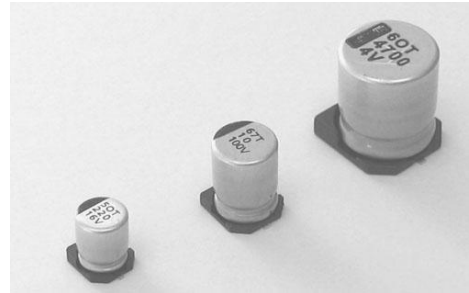


SMD 105°C Series



Features

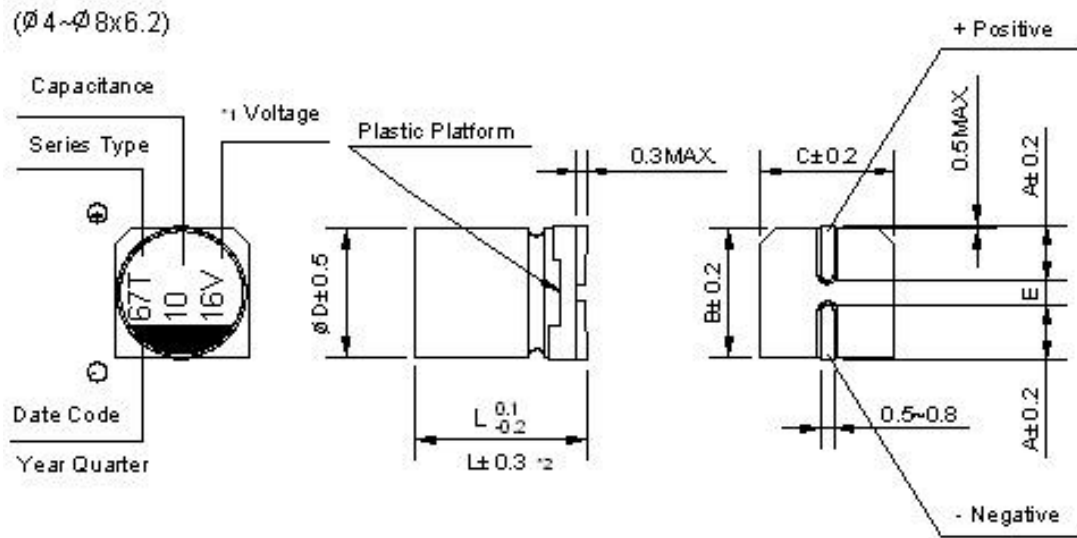
- Designed for surface mounting on high density circuit board
- Emboss carrier tape packing method is available for automatic insertion
- Lead-free soldering product is available subject to customer's request
- Applicable Standard
JIS C 5102 & JIS C 5141
- Rated Working Voltage Range & Operation Temperature Range
4 to 100 v DC/ -40 to +105°C
- This series is compliant with the requirement of RoHS and widely used for electronic products, such as portable GPS navigators, vehicle electronic equipment, portable DVD's, Car HiFi, Electronic Medical Apparatus , etc.

■ Specifications

Item	Performance Characteristics
Rated Working Voltage Range	4 to 100v DC
Operating Temperature Range	-40 to +105°C
Nominal Capacitance Range	0.1 to 1500uF
Capacitance Tolerance	± 20% (120Hz, +20°C)

Leakage Current	$I_L \leq 0.01CV$ or $3(\mu A)$ Whichever is bigger					
	After 2 minute application of rated working voltage at +20°C					
tg δ (120Hz,+20°C)	Working Voltage (v)	4	6.3	10	16	
	tg δ (max.)	0.35	0.26	0.20	0.16	
	Working Voltage (v)	25	35	50	63	
	tg δ (max.)	0.14	0.12	0.12	0.12	
	Working Voltage (v)	100				
	tg δ (max.)	0.12				
Stability at low temperature	Impedance ratio max. at 120Hz					
	Working voltage(v)	4	6.3	10	16	25
	-25°C/+20°C	7	4	3	2	2
	-40°C/+20°C	15	10	8	6	4
	Working voltage(v)	35	50	63	100	
	-25°C/+20°C	2	2	2	2	
High Temperature Loading	<p>Test conditions: Duration: 3000 hours Ambient temperature: +105°C Applied: DC voltage with maximum permissible ripple current should be equal to rated working voltage.</p> <p>Pos test requirement at +20°C Leakage current: \leq Initial specified value. Capacitance change: $\leq \pm 20$ of initial measured value. tg δ : $\leq 200\%$ of initial measured value.</p>					
	Shelf life	<p>Test conditions: Duration: 3000 hours Ambient temperature: +105°C Applied: (None)</p> <p>Post test requirement at +20°C Leakage current: \leq Initial specified value. Capacitance change: $\leq \pm 20$ of initial measured value. tg δ : $\leq 200\%$ of initial measured value.</p>				

