

SPA series

- Low ESR.
- High Voltage, Long Life.
- 105°C, 5,000~10,000hrs.
- RoHS compliant
- For high reliability applications.(Automotive equipment, Base station equipment,etc.)



SPA

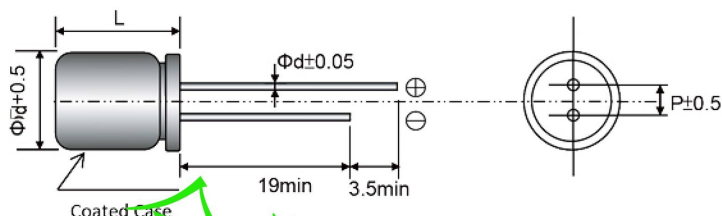
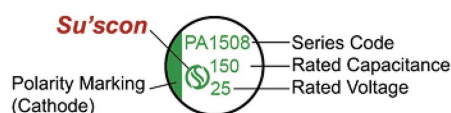
SPECIFICATIONS

Items	Conditions	Characteristics
Category Temperature Range	—	-55 to +105°C
Rated Voltage Range	—	16 ~ 125V
Capacitance Tolerance	at 20°C, 120Hz	±20%(M)
Surge Voltage	at 15 ~ 35°C	Rated voltage ×1.15V
Leakage Current	at 20°C after 2 minutes	$I \leq 0.01CV$ or $3(\mu A)$ Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C. Please see the attached characteristics list
Dissipation Factor ($\tan \delta$)	at 20°C, 120Hz	Please see the attached characteristics list
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5,000 to 10,000 hours at 105°C. $\Phi 6.3=5,000\text{hrs}$, $D \geq \Phi 8=10,000\text{hrs}$.	Appearance NO significant damage.
		Capacitance change $\leq \pm 30\%$ of the initial value.
		DF ($\tan \delta$) $\leq 200\%$ of the initial specified value.
		ESR $\leq 200\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.
Damp Heag (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance NO significant damage.
		Capacitance change $\leq \pm 30\%$ of the initial value.
		DF ($\tan \delta$) $\leq 200\%$ of the initial specified value.
		ESR $\leq 200\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 15~35°C for 30 seconds through a protective resistor (R = 1 k Ω) and discharge for 5 minutes 30 seconds.	Appearance NO significant damage.
		Capacitance change $\leq \pm 30\%$ of the initial value.
		DF ($\tan \delta$) $\leq 200\%$ of the initial specified value.
		ESR $\leq 200\%$ of the initial specified value.
		Leakage current $\leq$ The initial specified value.

※ Note : If any doubt arises, measure the leakage current after following voltage treatment.

Voltage treatment : DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	6.3x7.2	8x9.5	10x9.5	10x11.5
ϕD	6.3	8	10	10
L	L+1.5max	L+1.5max	L+1.5max	L+1.5max
ϕd	0.5	0.6	0.6	0.6
P	2.5	3.5	5.0	5.0

SPA SERIES STANDARD CHARACTERISTICS LIST

Rated voltage (S.V.)	Cap (μF)	Size Code DxL	Leakage current (μA) max.	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
16 (18.4)	120	6.3x7.2	19	40	1,500	0.16
	270	8x9.5	43	26	2,000	0.16
	470	10x9.5	75	21	2,600	0.16
	560	10x11.5	90	15	3,000	0.16
25 (28.8)	68	6.3x7.2	17	45	1,400	0.16
	150	8x9.5	38	27	1,900	0.16
	270	10x9.5	68	22	2,500	0.16
	330	10x11.5	83	16	2,900	0.16
35 (40.3)	47	6.3x7.2	16	60	1,300	0.16
	100	8x9.5	35	30	1,800	0.16
	150	10x9.5	53	23	2,400	0.16
	220	10x11.5	77	17	2,800	0.16
40 (46.0)	27	6.3x7.2	11	70	1,200	0.16
	56	8x9.5	22	32	1,700	0.16
	100	10x9.5	40	24	2,400	0.16
	120	10x11.5	48	18	2,700	0.16
50 (57.5)	15	6.3x7.2	8	80	1,200	0.16
	33	8x9.5	17	35	1,600	0.16
	56	10x9.5	28	25	2,300	0.16
	82	10x11.5	41	19	2,600	0.16
63 (72.5)	10	6.3x7.2	6	100	1,000	0.16
	22	8x9.5	14	40	1,500	0.16
	33	8x9.5	21	40	1,500	0.16
		10x9.5	21	30	2,100	0.16
	47	10x9.5	30	30	2,100	0.16
	56	10x11.5	35	22	2,400	0.16
80 (92.0)	12	10x9.5	10	70	1,600	0.16
	15	10x9.5	12	70	1,600	0.16
	18	10x11.5	14	50	1,800	0.16
100 (115.0)	10	10x9.5	10	80	1,400	0.16
	12	10x9.5	12	80	1,400	0.16
	15	10x11.5	15	60	1,600	0.16
125 (143.8)	10	10x9.5	13	90	1,200	0.16

Frequency Coefficient of Permissible Ripple Current

Frequency (Hz)	100 ≤ F < 1K	1K ≤ F < 10K	10K ≤ F < 100K	100K ≤ F
Capacitance (μF)				
4.7 < C ≤ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00