Document Number	V2_20130226

Product specification

LS ULTRACAPACITOR
LSUC

Overview

General

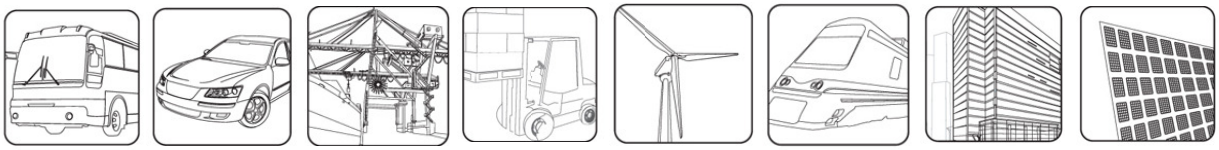
LS Ultracapacitor is promising energy storage device that Positioned between conventional electrolytic capacitor and Rechargeable battery. High power, high energy and long-term Reliability feature of LS Ultracapacitor enables this component to Use in various applications as backup power unit, auxiliary power Unit, instantaneous power compensation, peak power Compensation and energy storage as well.

- Rated voltage : up to 2.8V
- High power performance (vs. Battery)
- High Energy performance (vs. Conventional electrolytic capacitor)
- Environmental Friendliness
- Maintenance-free
- Wide operating temperature range(-40~65)

LS Ultracapacitor

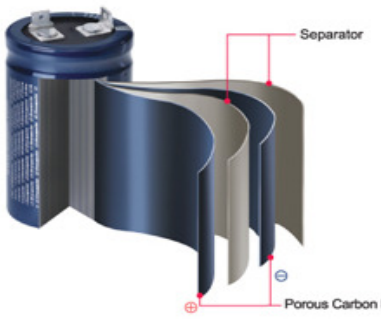
- **LSUC**
  - 2.5V, 2.7V, 2.8V
  - PC & ACN electrolyte
- **LSHC**
  - High Energy density
  - Pseudo Technology
- **LSUM**
  - Standard Module
  - Customized Module

Application

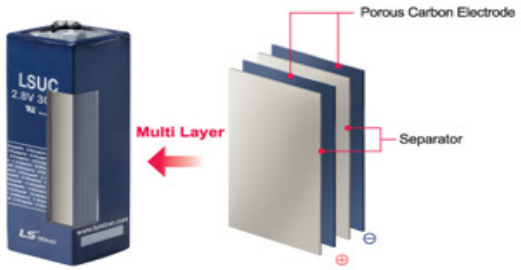


Structure

LS Ultracapacitor Cylindrical Type



LS Ultracapacitor Prismatic Type



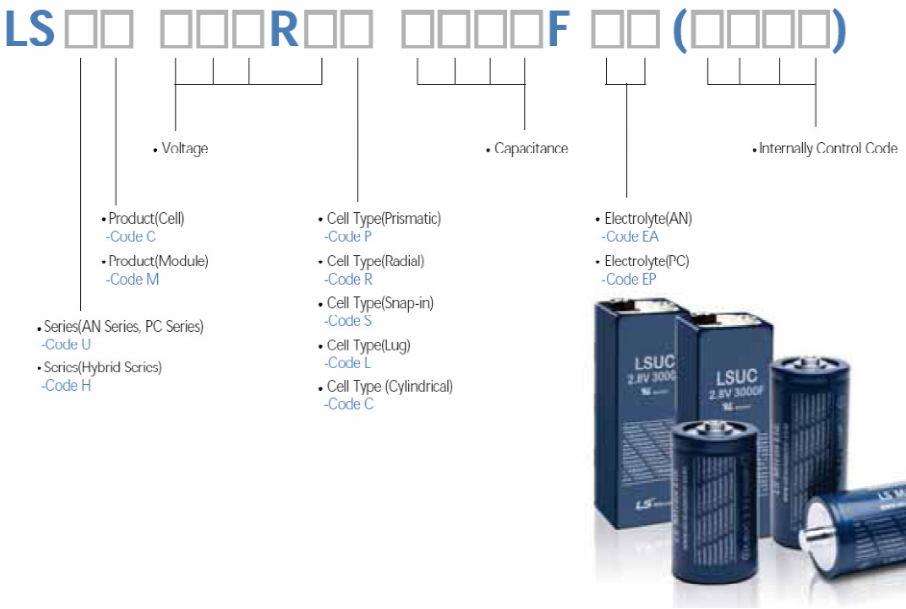
LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Overview

Product Line-up

Item	Feature	Voltage	Capacitance	Part Number	Terminal Type
LSUC series	World top class voltage AN series	2.8	100F	LSUC 002R8S 0100F EA	Snap In
		2.8	120F	LSUC 002R8S 0120F EA	Snap In
		2.8	350F	LSUC 002R8L 0350F EA	Lug
		2.8	400F	LSUC 002R8L 0400F EA	Lug
		2.8	1000F	LSUC 002R8P 1000F EA	Prismatic
		2.8	1700F	LSUC 002R8P 1700F EA	Prismatic
		2.8	3000F	LSUC 002R8P 3000F EA	Prismatic
		2.8	3000F	LSUC 002R8P 3000F EA LR01	Prismatic
	PC series	2.5	110F	LSUC 002R5S 0110F EP	Snap In
		2.5	320F	LSUC 002R5L 0320F EP	Lug
		2.5	380F	LSUC 002R5L 0380F EP	Lug
		2.5	2800F	LSUC 002R5P 2800F EP	Prismatic
LSHC series	High energy density	2.3	220F	LSHC 002R3S 0220F EA	Snap In
		2.5	220F	LSHC 002R5S 0220F EA	Snap In
		2.5	650F	LSHC 002R5L 0650F EA	Lug
		2.5	850F	LSHC 002R5L 0850F EA	Lug
		2.5	1800F	LSHC 002R5P 1800F EA	Prismatic
		2.5	5400F	LSHC 002R5P 5400F EA	Prismatic

Part number rule



Marking

LS Ultracapacitors are marked with the following information ;

LSUC, LSHC – Polarity, Rated capacitance, Rated Voltage, Serial number, Directions

