

STANDARD

标准品

- Operating with general temperature range $-40 \sim +105^{\circ}\text{C}$
适用于 $-40 \sim +105^{\circ}\text{C}$ 的常规温度范围
- Load life of 1000 hours
负荷寿命 1000 小时
- Comply with the RoHS directive
符合 RoHS 指令



CS

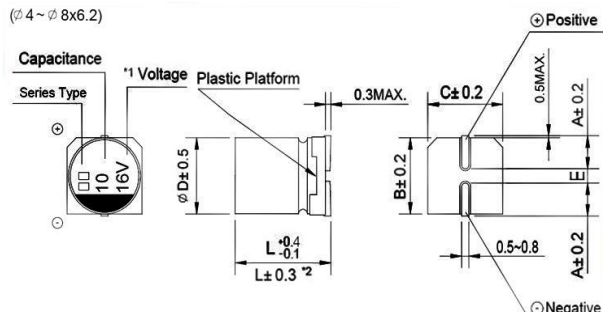
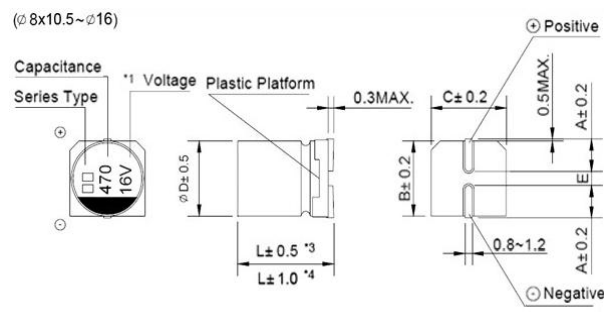
Long life
长寿命

