

LONG LIFE ASSURANCE

宽温长寿命

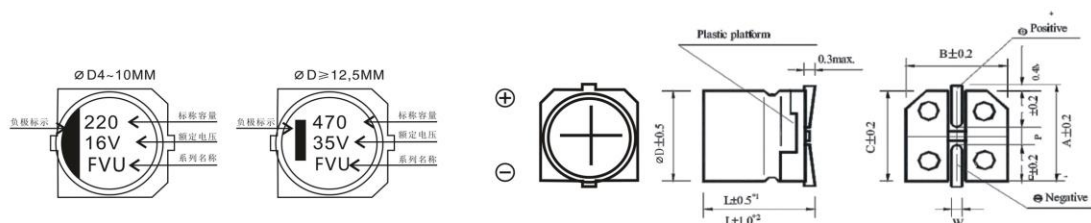
- Wide temperature range -55~+105°C
适用于-55~+105°C的宽温范围
- Load life of 2000~3000 hours
负荷寿命2000~3000 小时
- Comply with the RoHS directive
符合 RoHS 指令



SPECIFICATIONS 特性表

Items 项目	Characteristics 主要特性																																						
Operation Temperature Range 使用温度范围	-55 ~ +105°C																																						
Voltage Range 额定工作电压范围	6.3 ~ 100V																																						
Capacitance Range 静电容量范围	0.1 ~ 3300 μF																																						
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 3 μA, whichever is greater (after 2 minutes application of rated voltage) Leakage current (Ø12.5~Ø16) ≤ 0.03CV or 4 μA, 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 4 μA, 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>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>tan δ (max.) Ø4~Ø10</td><td>0.30</td><td>0.24</td><td>0.20</td><td>0.18</td><td>0.16</td><td>0.14</td></tr><tr><td>最大损耗角正切 Ø12.5~Ø16</td><td>0.38</td><td>0.34</td><td>0.30</td><td>0.28</td><td>0.22</td><td>0.18</td></tr></table>	Rated Voltage (V) 额定工作电压	6.3	10	16	25	35	50	tan δ (max.) Ø4~Ø10	0.30	0.24	0.20	0.18	0.16	0.14	最大损耗角正切 Ø12.5~Ø16	0.38	0.34	0.30	0.28	0.22	0.18																	
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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>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td rowspan="2">Impedance Ratio 阻抗比</td><td>Ø4~Ø10</td><td>Z(-25°C) / Z(20°C)</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td></tr><tr><td></td><td>Z(-55°C) / Z(20°C)</td><td>8</td><td>5</td><td>4</td><td>3</td><td>3</td></tr><tr><td rowspan="2">ZT/Z20 (max.)</td><td>Ø4~Ø10</td><td>Z(-25°C) / Z(20°C)</td><td>5</td><td>4</td><td>3</td><td>2</td><td>2</td></tr><tr><td></td><td>Z(-55°C) / Z(20°C)</td><td>12</td><td>10</td><td>8</td><td>5</td><td>4</td></tr></table>	Rated Voltage (V) 额定工作电压		6.3	10	16	25	35	50	Impedance Ratio 阻抗比	Ø4~Ø10	Z(-25°C) / Z(20°C)	3	3	2	2	2		Z(-55°C) / Z(20°C)	8	5	4	3	3	ZT/Z20 (max.)	Ø4~Ø10	Z(-25°C) / Z(20°C)	5	4	3	2	2		Z(-55°C) / Z(20°C)	12	10	8	5	4
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Load Life 高温负荷特性	After 3000 hrs. (2000 hrs. for Ø4~Ø6.3×5.8) 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3000小时 (Ø4~Ø6.3×5.8 为 2000 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 ± 30% of initial value 初始值的±30%以内</td></tr><tr><td>Dissipation Factor 损耗角正切</td><td>300% or less of initial specified value 不大于规范值的300%</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 ± 30% of initial value 初始值的±30%以内	Dissipation Factor 损耗角正切	300% or less of initial specified value 不大于规范值的300%	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 标识	Black print on the case top. 铝壳顶部黑字印刷。																																						

DRAWING (Unit: mm) 外形图



*1. Applicable to Ø4~Ø10 x 13.5 适用于 Ø4~Ø10 x 13.5
*2. Applicable to Ø12.5~Ø16 适用于 Ø12.5~Ø16

* A pressure relief vent is attached to products over ØD=8 x 10.5
* ØD=8 x 10.5 以上产品有缓压防爆阀