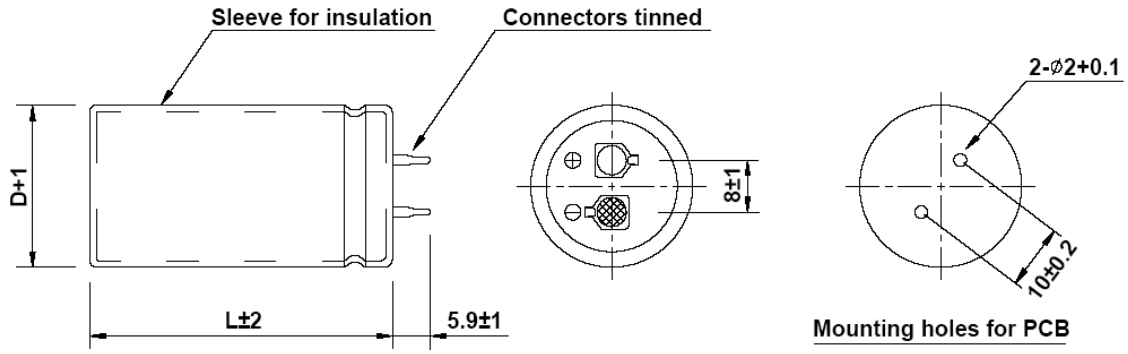
LSUM – Polarity, Rated capacitance, Rated Voltage, Part number, Serial number, Warning

LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.8 V	
Surge Voltage	3.0 V	
Capacitance Tolerance	-10% / 10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 500,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value

Standard Ratings

Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Continuous Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(1KHz)	DC				
LSUC 002R8S 0120F EA	120	7	9	81	20	< 0.4	0.13
LSUC 002R8S 0100F EA	100	7	9	74	20	< 0.3	0.11

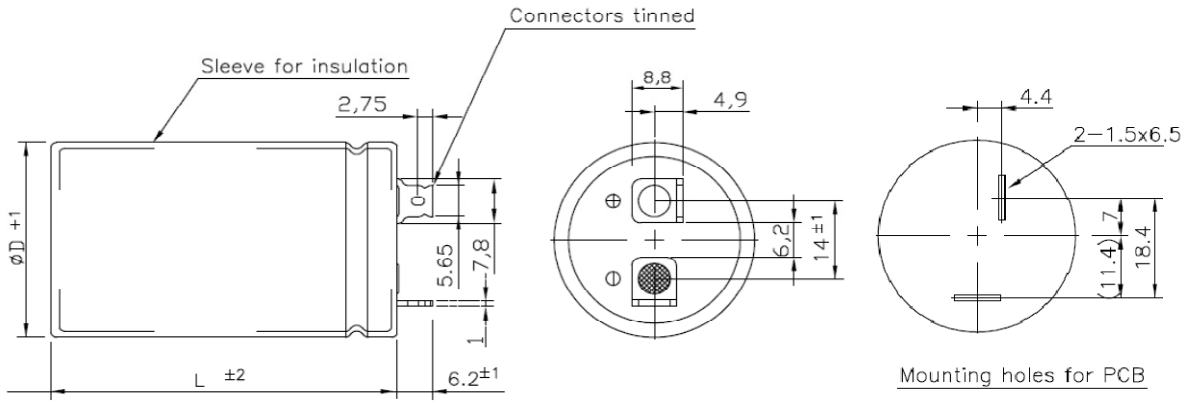
Part number	Dimension (mm)		Weight (g)
	D1 (+ 1.0)	L (±2.0)	
LSUC 002R8S 0120F EA	25.0	46.0	25
LSUC 002R8S 0100F EA	22.0	46.0	23

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555,Hogye-dong,Dongan-gu,Anyang-si,Gyeonggi-do,Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.8 V	
Surge Voltage	3.0 V	
Capacitance Tolerance	-10% / 10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 500,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value

Standard Ratings

Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Continuous Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(1KHz)	DC				
LSUC 002R8L 0400F EA	400	2.8	3	255	25	< 1	0.44
LSUC 002R8L 0350F EA	350	3	3.2	231	25	< 1	0.38

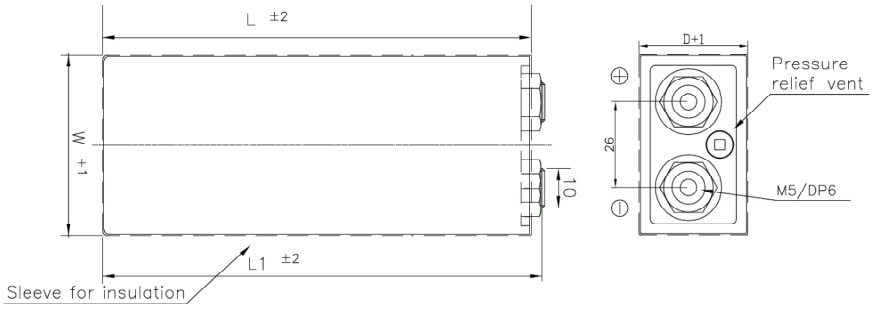
Part number	Dimension (mm)		Weight (g)
	D1 (+ 1.0)	L (±2.0)	
LSUC 002R8L 0400F EA	35.0	71.0	77
LSUC 002R8L 0350F EA	35.0	61.0	72

LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.8 V	
Surge Voltage	3.0 V	
Capacitance Tolerance	+10% / -10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance	After 1500 hours application of 2.8V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% 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 002R8P 1700F EA	1700	0.47	0.50	1,286	< 3	1.85
LSUC 002R8P 1000F EA	1000	0.55	0.58	886	< 2	1.09

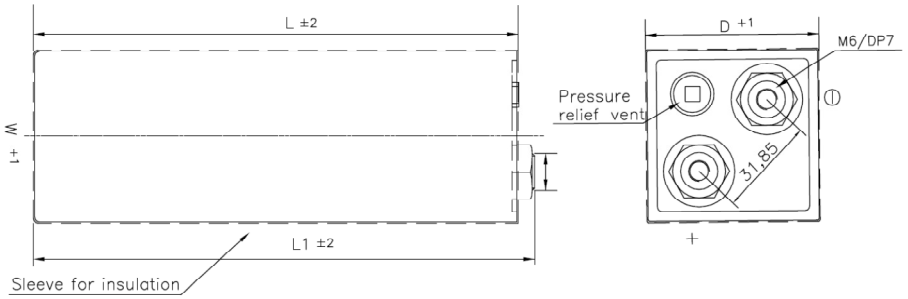
Part number	Dimension (mm)				Weight (g)
	D (+1)	W (+ 1)	L (±2)	L1 (±2)	
LSUC 002R8P 1700F EA	32	54	150	155	380
LSUC 002R8P 1000F EA	32	54	97	100	245