CK

SPECIFICATIONS 特性表

Items 项目	Characteristics 主要特性																																													
Operation Temperature Range 使用温度范围	-40 ~ +105°C																																													
Voltage Range 额定工作电压范围	4 ~ 100V																																													
Capacitance Range 静电容量范围	0.1 ~ 6800μF																																													
Capacitance Tolerance 静电容量允许偏差	±20% at 120Hz, 20°C																																													
Leakage Current 漏电流	Leakage current (Ø4~Ø10) ≦0.01CV or 3μA, whichever is greater (after 2 minutes application of rated voltage) Leakage current (Ø12.5~Ø16) ≦0.03CV or 4μA, whichever is greater (after 1 minute application of rated voltage) 漏电流 (Ø4~Ø10) ≦0.01CV 或 3μA, 取较大值 (施加额定工作电压 2 分钟后) 漏电流 (Ø12.5~Ø16) ≦0.03CV 或 4μA, 取较大值 (施加额定工作电压 1 分钟后)																																													
Dissipation Factor (tan δ) 损耗角正切	Measurement frequency 测试频率: 120Hz, Temperature 温度: 20°C <table><tr><td>Rated Voltage (V) 额定工作电压</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr><tr><td>tan δ (max.) Ø4~Ø10</td><td>0.35</td><td>0.30</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.14</td><td>0.12</td><td>0.10</td></tr><tr><td>最大损耗角正切 Ø12.5~Ø16</td><td>0.42</td><td>0.38</td><td>0.34</td><td>0.30</td><td>0.26</td><td>0.22</td><td>0.18</td><td>0.14</td><td>0.10</td></tr></table>	Rated Voltage (V) 额定工作电压	4	6.3	10	16	25	35	50	63	100	tan δ (max.) Ø4~Ø10	0.35	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10	最大损耗角正切 Ø12.5~Ø16	0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10															
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Stability at Low Temperature 低温特性	Measurement frequency 测试频率: 120Hz <table><tr><td colspan="2">Rated Voltage (V) 额定工作电压</td><td>4</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td colspan="2">50~100</td></tr><tr><td rowspan="3">Impedance Ratio 阻抗比 ZT/Z20 (max.)</td><td rowspan="2">Ø4~Ø10</td><td>Z(-25°C) / Z(20°C)</td><td>7</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40°C) / Z(20°C)</td><td>15</td><td>8</td><td>6</td><td>4</td><td>4</td><td>3</td><td>3</td></tr><tr><td rowspan="2">Ø12.5~Ø16</td><td>Z(-25°C) / Z(20°C)</td><td>7</td><td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40°C) / Z(20°C)</td><td>17</td><td>12</td><td>10</td><td>8</td><td>5</td><td>4</td><td>3</td></tr></table>	Rated Voltage (V) 额定工作电压		4	6.3	10	16	25	35	50~100		Impedance Ratio 阻抗比 ZT/Z20 (max.)	Ø4~Ø10	Z(-25°C) / Z(20°C)	7	4	3	2	2	2	2	Z(-40°C) / Z(20°C)	15	8	6	4	4	3	3	Ø12.5~Ø16	Z(-25°C) / Z(20°C)	7	5	4	3	2	2	2	Z(-40°C) / Z(20°C)	17	12	10	8	5	4	3
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Z(-40°C) / Z(20°C)		17	12	10	8	5	4	3																																						
Load Life 高温负荷特性	After 1000 hrs. application of the rated voltage at 105°C, they meet the characteristics listed below. 在 105°C 环境中施加额定工作电压 1000 小时 (后), 电容器的特性符合下表的要求。 <table><tr><td>Capacitance Change 静电容量变化率</td><td>Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20%以内 (4V 为±30%以内)</td></tr><tr><td>Dissipation Factor 损耗角正切</td><td>200% or less of initial specified value 不大于规范值的 200%</td></tr><tr><td>Leakage Current 漏电流</td><td>initial specified value or less 不大于规范值</td></tr></table>	Capacitance Change 静电容量变化率	Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20%以内 (4V 为±30%以内)	Dissipation Factor 损耗角正切	200% or less of initial specified value 不大于规范值的 200%	Leakage Current 漏电流	initial specified value or less 不大于规范值																																							
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Shelf Life 高温贮存特性	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above. 在 105°C 环境中无负荷放置 1000 小时后, 电容器的特性符合高温负荷特性中所列的规定值。																																													
Resistance to Soldering Heat 耐焊接热特性	After reflow soldering and restored at room temperature, they meet the characteristics listed below. 经过回流焊并冷却至室温后, 电容器的特性符合下表的要求。 <table><tr><td>Capacitance Change 静电容量变化率</td><td>Within ±10% of initial value 初始值的±10%以内</td></tr><tr><td>Dissipation Factor 损耗角正切</td><td>initial specified value or less 不大于规范值</td></tr><tr><td>Leakage Current 漏电流</td><td>initial specified value or less 不大于规范值</td></tr></table>	Capacitance Change 静电容量变化率	Within ±10% of initial value 初始值的±10%以内	Dissipation Factor 损耗角正切	initial specified value or less 不大于规范值	Leakage Current 漏电流	initial specified value or less 不大于规范值																																							
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Marking 标示	Black print on the case top. 铝壳顶部黑字印刷。																																													

DRAWING (Unit: mm) 外形图

($\varnothing 4 \sim \varnothing 8 \times 6.2$)($\varnothing 8 \times 10.5 \sim \varnothing 16$)

- *1. Voltage mark for 6.3V is [6V] 6.3V 的产品标识为 [6V]
 *2. Applicable to $\varnothing 6.3 \times 7.7$ 适用于 $\varnothing 6.3 \times 7.7$
 *3. Applicable to $\varnothing 8 \times 10.5 \sim \varnothing 10$ 适用于 $\varnothing 8 \times 10.5 \sim \varnothing 10$
 *4. Applicable to $\varnothing 12.5 \sim \varnothing 16$ 适用于 $\varnothing 12.5 \sim \varnothing 16$

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□ DIMENSIONS (Unit: mm) 尺寸表

∅D x L	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 7.7	8 x 6.2	8 x 10.5	10 x 10.5	10 x 12.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	2.0	2.2	2.6	2.6	3.3	3.0	3.2	3.2	4.6	4.6	5.8
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	12.8	12.8	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	12.8	12.8	17.0
E ± 0.2	1.0	1.5	2.1	2.1	2.2	3.1	4.6	4.6	4.6	4.6	6.4
L	5.4	5.4	5.4	7.7	6.2	10.5	10.5	13.5	13.5	16.0	16.5

