Document Number	V1_20160617

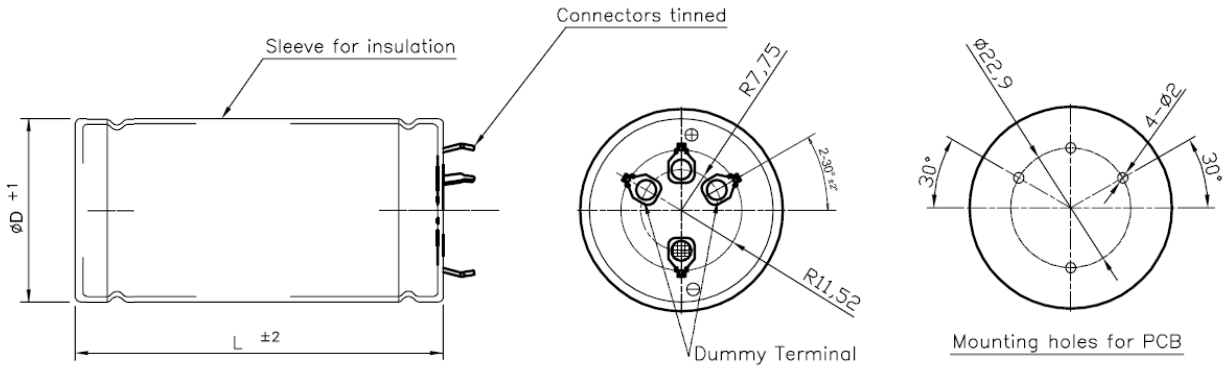
Product Specification

LSUC 003R0S 0500F EA

Product Specification

Physical Properties

Dimension in mm (not to scale)



Specification

Rated Voltage	3.0 V	
Surge Voltage	3.2 V	
Capacitance Tolerance	-10% / + 10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance Life (65℃)	1,000 Hours at rated voltage and +65℃	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Life Time (25℃)	10 Years at rated voltage and +25℃	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25℃)	500,000 Cycles between rated voltage to half rated voltage at +25℃	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

Standard Ratings

Part number	Capacitance (F)	ESR (mΩ)		Max. Current (A)	Leakage Current (mA)
		AC (1KHz)	DC		
LSUC 003R0S 0500F EA	500	2.8	3.0	300	< 1

Part number	Max. Stored Energy (Wh)	Max. Continuous Current (A)	Dimension (mm)		Weight (g)
			D1 (+ 1.0)	L (±2.0)	
LSUC 003R0S 0500F EA	0.63	25	35.0	71.0	88

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Technical Information (1)

How to calculate specification value

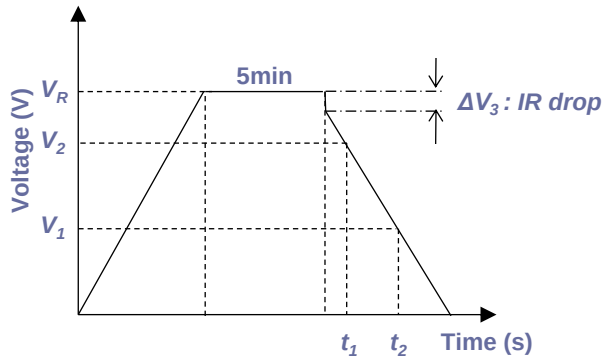
1. The Measurement Methods

1-1 Capacitance

Apply rated voltage and charge for 5min after the constant current / constant voltage power supply has achieved the rated voltage. After a charge for 5min has finished, discharge with 10mA/F to 0.1V.

Measure the time t1 to t2 where the voltage between capacitor terminals at the time of discharge reduces from V1 to V2 as shown figure and calculate the capacitance value by the following formula:

1) Constant current charge with 10mA/F to V_R
2) Constant voltage charge at V_R for 5min
3) Constant current discharge with 10mA/F to 0.1V



$$C = \frac{I \times (t_2 - t_1)}{V_2 - V_1}$$

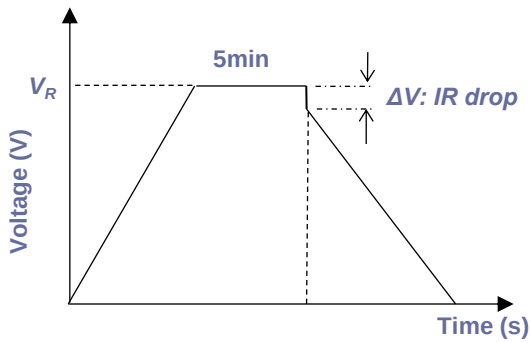
(V1 : 40% value of rate voltage, V2: 80% value of rate voltage)

1-2 DC ESR (Equivalent Series Resistance)

DC ESR of a capacitor shall be calculated by the following formula;

$$R_{AC} = \frac{V}{I_{AC}}$$ (The frequency of the measuring voltage shall be 1kHz)

$$R_{DC} = \frac{\Delta V}{I_{DC}}$$



Where
- R_{AC} is the AC internal resistance (Ω);
- R_{DC} is the DC internal resistance (Ω);
- V is the effective value of AC voltage (V);
- ΔV is the drop voltage for 10ms (V);
- I_{AC} is the effective value of AC current (A);
- I_{DC} is the discharge current (A); 5A

Technical Information (2)

1-3 Leakage Current

The leakage current shall be measured using the direct voltage appropriate to the test temperature(25℃) for 72hrs.

1-4 Maximum current (No repeatable current)

Current for 1sec discharge from the rated voltage to the half of it in constant current discharge,

$$I_{Max} = \frac{V_R - 0.5*V_R}{\Delta t / C + R_{DC}}$$

Where I_{Max} is the Maximum current (A);
Δt is the discharge time (sec), 1 sec in this case ;
C is the capacitance (F);
R_{DC} is the DC resistance (Ω);
V_R is the rated voltage (V).

1-5 Maximum stored energy (E_{MAX})

$$E_{MAX}\,(Wh) = \frac{½\,CV_R^2}{3600}$$

2. The Standard Atmospheric Condition for Measurement

All test and measurements shall be made under standard atmospheric conditions for testing. Before the measurements are made, the capacitor shall be stored at the measuring temperature for a time sufficient to allow the entire capacitor to reach this temperature. The period as prescribed for recovery at the end of a test is a normally sufficient for this purpose.

Temperature : *15~35 ℃*
Relative humidity : *25~75%*
Air Pressure : *86~106 kPa*