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.8 V	
Surge Voltage	3.0 V	
Capacitance Tolerance	+10% / -10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance	After 1500 hours application of 2.8V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% 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 002R8P 3000F EA	3000	0.29	0.36	2,019	< 5	3.27
LSUC 002R7C 3000F EA LR01	3000	0.25	0.25	2,400	< 5	3.27

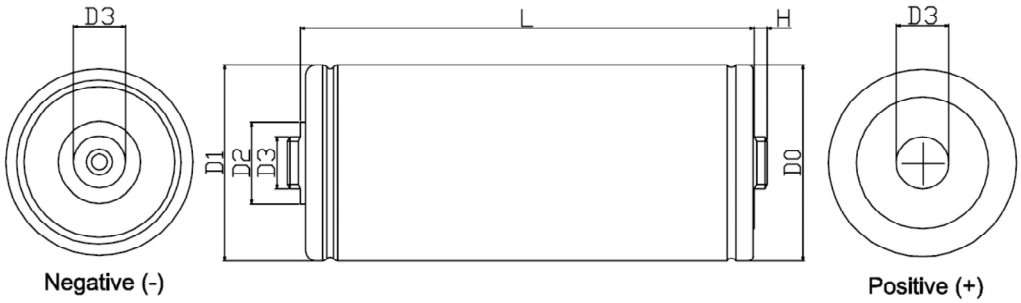
Part number	Dimension (mm)				Weight (g)
	D (+1)	W (+ 1)	L (±2)	L1 (±2)	
LSUC 002R8P 3000F EA	55	55	155	160	650
LSUC 002R7C 3000F EA LR01	55	55	155	160	650

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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

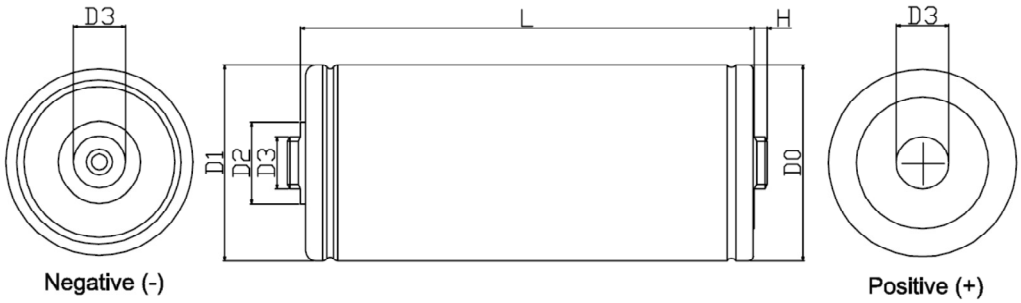
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(100Hz)	DC			
LSUC 002R7C 3000F EA ST01	3000	0.22	0.23	2,396	< 5	3.04
LSUC 002R7C 3000F EA LT01	3000	0.22	0.23	2,396	< 5	3.04

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	Ø 60	Ø 60.7	Ø 25	M16, P1.0	4	138	525
LSUC 002R7C 3000F EA LT01	Ø 60	Ø 60.7	Ø 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℃, 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

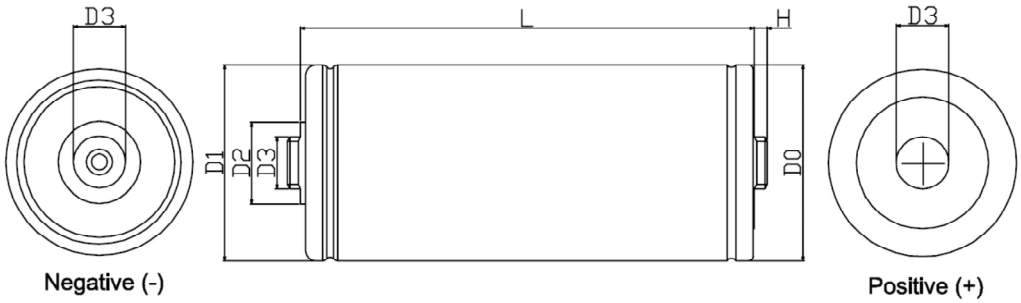
Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (±0.1)	D3	H (±0.1)	L (±0.5)	
LSUC 002R7C 2000F EA ST01	Ø 60	Ø 60.7	Ø 25	M16, P1.0	4	102	390
LSUC 002R7C 2000F EA LT01	Ø 60	Ø 60.7	Ø 25	M16, P2.0	14	102	395

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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

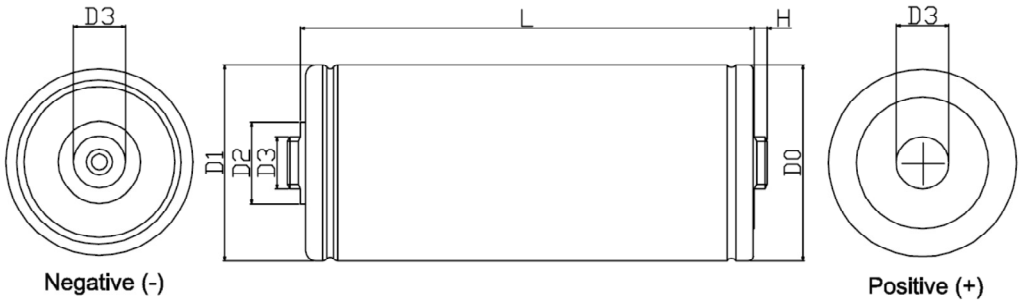
Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (±0.1)	D3	H (±0.1)	L (±0.5)	
LSUC 002R7C 1500F EA ST01	Ø 60	Ø 60.7	Ø 25	M16, P1.0	4	85	330
LSUC 002R7C 1500F EA LT01	Ø 60	Ø 60.7	Ø 25	M16, P2.0	14	85	335

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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