■ Diagram of Dimension (Unit: mm)



DxL	Φ 4x5.4	Φ 5x5.4	Φ 6.3x5.4	Φ 6.3x7.7	Φ 8x6.2	Φ 8x10.5	Φ 10x10.5	Φ 10x13.5	Φ 12.5x13.5	Φ 12.5x16	Φ 16x16.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
$E \pm 0.2$	1.0	1.3	2.2	2.2	2.2	3.1	4.4	4.4	4.4	4.4	6.7
L	5.4	5.4	5.4	7.7	6.2	10.5	10.5	13.5	13.5	16.0	16.5

■ Dimensions (D x L mm) & Maximum Ripple Current (Unit: mA)

V uF	4		6.3		10		16		25	
4.7									4 x 5.4	13
10							4 x 5.4	18	5 x 5.4 (4 x 5.4)	20 (14)
22			5 x 5.4	22	5 x 5.4 (4 x 5.4)	25 (20)	5 x 5.4 (4 x 5.4)	27 (20)	6.3 x 5.4 (5 x 5.4)	36 (25)
33	5 x 5.4 (4 x 5.4)	30 (18)	5 x 5.4 (4 x 5.4)	27 (22)	5 x 5.4 (4 x 5.4)	30 (22)	6.3 x 5.4 (5 x 5.4)	40 (28)	6.3 x 5.4 (5 x 5.4)	44 (29)
47	5 x 5.4 (4 x 5.4)	36 (24)	5 x 5.4 (4 x 5.4)	33 (25)	6.3 x 5.4 (5 x 5.4)	41 (18)	6.3 x 5.4 (5 x 5.4)	48 (31)	6.3 x 5.4	48
56	4 x 5.4	39	5 x 5.4 (4 x 5.4)	54 (38)	6.3 x 5.4 (5 x 5.4)	68 (47)	6.3 x 5.4	74	6.3 x 5.4	82
68	4 x 5.4	45	5 x 5.4	62	6.3 x 5.4 (5 x 5.4)	72 (57)	6.3 x 5.4 (5 x 5.4)	80 (67)	6.3 x 5.4	94
100	5 x 5.4	56	6.3 x 5.4 (5 x 5.4)	50 (39)	6.3 x 5.4	53	6.3 x 5.4	60	6.3 x 7.7	145

V uF	4		6.3		10		16		25	
150	6.3×5.4	52	6.3×5.4	55	6.3×5.4	62	6.3×7.7	95	8×10.5 (6.3×7.7)	80 (67)
220	6.3×5.4	57	6.3×5.4	105	6.3×7.7	105	6.3×7.7	150	8×10.5	175
330	6.3×7.7	100	6.3×7.7	105	8×10.5	196	8×10.5	226	10×10.5 (8×10.5)	246 (235)
470	6.3×7.7	108	8×10.5 (6.3×7.7)	210 (120)	8×10.5	226	10×10.5 (8×10.5)	246 (235)	10×10.5	175
680	8×10.5	210	8×10.5	210	10×10.5	270	10×10.5	315		
1000	8×10.5	230	8×10.5	300	10×10.5	340	10×10.5	490		
1500	10×10.5	315								

