



Part Number	LSCU 002R7C 3000F EA LT01/ ST01
	LSCU 002R7C 2000F EA LT01/ ST01
	LSCU 002R7C 1500F EA LT01/ ST01
	LSCU 002R7C 1200F EA LT01/ ST01
	LSCU 002R7C 0650F EA LT01/ ST01
Document Number	V3_20130128

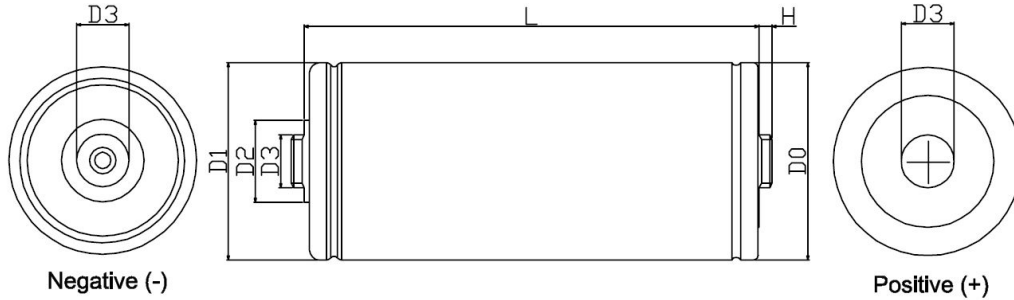
# Product specification



# Product specification

## Physical properties

Dimension in mm (not to scale)



## Specification

Rated Voltage	2.7 V	
Surge Voltage	2.85 V	
Capacitance Tolerance	0% / +20%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 °C	
Storage temperature range	-40 ~ 70 °C	
Endurance	After 1500 hours application of 2.7V .DC at 65°C, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load, the capacitor shall meet specification of endurance.	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 1,000,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

## Standard Ratings

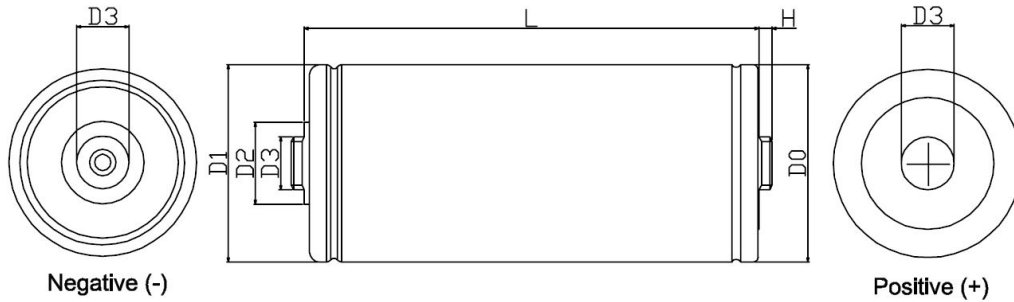
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 3000F EA ST01	3000	0.22	0.23	2,396	< 5	3.04
LSUC 002R7C 3000F EA LT01	3000	0.22	0.23	2,396	< 5	3.04

Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (± 0.1)	D4	H (± 0.1)	L (± 0.5)	
LSUC 002R7C 3000F EA ST01	∅ 60	∅ 60.7	∅ 25	M16, P1.0	4	138	525
LSUC 002R7C 3000F EA LT01	∅ 60	∅ 60.7	∅ 25	M16, P2.0	14	138	535

# Product specification

## Physical properties

Dimension in mm (not to scale)



## Specification

Rated Voltage	2.7 V	
Surge Voltage	2.85 V	
Capacitance Tolerance	0% / +20%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 °C	
Storage temperature range	-40 ~ 70 °C	
Endurance	After 1500 hours application of 2.7V .DC at 65°C, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load, the capacitor shall meet specification of endurance.	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 1,000,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

## Standard Ratings

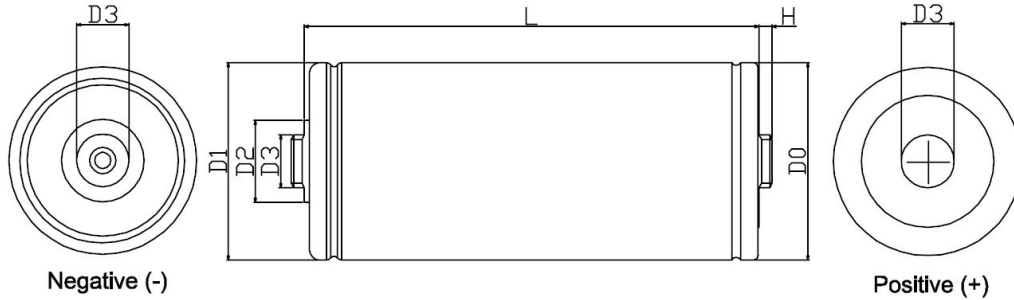
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 2000F EA ST01	2000	0.26	0.27	1,753	< 4	2.03
LSUC 002R7C 2000F EA LT01	2000	0.26	0.27	1,753	< 4	2.03

Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (±0.1)	D3	H (±0.1)	L (±0.5)	
LSUC 002R7C 2000F EA ST01	∅ 60	∅ 60.7	∅ 25	M16, P1.0	4	102	390
LSUC 002R7C 2000F EA LT01	∅ 60	∅ 60.7	∅ 25	M16, P2.0	14	102	395

# Product specification

## Physical properties

Dimension in mm (not to scale)



## Specification

Rated Voltage	2.7 V	
Surge Voltage	2.85 V	
Capacitance Tolerance	0% / +20%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 °C	
Storage temperature range	-40 ~ 70 °C	
Endurance	After 1500 hours application of 2.7V .DC at 65°C, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load, the capacitor shall meet specification of endurance.	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 1,000,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

## Standard Ratings

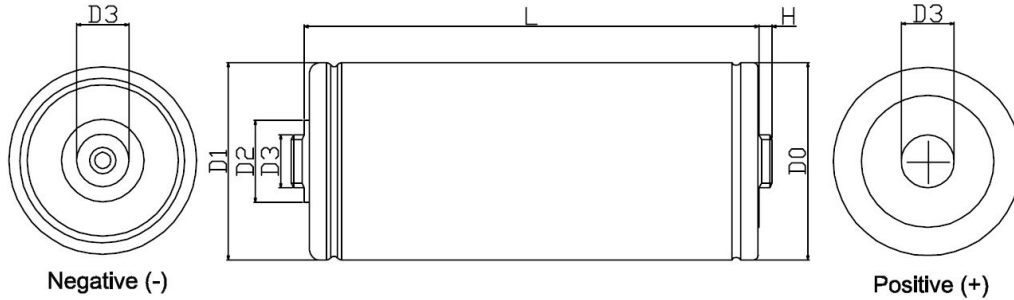
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 1500F EA ST01	1500	0.27	0.28	1,426	< 3	1.52
LSUC 002R7C 1500F EA LT01	1500	0.27	0.28	1,426	< 3	1.52

Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (± 0.1)	D3	H (± 0.1)	L (± 0.5)	
LSUC 002R7C 1500F EA ST01	∅ 60	∅ 60.7	∅ 25	M16, P1.0	4	85	330
LSUC 002R7C 1500F EA LT01	∅ 60	∅ 60.7	∅ 25	M16, P2.0	14	85	335

# Product specification

## Physical properties

Dimension in mm (not to scale)



## Specification

Rated Voltage	2.7 V	
Surge Voltage	2.85 V	
Capacitance Tolerance	0% / +20%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 °C	
Storage temperature range	-40 ~ 70 °C	
Endurance	After 1500 hours application of 2.7V .DC at 65°C, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load, the capacitor shall meet specification of endurance.	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 1,000,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

## Standard Ratings

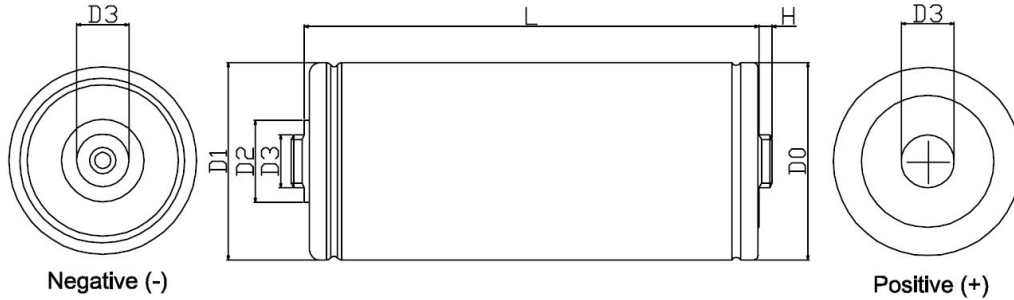
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 1200F EA ST01	1200	0.32	0.33	1,160	< 2.7	1.22
LSUC 002R7C 1200F EA LT01	1200	0.32	0.33	1,160	< 2.7	1.22

Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (± 0.1)	D3	H (± 0.1)	L (± 0.5)	
LSUC 002R7C 1200F EA ST01	∅ 60	∅ 60.7	∅ 25	M16, P1.0	4	74	290
LSUC 002R7C 1200F EA LT01	∅ 60	∅ 60.7	∅ 25	M16, P2.0	14	74	295

# Product specification

## Physical properties

Dimension in mm (not to scale)



Negative (-)

Positive (+)

## Specification

Rated Voltage	2.7 V	
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Capacitance Tolerance	0% / +20%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 °C	
Storage temperature range	-40 ~ 70 °C	
Endurance	After 1500 hours application of 2.7V .DC at 65°C, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
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	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 1,000,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 100% of initially specified value

## Standard Ratings

Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 0650F EA ST01	650	0.56	0.57	640	< 1.5	0.66
LSUC 002R7C 0650F EA LT01	650	0.56	0.57	640	< 1.5	0.66

Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (± 0.1)	D3	H (± 0.1)	L (± 0.5)	
LSUC 002R7C 0650F EA ST01	∅ 60	∅ 60.7	∅ 25	M16, P1.0	4	51.5	210
LSUC 002R7C 0650F EA LT01	∅ 60	∅ 60.7	∅ 25	M16, P2.0	14	51.5	215

## Technical Information (1)

### How to calculate specification value

#### 1. The Measurement Methods

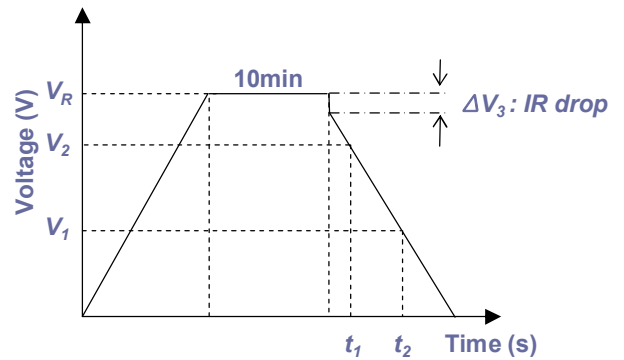
##### 1-1 Capacitance

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

Measure the time  $t_1$  to  $t_2$  where the voltage between capacitor terminals at the time of discharge reduces from  $V_1$  to  $V_2$  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

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



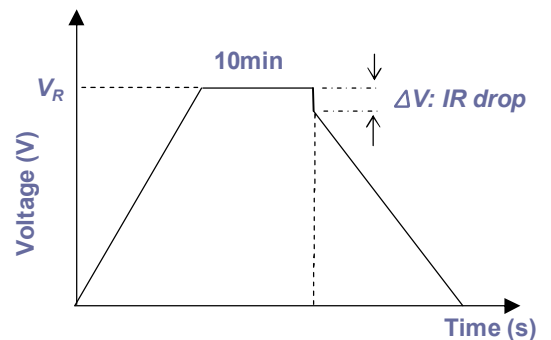
##### 1-2 Resistance

The AC and DC resistance of a capacitor shall be calculated by the following formula;

$$R_{AC} = \frac{V}{I_{AC}} \quad (\text{The frequency of the measuring voltage shall be 100Hz})$$

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

Where  $R_{AC}$  is the AC internal resistance ( $\Omega$ );  
 $R_{DC}$  is the DC internal resistance ( $\Omega$ );  
 $V$  is the effective value of AC voltage (V);  
 $\Delta V$  is the drop voltage for 10ms (V);  
 $I_{AC}$  is the effective value of AC current (A);  
 $I_{DC}$  is the discharge current (A)



## Technical Information (2)

### 1-3 Leakage current & Self discharge

The leakage current shall be measured using the direct voltage appropriate to the test temperature(25℃) for 72hrs. Self discharge voltage shall be measured after charging up for 12hrs, disconnect the capacitor terminals from the voltage source. The capacitor shall be kept under standard condition for 100hrs.

### 1-4 Maximum current

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

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

Where  $I_{Max}$  is the Maximum current (A);

$\Delta t$  is the discharge time (sec), 1 sec in this case ;

$C$  is the capacitance (F);

$R_{DC}$  is the DC resistance ( $\Omega$ );

$V_R$  is the rated voltage (V).

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

$$E_{MAX} (Wh) = \frac{\frac{1}{2} C V_R^2}{3600}$$

## 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