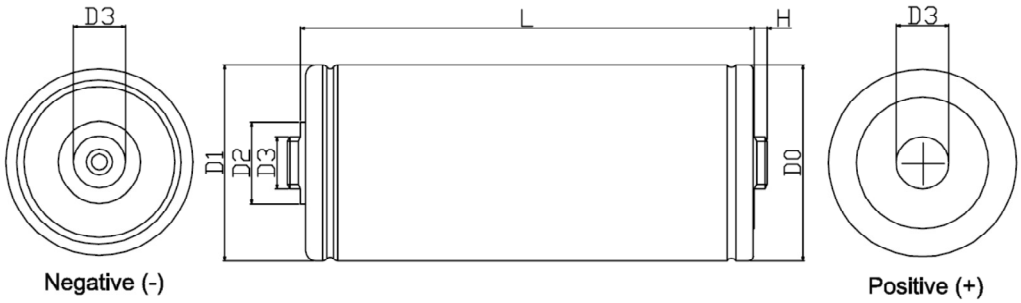
Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (±0.1)	D3	H (±0.1)	L (±0.5)	
LSUC 002R7C 1200F EA ST01	Ø 60	Ø 60.7	Ø 25	M16, P1.0	4	74	290
LSUC 002R7C 1200F EA LT01	Ø 60	Ø 60.7	Ø 25	M16, P2.0	14	74	295

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 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

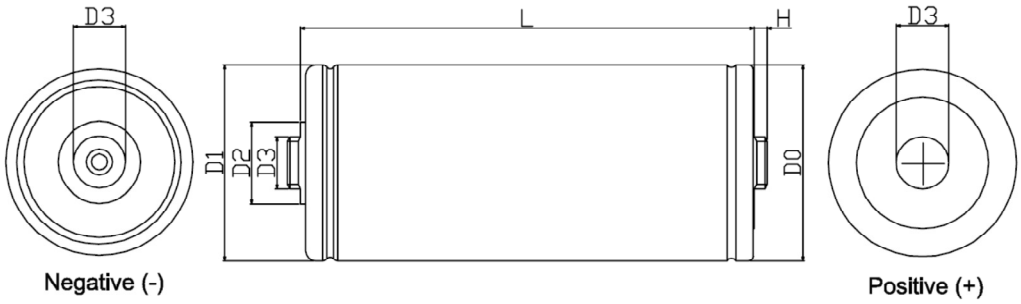
Part number	Dimension (mm)						Weight (g)
	D0 (± 0.3)	D1 (± 0.7)	D2 (±0.1)	D3	H (±0.1)	L (±0.5)	
LSUC 002R7C 0650F EA ST01	Ø 60	Ø 60.7	Ø 25	M16, P1.0	4	51.5	210
LSUC 002R7C 0650F EA LT01	Ø 60	Ø 60.7	Ø 25	M16, P2.0	14	51.5	215

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 WT01	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)	D3 (±0.05)	H (±0.125)	L (±0.5)	
LSUC 002R7C 3000F EA WT01	Ø 60	Ø 60.7	Ø 25	Ø 14	3.18	138	525

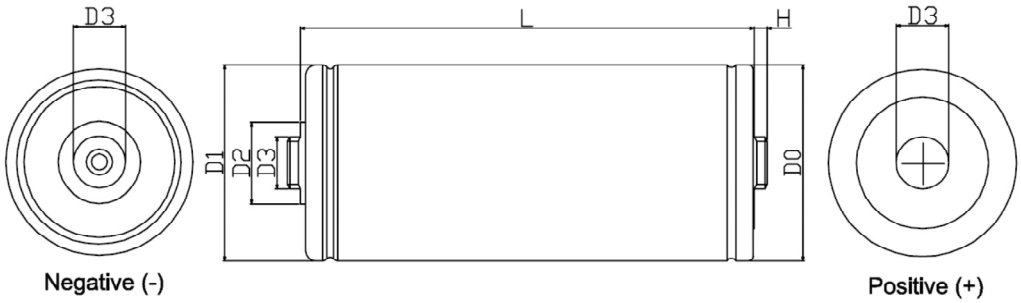
* Material for weldable terminal : AL 6061

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 WT01	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 (±0.05)	H (±0.125)	L (±0.5)	
LSUC 002R7C 2000F EA WT01	Ø 60	Ø 60.7	Ø 25	Ø 14	3.18	102	390

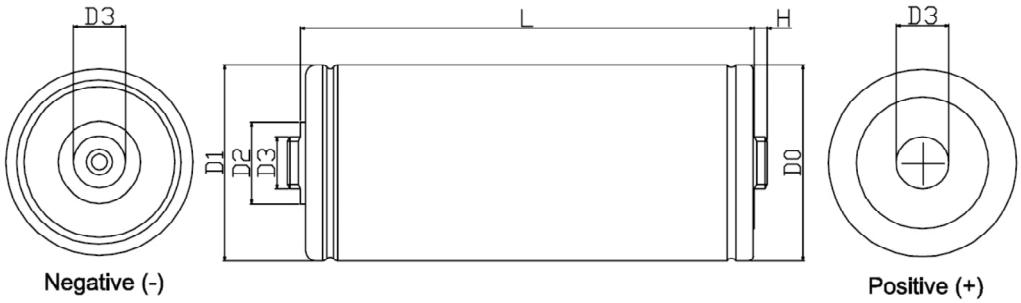
* Material for weldable terminal : AL 6061

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 WT01	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 (±0.05)	H (±0.125)	L (±0.5)	
LSUC 002R7C 1500F EA WT01	Ø 60	Ø 60.7	Ø 25	Ø 14	3.18	85	330

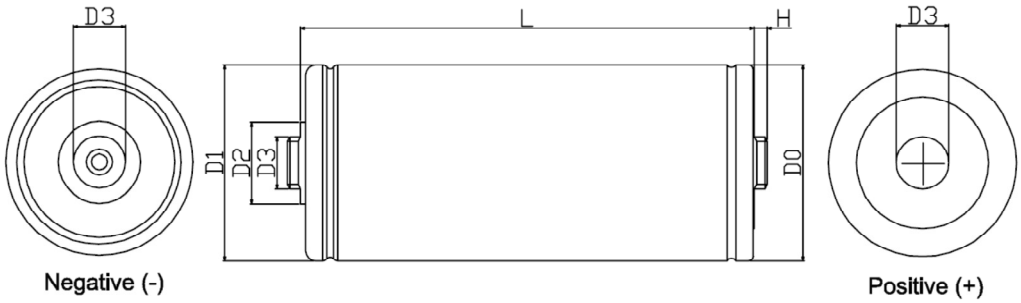
* Material for weldable terminal : AL 6061

LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 WT01	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 (±0.05)	H (±0.125)	L (±0.5)	
LSUC 002R7C 1200F EA WT01	Ø 60	Ø 60.7	Ø 25	Ø 14	3.18	74	290

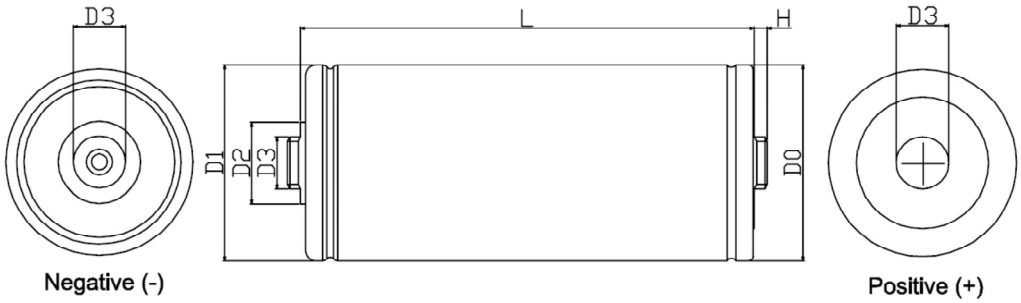
* Material for weldable terminal : AL 6061

LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

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℃, 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 0650F EA WT01	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 (±0.05)	H (±0.125)	L (±0.5)	
LSUC 002R7C 0650F EA WT01	Ø 60	Ø 60.7	Ø 25	Ø 14	3.18	51.5	210

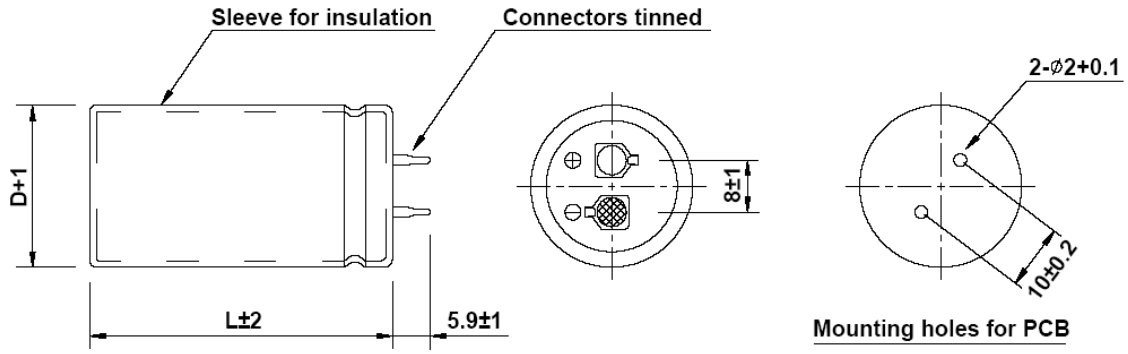
* Material for weldable terminal : AL 6061

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.5 V	
Surge Voltage	2.7 V	
Capacitance Tolerance	-10% / 10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-25 ~ 65 ˚C	
Storage temperature range	-40 ~ 85 ˚C	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 500,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value

Standard Ratings

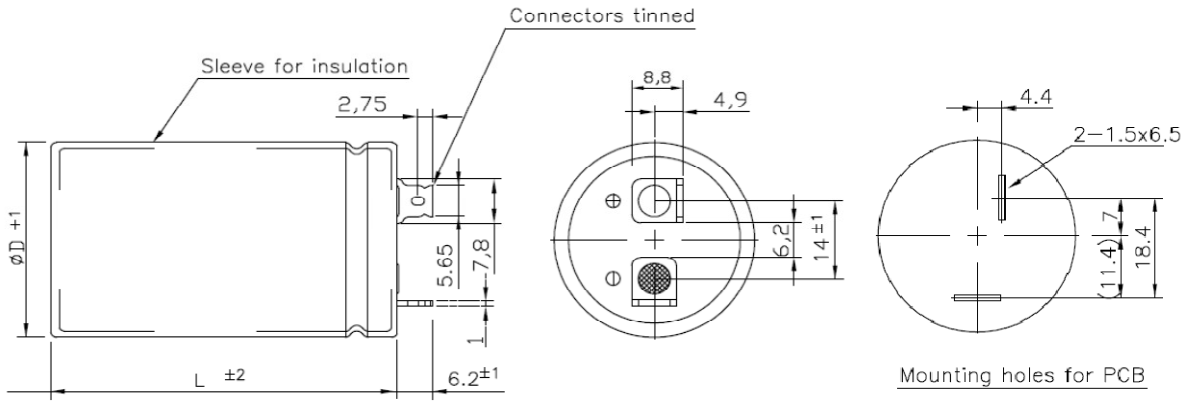
Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Continuous Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(1KHz)	DC				
LSUC 002R5S 0110F EP	110	10	14	54	20	< 0.3	0.10

Part number	Dimension (mm)		Weight (g)
	D1 (+ 1.0)	L (±2.0)	
LSUC 002R5S 0110F EP	25.0	46.0	28

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.5 V	
Surge Voltage	2.7 V	
Capacitance Tolerance	-10% / 10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-25 ~ 65 ˚C	
Storage temperature range	-40 ~ 85 ˚C	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value
Cycle Life (25°C)	After 500,000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 100% of initially specified value

Standard Ratings

Part number	Capacitance (F)	Resistance (mΩ)		Max. Current (A)	Continuous Current (A)	Leakage Current (mA)	Max. Stored Energy (Wh)
		(1KHz)	DC				
LSUC 002R5L 0380F EP	380	4.0	4.5	175	25	< 1.1	0.33
LSUC 002R5L 0320F EP	320	4.5	5.0	154	25	< 0.9	0.28