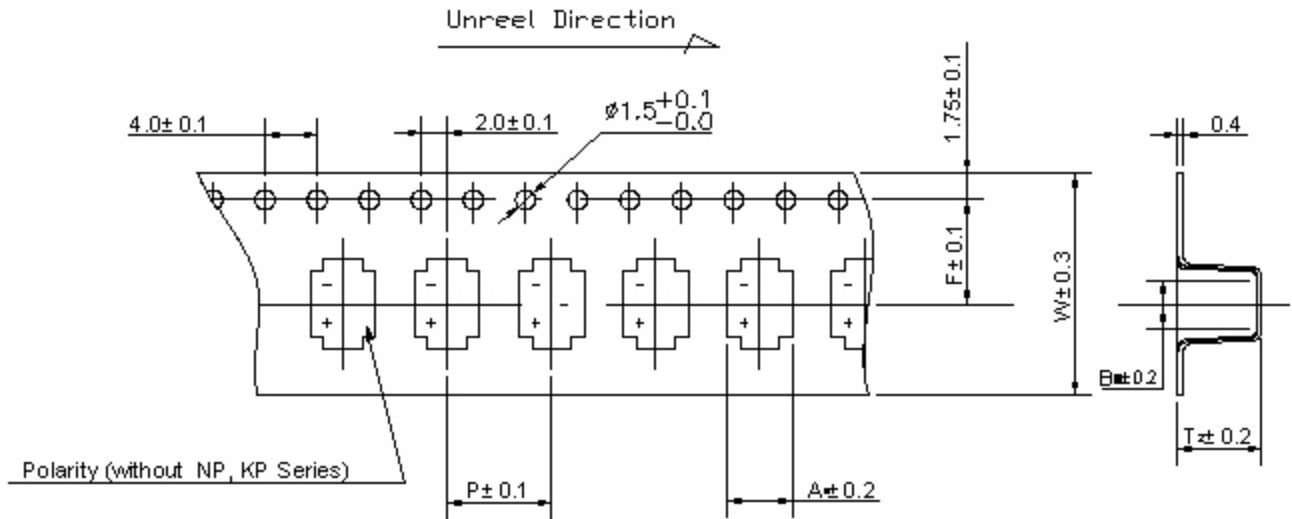
V uF	35		50		63		100	
0.1			4×5.4	1.0	4×5.4	1.0		
0.22			4×5.4	2.3	4×5.4	2.3		
0.33			4×5.4	3.5	4×5.4	3.5		
0.47			4×5.4	5.0	4×5.4	5.0		
1.0			4×5.4	10	4×5.4	10	4×5.4	10
1.5			4×5.4	12	4×5.4	12	5×5.4	15
2.2			4×5.4	10	4×5.4	15	6.3×5.4	20
3.3	4×5.4	18	4×5.4	18	4×5.4	20	6.3×5.4	28
4.7	4×5.4	20	5×5.4	23	5×5.4	24	6.3×5.4	35
10	5×5.4	30	6.3×5.4	34	6.3×5.4	34	6.3×7.7	50
22	5×5.4	45	6.3×5.4	54	6.3×7.7	70	8×10.5	120
33	6.3×5.4	60	6.3×7.7	85	6.3×7.7	85	10×10.5	190
47	6.3×5.4	70	6.3×7.7	90	8×10.5	170	10×10.5	238
56	6.3×5.4	99	6.3×7.7	110	8×10.5	200		
68	6.3×7.7	110	8×10.5	180	10×10.5	230		
100	6.3×7.7	120	8×10.5	160	10×10.5	280		
220	8×10.5	190	10×10.5	280				
330	10×10.5	248						
470	10×10.5	280						

* The sizes of e-cap. will be changed as a result of the raw materials being continuously developed and improved. The sizes of e-cap. are subject to change without notice, and so the

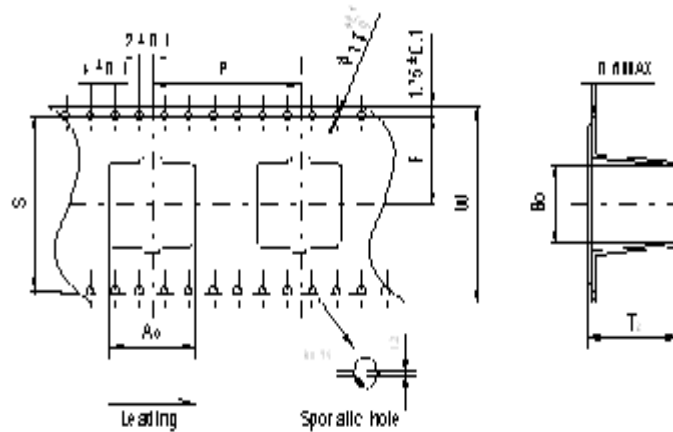
sizes are based on our offering samples.

■ Taping Standard

● $\Phi 4 \sim \Phi 10$



● $\Phi 12.5 \sim \Phi 16$



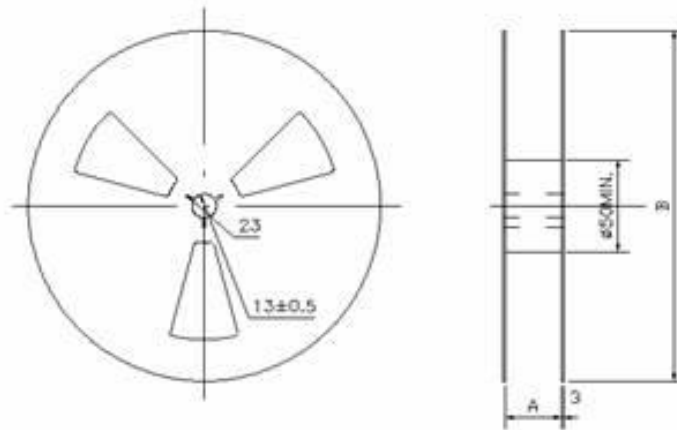
● Dimensions

(mm)

$\Phi D \times L$	4×5.4/5.8	5×5.4/5.8	6.3×5.4/5.8	6.3×7.7	8×6.2	8×10.5	10×10.5/13.5	12.5×13.5/16	16×16.5
W	12.0	12.0	16.0	16.0	16.0	24.0	24.0	32.0	44.0
P	8.0	12.0	12.0	12.0	12.0	16.0	16.0	24.0	28.0
F	5.5	5.5	7.5	7.5	7.5	11.5	11.5	14.2	20.2
A ₀	5.0	6.0	7.0	7.0	8.7	8.7	10.7	14.0	17.5
B ₀	5.0	6.0	7.0	7.0	8.7	8.7	10.7	14.0	17.5
T ₂	5.8/6.3	5.8/6.3	5.8/6.3	8.4	6.8	11.0	11		

