	33	mm
Length	61.5	mm

Energy

Energy [2]	0.34	Wh
Specific energy [3]	5.3	Wh/kg
Energy density [4]	6.4	Wh/L

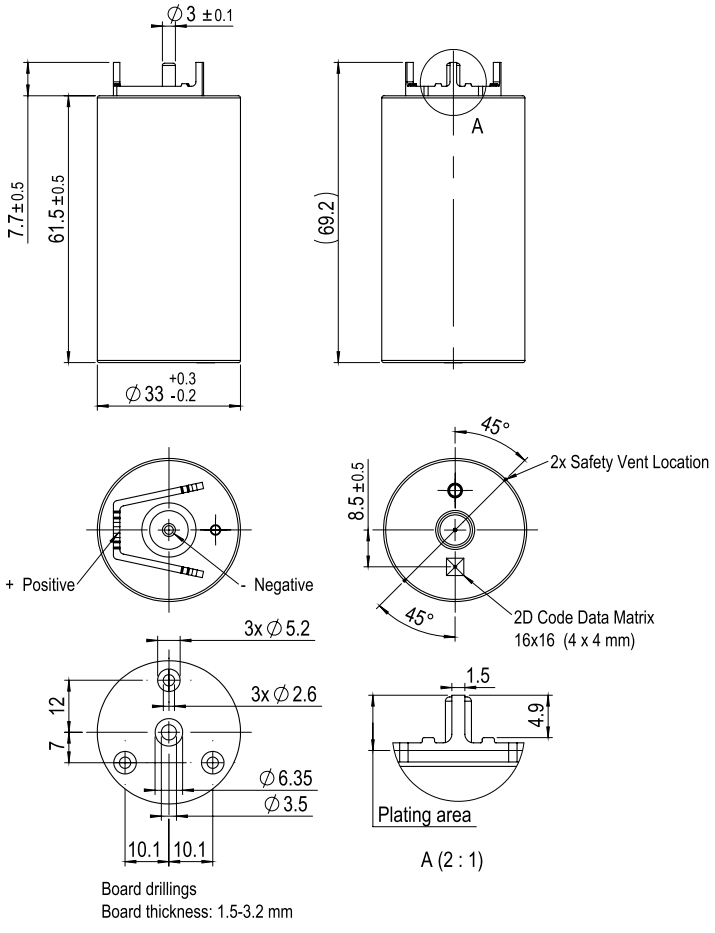
Thermal (based on DC 1s ESR)

	Value	Unit
Thermal resistance, R_{ca}, typical	10.8	°C/W
Thermal capacitance, C_{th}, typical	60	J/°C
Max continuous current, ΔT = 15°C [8]	29	A
Max continuous current, ΔT = 40°C [8]	48	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) $I_{max} = \sqrt{\frac{\Delta T}{ESR \times R_{th}}}$



Board drillings
Board thickness: 1.5-3.2 mm

(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 ultracapacitors 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*.

SkelCap
supercapacitor

+ Capacitance 350 F
+ Extreme power density
+ Durable and safe aluminum casings
+ High cycle life >1,000,000 cycles

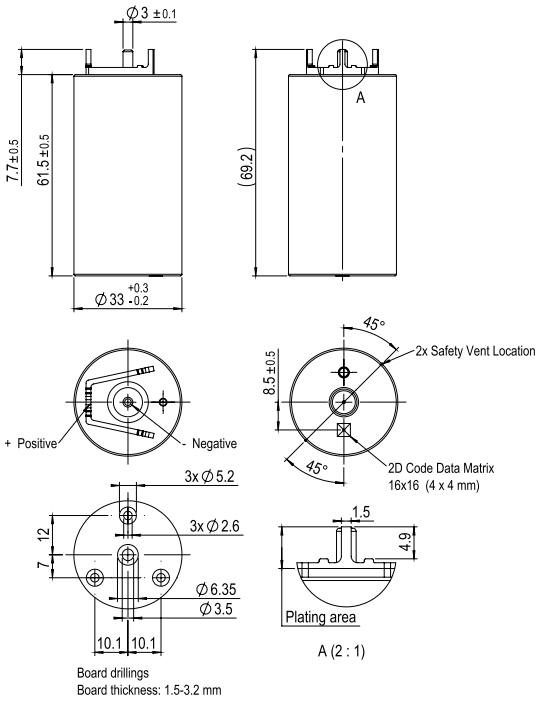
Note: Polarity of the cell is stated as following:
center terminal for "-", can and 3-pillar PCB frame for "+".

General

	Value	Unit
Product code	3710050	
Rated voltage V_R	2.85	V
Rated capacitance	350	F
DC ESR, rated	1.70	mΩ
Surge voltage	3	V

Energy

Stored energy / E	0.39	Wh
Specific energy / E_{max}	5.6	Wh/kg
Energy density / E_{vol}	7.5	Wh/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

Capacitance decrease 20% from rated value;
resistance increase 100% from rated value

Storage life @ RT, uncharged	10	Years
Cyclelife @ RT, between V_R and $V_R/2$	1,000,000	Cycles

Power

Nominal power

Nominal specific power	29	kW/kg
Practical specific power	18	kW/kg
Specific power, matched impedance	17.1	kW/kg
Power density, matched impedance	22.7	kW/L

Practical power*, calculated from total resistance
(for engineering)

Power, matched impedance / P	1.2	kW
Specific power, matched Impedance / P_{max}	17.1	kW/kg
Power density, matched impedance	22.7	kW/L

Physical parameters

	Value	Unit
Mass. Typical	0.07	kg
Volume	0.05	L
Diameter	33	mm
Length	61.4	mm

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