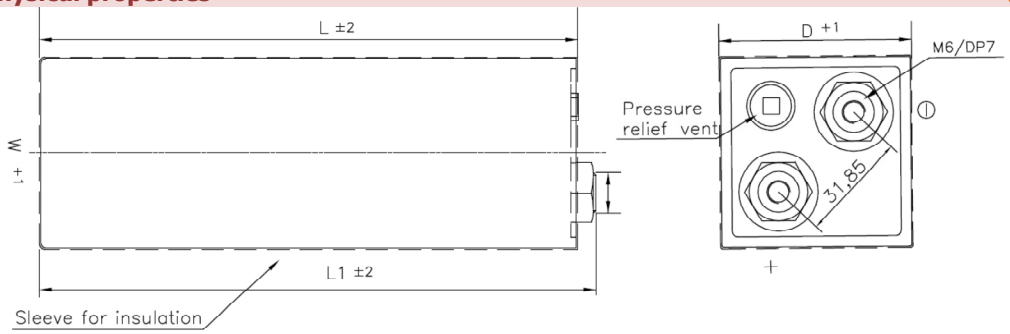
Part number	Dimension (mm)		Weight (g)
	D1 (+ 1.0)	L (±2.0)	
LSUC 002R5L 0380F EP	35.0	71.0	89
LSUC 002R5L 0320F EP	35.0	61.0	75

LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

Physical properties

Dimension in mm (not to scale)



Specification

Rated Voltage	2.5 V	
Surge Voltage	2.7 V	
Capacitance Tolerance	+10% / -10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-25 ~ 65 ˚C	
Storage temperature range	-40 ~ 85 ˚C	
Endurance	After 1500 hours application of 2.5V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 30% 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 30% 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 30% 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 002R8P 2800F EP	2800	0.60	0.65	1,241	< 8	2.43

Part number	Dimension (mm)				Weight (g)
	D (+1)	W (+ 1)	L (±2)	L1 (±2)	
LSUC 002R8P 2800F EP	55	55	155	160	730

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555,Hogye-dong,Dongan-gu,Anyang-si,Gyeonggi-do,Korea

Product specification

■ Specification

1. Primary specification

Part number	Capacitance (F)	Resistance DC (mΩ)	Max. Current (A)[1]	Leakage Current (mA)
LSUM 016R8L 0058F EA	58.3	22	200	< 10

2. Power & Energy

Part number	Specific Energy (Wh/kg)	Stored Energy (Wh)
LSUM 016R8L 0058F EA	3.81	2.29

3. Standard & Reliability

Rated Voltage	16.8V	
Max. Voltage[2]	18.0V	
Capacitance Tolerance	-10% / +10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance	After 1500 hours application of 2.8V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load shall meet specification of endurance	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% of initially specified value
Cycle Life (25°C)	After 500.000 cycles between rated voltage to half rated voltage at +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% of initially specified value

4. Monitoring

Part number	Temperature sensor	Temperature interface	Cell voltage monitoring	Balancing
LSUM 016R8L 0058F EA	-	-	-	Active & Passive

*Remarks
1) Current for 1sec discharge from the rated voltage to the half of it in constant current discharge, do not use as an operating current.
2) Non repeated, not to exceed 1sec.

Product specification

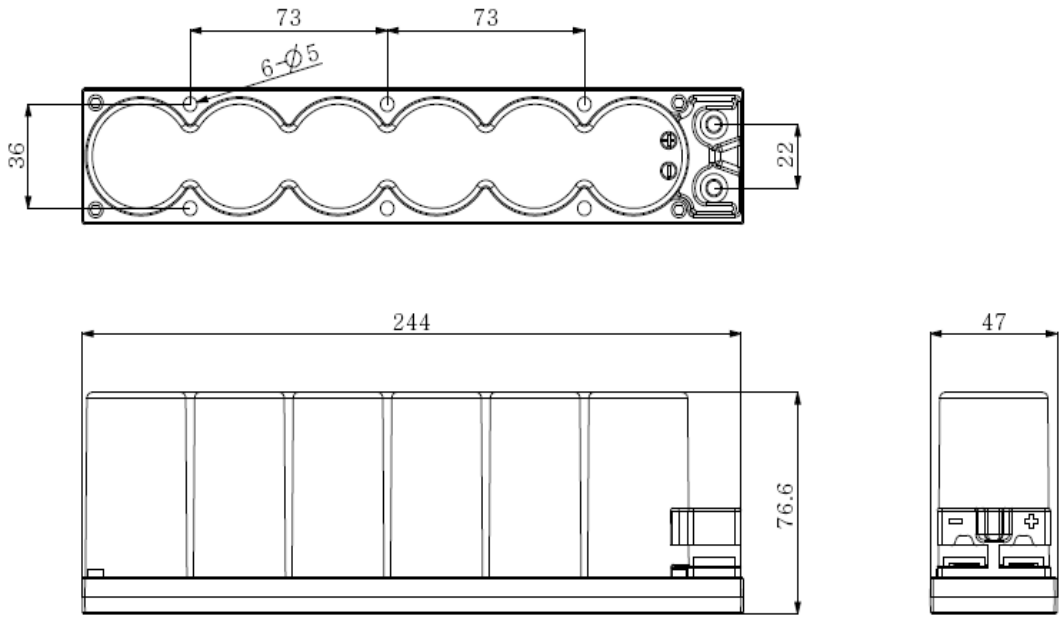
Safety & Physical Protection

Isolation voltage (DC)	2.5 kV

Dimension in mm (not to scale)

Geometric properties

Part number	Dimension (mm)			Weight (kg)
	Length	Width	Height	
LSUM 016R2C 0500F EA	245.0±1.0	47.0±1.0	76.6±1.0	0.6±0.1



Product specification

■ Specification

1. Primary specification

Part number	Capacitance (F)	Resistance DC (mΩ)	Max. Current (A)[1]	Leakage Current (mA)
LSUM 016R2C 0500F EA	500	1.9	2,000	< 120

2. Power & Energy

Part number	Energy Density (Wh/kg)	Stored Energy (Wh)
LSUM 016R2C 0500F EA	3.6	18.2

3. Standard & Reliability

Rated Voltage	16.2 V	
Max. Voltage[2]	17.1V	
Capacitance Tolerance	-0% / +10%	
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℃, 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 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

4. Monitoring

Part number	Temperature sensor	Temperature interface	Cell voltage monitoring	Balancing
LSUM 016R2C 0500F EA	NTC Thermistor (Optional)	Analog	-	Passive

*Remarks
1) Current for 1sec discharge from the rated voltage to the half of it in constant current discharge, do not use as an operating current.
2) Non repeated, not to exceed 1sec.