■ Package Information

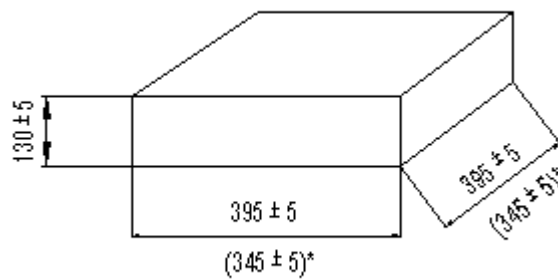
● Reel



(mm)

ΦD×L	4x5.4/5.8	5x5.4/5.8	6.3x5.4/5.8/7.7	8x6.2/10.5	10x10.5	10x13.5	12.5x13.5/16	16x16.5
A	14	14	18	26	26	26	34	46
B	382	382	382	382	382	382 / 332*	382 / 332*	332*

● Packing

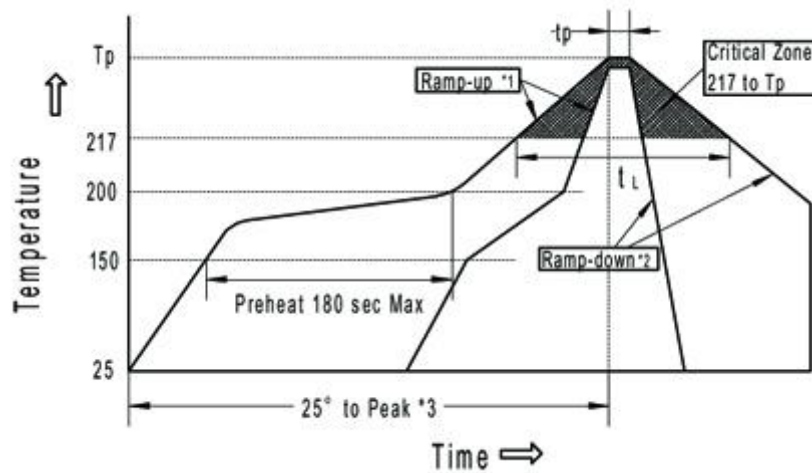


■ 回流焊条件

1. 应采用红外线或热风回流焊接，而不宜采用汽相加热回流焊接。
2. 回流次数最多 2 次，请确保在第 1 次和第 2 次之间产品有足够的冷却时间。
3. — 从 150℃ 至 200℃ 的预热时间应在 180 秒钟以内；
— 电容器顶部温度超过 217℃ 的焊接时间不得超过 t_L (秒)；

— 电容器顶部的尖峰温度不得超过 $T_p(^{\circ}\text{C})$ ，在 5°C 范围内的实际尖峰温度时间不得超过 t_p (秒)。

● 回流焊曲线图



- *1. 温度上升平均每秒钟最多 3°C 。
- *2. 温度下降平均每秒钟最多 6°C 。
- *3 从 25°C 上升到尖峰温度的时间最多 8 分钟。

● 温度和时间分类适用所有产品

Size	Thickness (mm)	Volume (mm^3)	$T_p (^{\circ}\text{C})$	$t_L(\text{second})$	$t_p(\text{second})$
$\Phi 4 \sim \Phi 6.3$ & $\Phi 8 \times 6.2\text{L}$	≥ 2.5	< 350	250 ± 0	90	40
$\Phi 8 \times 10.5\text{L}$	≥ 2.5	$350 \sim 2000$	240 ± 0	90	30
$\Phi 10 \times 10.5\text{L} / 13.5\text{L}$	≥ 2.5	$350 \sim 2000$	235 ± 0	60	30
$\Phi 12.5$ & $\Phi 16$	≥ 2.5	> 2000	230 ± 0	$30(20)^*$	20

● 温度和时间分类只适用没有()的标准壳号产品

Size	Thickness (mm)	Volume (mm^3)	$T_p (^{\circ}\text{C})$	$t_L(\text{second})$	$t_p(\text{second})$
$\Phi 4 \sim \Phi 6.3$ & $\Phi 8 \times 6.2\text{L}$	≥ 2.5	< 350	260 ± 0	90	5
$\Phi 8 \times 10.5\text{L}$	≥ 2.5	$350 \sim 2000$	260 ± 0	90	5
$\Phi 10 \times 10.5\text{L} / 13.5\text{L}$	≥ 2.5	$350 \sim 2000$	260 ± 0	60	5