□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 规格尺寸及最大允许纹波电流

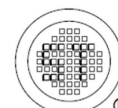
μF	WV Code 代码	4		6.3		10		16		25	
		0G		0J		1A		1C		1E	
4.7	4R7									4 x 5.4	13
10	100							4 x 5.4	18	5 x 5.4 (4 x 5.4)	20 (14)
22	220			4 x 5.4	22	5 x 5.4 (4 x 5.4)	25 (20)	5 x 5.4 (4 x 5.4)	27 (20)	6.3 x 5.4 (5 x 5.4)	36 (25)
33	330	5 x 5.4 (4 x 5.4)	30 (18)	5 x 5.4 (4 x 5.4)	27 (22)	5 x 5.4 (4 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	470	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) (4 x 5.4)	41 (30) (25)	6.3 x 5.4 (5 x 5.4)	48 (31)	6.3 x 5.4 (8 x 6.2)	48 (91)
56	560	4 x 5.4	32	5 x 5.4	40	6.3 x 5.4	50	6.3 x 5.4	65	6.3 x 5.4	75
68	680	5 x 5.4	40	5 x 5.4	45	6.3 x 5.4	65	6.3 x 5.4	75	6.3 x 5.4	85
100	101	6.3 x 5.4 (5 x 5.4)	60 (43)	6.3 x 5.4 (5 x 5.4)	50 (39)	6.3 x 5.4 (5 x 5.4)	53 (49)	6.3 x 5.4 (8 x 6.2)	60 (120)	6.3 x 7.7 8 x 6.2	91 130
120	121							6.3 x 7.7	80		
150	151	6.3 x 5.4	52	6.3 x 5.4	55	6.3 x 5.4	62	6.3 x 7.7	95	8 x 10.5 (6.3 x 7.7)	140 (100)
220	221	6.3 x 5.4	57	6.3 x 7.7 (6.3 x 5.4)	105 (67)	6.3 x 7.7 (8 x 6.2) 6.3 x 5.4	105 (105) 84.6	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	150 (105) (85)	6.3 x 7.7 8 x 10.5	110 175
330	331	6.3 x 7.7	100	6.3 x 7.7	105	8 x 10.5	196	8 x 10.5	195	10 x 10.5 (8 x 10.5)	240 (220)
470	471	6.3 x 7.7	105	8 x 10.5 (6.3 x 7.7)	210 (120)	10 x 10.5 (8 x 10.5) (6.3 x 7.7)	260 (210) (120)	10 x 10.5 (8 x 10.5)	295 (230)	10 x 10.5	280
680	681	8 x 10.5	210	8 x 10.5	210	10 x 10.5	270	10 x 10.5	315	10 x 12.5	400
1000	102	8 x 10.5	230	10 x 10.5 (8 x 10.5)	300 (230)	10 x 10.5 (8 x 10.5)	315 (230)	12.5 x 13.5 (10 x 12.5) (10 x 10.5)	500 (390) (340)	12.5 x 13.5	580
1500	152	10 x 10.5	315	10 x 12.5 (10 x 10.5)	450 (315)	10 x 12.5	460	12.5 x 13.5	550	12.5 x 16	850
2200	222	10 x 12.5 (10 x 10.5)	440 (340)	12.5 x 13.5 (10 x 12.5)	620 (500)	12.5 x 13.5	680	16 x 16.5 (12.5 x 16)	950 (750)	16 x 16.5	1050
3300	332	10 x 12.5	490	12.5 x 16 (12.5 x 13.5)	700 (660)	16 x 16.5	1000	16 x 16.5	1000		
4700	472	12.5 x 13.5	600	16 x 16.5	1000					Case size 尺寸	Ripple current 纹波电流
6800	682	16 x 16.5 (12.5 x 16)	950 (650)								