LS Mtron Ltd.
I tel.82-31-428-4545 I Email.ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Product specification

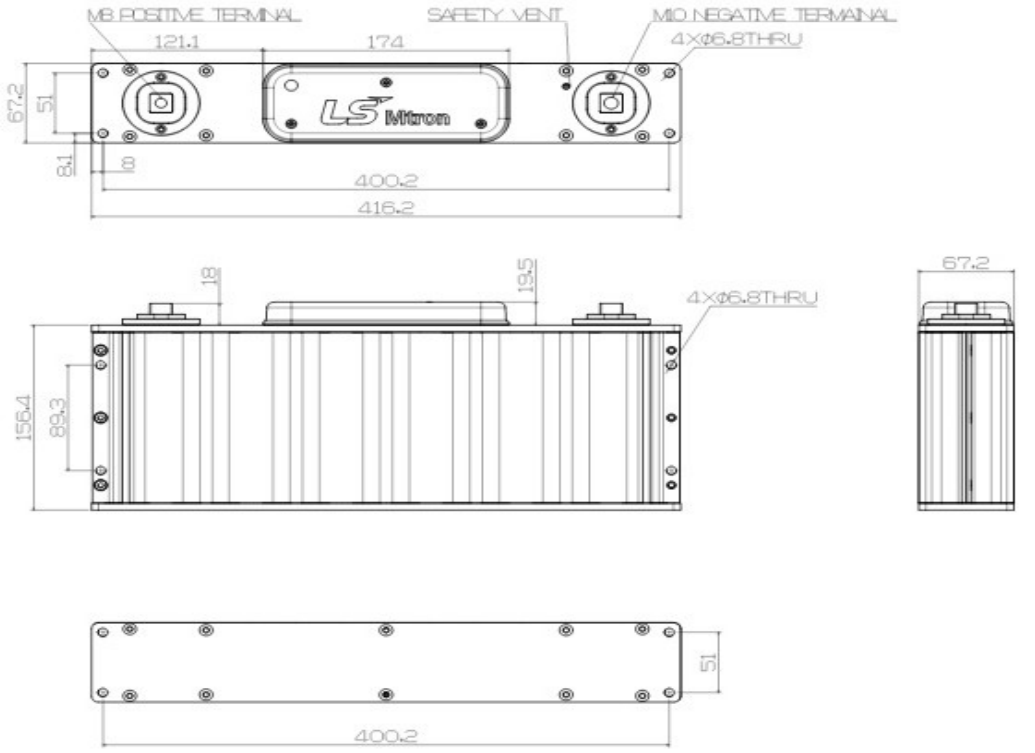
Safety & Physical Protection

Isolation voltage (DC)	2.5 kV

Dimension in mm (not to scale)

Geometric properties

Part number	Dimension (mm)			Weight (kg)
	Length	Width	Height	
LSUM 016R2C 0500F EA	416.2±1.0	67.2±1.0	156.7±1.0	5.1±0.5



Product specification

■ Specification

1. Primary specification

Part number	Capacitance (F)	Resistance DC (mΩ)	Max. Current (A)[1]	Leakage Current (mA)
LSUM 033R6P 0250F EA	250	4.5	1,900	< 30

2. Power & Energy

Part number	Specific Energy (Wh/kg)	Stored Energy (Wh)
LSUM 033R6P 0250F EA	4.0	39.2

3. Standard & Reliability

Rated Voltage	33.6V	
Max. Voltage[2]	36.0V	
Capacitance Tolerance	-10% / +10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance	After 1500 hours application of 2.8V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 60% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load shall meet specification of endurance	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% of initially specified value

4. Monitoring

Part number	Temperature sensor	Temperature interface	Cell voltage monitoring	Balancing
LSUM 033R6P 0250F EA	-	-	-	Active & Passive

*Remarks
1) Current for 1sec discharge from the rated voltage to the half of it in constant current discharge, do not use as an operating current.
2) Non repeated, not to exceed 1sec.

Product specification

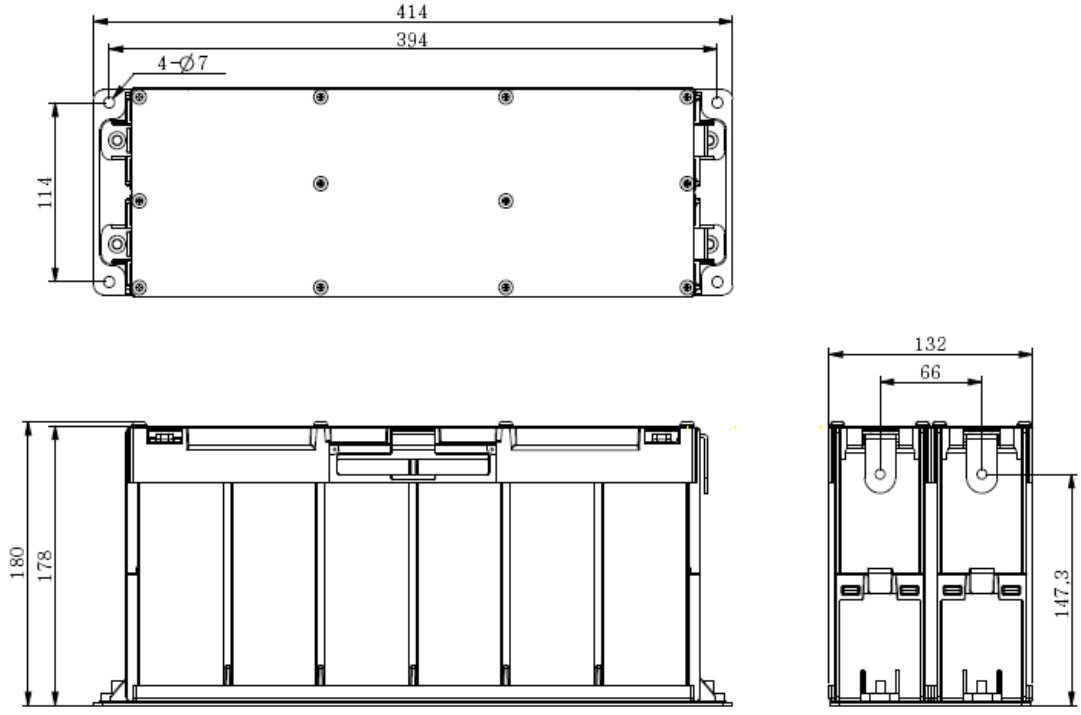
Safety & Physical Protection

Isolation voltage (DC)	2.5 kV

Dimension in mm (not to scale)