□ DIMENSIONS (Unit: mm) 尺寸表

D x L	4 x 5.8	5 x 5.8	6.3 x 5.8	6.3 x 7.7	8 x 10.5	10 x 10.5	10 x 13.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	5.1	6.1	7.3	7.3	9.2	11.2	11.2	13.8	13.8	18.0
B	4.3	5.3	6.6	6.6	8.4	10.4	10.4	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.4	10.4	10.4	13.0	13.0	17.0
P ±0.2	1.0	1.3	2.2	2.2	3.1	4.4	4.4	4.4	4.4	6.7
L	5.8	5.8	5.8	7.7	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	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4 × 5.8	1
0.22	R22											4 × 5.8	2
0.33	R33											4 × 5.8	3
0.47	R47											4 × 5.8	5
1	010											4 × 5.8	10
2.2	2R2											4 × 5.8	16
3.3	3R3											4 × 5.8	16
4.7	4R7							4 × 5.8	13	4 × 5.8	14	5 × 5.8	23
10	100					4 × 5.8	18	5 × 5.8	20	5 × 5.8	21	6.3 × 5.8	35
22	220	4 × 5.8	22	5 × 5.8	25	5 × 5.8	27	6.3 × 5.8	36	6.3 × 5.8	38	6.3 × 7.7	70
33	330	5 × 5.8	27	5 × 5.8	30	6.3 × 5.8	40	6.3 × 5.8	60	6.3 × 7.7	84	8 × 10.5	90
47	470	5 × 5.8	33	6.3 × 5.8	41	6.3 × 5.8	48	6.3 × 7.7	90	8 × 10.5	98	8 × 10.5	90
100	101	6.3 × 5.8	50	6.3 × 5.8	53	6.3 × 5.8	60	8 × 10.5	130	8 × 10.5	130	10 × 10.5	100
150	151	6.3 × 5.8	55	6.3 × 7.7	105	6.3 × 7.7	95	8 × 10.5	140	10 × 10.5	315	10 × 10.5	100
220	221	6.3 × 7.7	100	8 × 10.5	210	8 × 10.5	210	10 × 10.5	190	10 × 10.5	315	10 × 13.5 (10 × 10.5)	250 (100)
330	331	8 × 10.5	210	8 × 10.5	210	8 × 10.5	210	10 × 10.5	315	10 × 10.5	315	12.5 × 13.5	400
470	471	8 × 10.5	210	10 × 10.5	315	10 × 10.5	315	10 × 10.5	315	12.5 × 13.5 (10 × 13.5)	500 (360)	16 × 16.5 (12.5 × 16)	650 (500)
680	681	8 × 10.5	210	10 × 10.5	315	10 × 10.5	315	10 × 13.5	380	12.5×13.5	500		
1000	102	10 × 10.5	315	10 × 13.5 (10 × 10.5)	360 (315)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	450 (350) (315)	12.5 × 13.5	550	16 × 16.5 (12.5 × 16)	700 (550)		
1500	152	10 × 13.5 (10 × 10.5)	450 (315)	12.5 × 13.5	500	12.5 × 13.5	500	12.5 × 16	800				
2200	222	12.5 × 13.5	620	12.5 × 16 (12.5 × 13.5)	650 (600)	16 × 16.5	900	16 × 16.5	1000			Case size 尺寸	Ripple current 纹波电流
3300	332	12.5 × 16	750	16 × 16.5	950								

WV Code μF 代码	63		80		100	
	1J		1K		2A	
4.7	4R7	5 x 5.8	30			
10	100	6.3 x 5.8	50	6.3 x 7.7	60	
22	220	6.3 x 7.7	84	8 x 10.5	130	8 x 10.5
33	330	8 x 10.5	130	8 x 10.5	130	10 x 10.5
47	470	8 x 10.5	130	10 x 10.5	190	12.5 x 13.5
100	101	10 x 10.5	190	12.5 x 13.5	220	12.5 x 13.5
150	151	12.5 x 13.5	240	12.5 x 16	290	12.5 x 16.5
220	221	12.5 x 16	320	16 x 16.5	410	16 x 16.5
330	331	16 x 16.5	450	16 x 16.5	510	
470	471	16 x 16.5	540			

• Case size ∅D x L (mm), ripple current (mA rms) at 105°C, 120Hz
 • 尺寸 ∅D x 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	Ø4 ~ Ø10	0.1 ~ 100µF	0.70	1.00	1.17	1.36	1.50
		150 ~ 1500µF	0.85	1.00	1.08	1.20	1.30
	Ø12.5 ~ Ø16	~ 470µF	0.75	1.00	1.35	1.57	2.00
		680 ~ 3300µF	0.85	1.00	1.23	1.34	1.50

● The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

● 铝电解电容器由于在纹波电流叠加时自我发热，温度上升而老化，每升温10°C寿命减少一半；要想保持长寿命请在使用过程中降低纹波电流。

● Taping specifications are given in page 15 "Taping Specifications". 编带标准请参阅第 15 页“编带标准”。

● Please refer to page 16 "Package Quantity" for the minimum package quantity. 最小包装数量请参阅第 16 页“包装数量”。