μF	WV Code 代码	35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4 x 5.4	0.7	4 x 5.4	0.7		
0.22	R22			4 x 5.4	1.6	4 x 5.4	1.6		
0.33	R33			4 x 5.4	2.5	4 x 5.4	2.5		
0.47	R47			4 x 5.4	3.5	4 x 5.4	3.5		
1	010			4 x 5.4	7	4 x 5.4	7	4 x 5.4	7
2.2	2R2			4 x 5.4	11	4 x 5.4	11	6.3 x 5.4	14
3.3	3R3	4 x 5.4	13	4 x 5.4	13	5 x 5.4	13	6.3 x 7.7 (6.3 x 5.4)	32 (20)
4.7	4R7	4 x 5.4	14	5 x 5.4 (4 x 5.4)	16 (13)	6.3 x 5.4 (5 x 5.4)	21 (16)	6.3 x 7.7 (6.3 x 5.4) 5 x 5.4	35 (21) 18
10	100	5 x 5.4 (4 x 5.4)	21 (14)	6.3 x 5.4 (5 x 5.4)	34 (27)	6.3 x 7.7 (6.3 x 5.4)	55 (34)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	110 (50) (50)
22	220	6.3 x 5.4	54	6.3 x 5.4 (8 x 6.2)	60 (120)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	140 (70) (35)	10 x 10.5 (8 x 10.5)	180 (120)
33	330	6.3 x 5.4 (8 x 6.2)	42 (84)	6.3 x 7.7 (8 x 6.2)	60 (65)	8 x 10.5 (6.3 x 7.7)	112 (60)	10 x 10.5	133
								Case size 尺寸	Ripple current 纹波电流

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C 120Hz •尺寸∅D×L(mm), 纹波电流(mA rms)于 105°C 120Hz

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☐ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 规格尺寸及最大允许纹波电流

μF	WV Code 代码	35		50		63		100	
		1V		1H		1J		2A	
47	470	6.3 × 5.4 6.3 × 7.7 (8 × 6.2)	50 70 (165)	10 × 10.5 (8 × 10.5) (6.3 × 7.7)	130 (110) (63)	10 × 10.5 (8 × 10.5)	160 (119)	10 × 12.5 (10 × 10.5) 12.5 × 13.5	160 (140) 250
56	560	6.3 × 7.7	56	6.3 × 7.7	70	10 × 10.5	170		
68	680	6.3 × 7.7	50	8 × 10.5	120	10 × 10.5	190		
100	101	8 × 10.5 (6.3 × 7.7)	120 (84)	10 × 10.5 (8 × 10.5)	170 (140)	12.5 × 13.5 (10 × 12.5) (10 × 10.5)	270 (210) (196)	12.5 × 13.5	380
150	151	8 × 10.5	155	10 × 10.5	170	10 × 12.5	225		
220	221	10 × 10.5 (8 × 10.5)	220 (190)	10 × 12.5 (10 × 10.5)	280 (220)	12.5 × 13.5	470	16 × 16.5	550
330	331	10 × 10.5	245	12.5 × 13.5 (10 × 12.5)	420 (295)	16 × 16.5 (12.5 × 16)	700 (510)		
470	471	12.5 × 13.5 (10 × 12.5) (10 × 10.5)	520 (375) (280)	16 × 16.5 (12.5 × 13.5)	700 (420)	16 × 16.5	750		
680	681	12.5 × 13.5 (10 × 12.5)	530 (395)	16 × 16.5	750			Case size 尺寸	Ripple current 纹波电流
1000	102	16 × 16.5 (12.5 × 16)	750 (600)						

μF	WV Code 代码	200							
		2D							
47	470	16 × 16.5	320						
								Case size 尺寸	Ripple current 纹波电流

• Case size $\varnothing D \times L$ (mm), ripple current (mA rms) at 105°C 120Hz • 尺寸 $\varnothing D \times L$ (mm), 纹波电流 (mA rms) 于 105°C 120Hz

☐ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 纹波电流频率补偿系数

Frequency 频率			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient 系数	$\varnothing 4 \sim \varnothing 10$	0.1 ~ 68 μF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300 μF	0.85	1.00	1.08	1.20	1.30
	$\varnothing 12.5 \sim \varnothing 16$	~ 68 μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680 μF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800 μF	0.85	1.00	1.10	1.13	1.15

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