Geometric properties

Part number	Dimension (mm)			Weight (kg)
	Length	Width	Height	
LSUM 033R6P 0250F EA	414.0±1.0	132.0±1.0	180.0±1.0	9.8±0.5



Product specification

■ Specification

1. Primary specification

Part number	Capacitance (F)	Resistance DC (mΩ)	Max. Current (A)[1]	Leakage Current (mA)
LSUM 201R6P 0041F EA	41	28.8	1,800	< 30

2. Power & Energy

Part number	Specific Energy (Wh/kg)	Stored Energy (Wh)
LSUM 201R6P 0041F EA	2.77	235

3. Standard & Reliability

Rated Voltage	201.6V	
Max. Voltage[2]	216.0V	
Capacitance Tolerance	-10% / +10%	
Resistance Tolerance	< Spec. Value	
Operating temperature range	-40 ~ 65 ˚C	
Storage temperature range	-40 ~ 70 ˚C	
Endurance	After 1500 hours application of 2.8V .DC at 65℃, the capacitor shall meet the following limits.	
	Capacitance change	Within 20% of initially specified value
	Internal resistance change	Within 60% of initially specified value
Shelf life	After 1500 hours storage at +65 °C without load shall meet specification of endurance	
Life Time (25°C)	After 10 years at rated voltage and +25 °C	
	Capacitance change	Within 30% of initially specified value
	Internal resistance change	Within 150% 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 30% of initially specified value
	Internal resistance change	Within 150% of initially specified value

4. Monitoring

Part number	Temperature sensor	Temperature interface	Cell voltage monitoring	Balancing
LSUM 201R6P 0041F EA	NTC Thermistor	CAN	4 point monitoring	Active & Passive

*Remarks
1) Current for 1sec discharge from the rated voltage to the half of it in constant current discharge, do not use as an operating current.
2) Non repeated, not to exceed 1sec.

Product specification

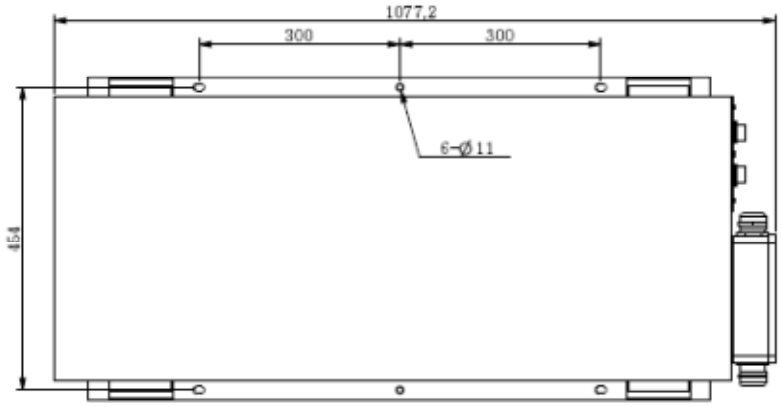
Safety & Physical Protection

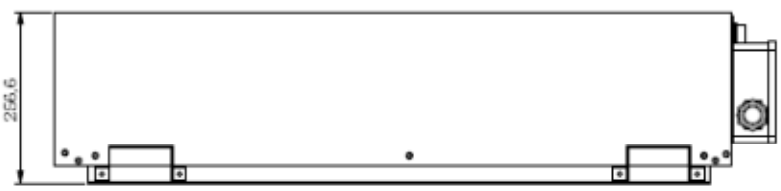
Isolation voltage (DC)	4 kV

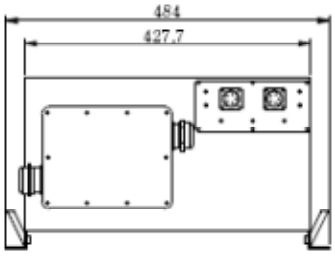
Dimension in mm (not to scale)

Geometric properties

Part number	Dimension (mm)			Weight (kg)
	Length	Wide	Height	
LSUM 201R6P 0041F EA	1077.2.±2.0	484.0±2.0	256.6.0±2.0	85±1.0







LS Mtron Ltd.
I tel.82-31-428-4545 I Email. ultracapacitor@lsmtron.com
555, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

Technical Information (1)

How to calculate specification value

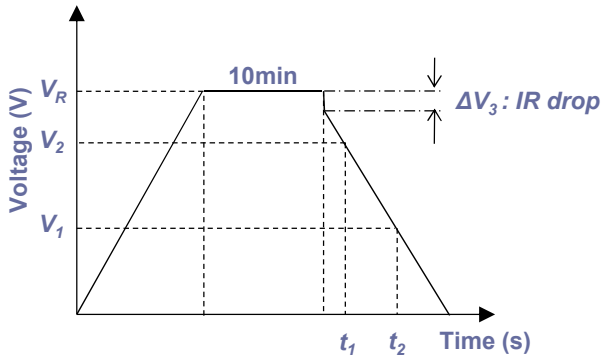
1. The Measurement Methods

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 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



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

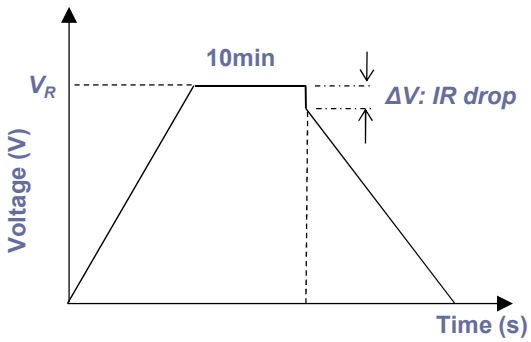
1-2 Resistance

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

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

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

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); 100A



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,

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

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