

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

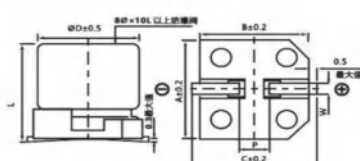


SPECIFICATIONS 特性表

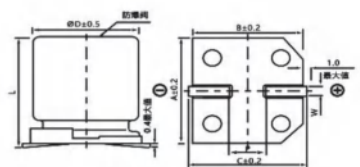
Items 项目	Characteristics 主要特性																																						
Operation Temperature Range 使用温度范围	-55 ~ +105°C																																						
Voltage Range 额定工作电压范围	6.3 ~ 100V																																						
Capacitance Range 静电容量范围	0.1 ~ 3300 μF																																						
Capacitance Tolerance 静电容量允许偏差	± 20% at 120Hz, 20°C																																						
Leakage Current 漏电流	Leakage current (∅4-∅10) ≤ 0.01CV or 3 μA, whichever is greater (after 2 minutes application of rated voltage) Leakage current (∅12.5-∅16) ≤ 0.03CV or 4 μA, whichever is greater (after 1 minute application of rated voltage) 漏电流 (∅4-∅10) ≤ 0.01CV 或 3μA, 取较大值 (施加额定工作电压 2 分钟后) 漏电流 (∅12.5-∅16) ≤ 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 border="1"> <thead> <tr> <th>Rated Voltage (V) 额定工作电压</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>tan δ(max.) ∅4-∅10</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 ∅12.5-∅16</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> </tbody> </table>	Rated Voltage (V) 额定工作电压	6.3	10	16	25	35	50	tan δ(max.) ∅4-∅10	0.30	0.24	0.20	0.18	0.16	0.14	最大损耗角正切 ∅12.5-∅16	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 border="1"> <thead> <tr> <th colspan="2">Rated Voltage (V) 额定工作电压</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio 阻抗比</td> <td>∅4-∅10</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 rowspan="2">∅12.5-∅16</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>ZT/Z20 (max.)</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> <td>3</td> </tr> </tbody> </table>	Rated Voltage (V) 额定工作电压		6.3	10	16	25	35	50	Impedance Ratio 阻抗比	∅4-∅10	Z(-25°C) / Z(20°C)	3	3	2	2	2	∅12.5-∅16	Z(-55°C) / Z(20°C)	8	5	4	3	3	ZT/Z20 (max.)	Z(-25°C) / Z(20°C)	5	4	3	2	2		Z(-55°C) / Z(20°C)	12	10	8	5	4	3
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Load Life 高温负荷特性	After 3000 hrs. (2000 hrs. for ∅4-∅6.3x5.8) 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 (∅4-∅6.3x5.8 为 2000 小时) 后, 电容器的特性符合下表的要求。 <table border="1"> <tbody> <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> </tbody> </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 border="1"> <tbody> <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> </tbody> </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。																																						

FVU | Chip Type 贴片式

Diagram of Dimensions 尺寸图



ΦD=4~10 适用



Φ 12.5 以上适用

DIMENSIONS (Unit: mm) 尺寸表

DXL	4X5.8	5X5.8	6.3X5.8	6.3X7.7	8X10.5	10X10.5	10X13.5	12.5X13.5	12.5X16	16X16.5
A	4.3	5.3	6.6	6.6	8.3	10.3	10.3	13.0	13.0	17.0
B	4.3	5.3	6.6	6.6	8.3	10.3	10.3	13.0	13.0	17.0
C	5.1	5.9	7.2	7.2	9.2	11.2	11.2	13.7	13.7	18.0
P±0.2	1.0	1.5	2.0	2.0	3.1	4.4	4.4	4.4	4.4	6.4
L	5.8 ± 0.3	5.8 ± 0.3	5.8 ± 0.3	7.7 ± 0.3	10.5 ± 0.5	10.5 ± 0.5	13.5 ± 0.5	13.5 ± 0.5	16 ± 0.5	16.5 ± 0.5

# FVU



MINIATURE ALUMINUM  
ELECTROLYTIC CAPACITORS

□ DRAWING (Unit: mm) 外形图



□ 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								

μF	WV Code 代码	63		80		100	
		1J		1K		2A	
4.7	4R7	5 × 5.8	30				
10	100	6.3 × 5.8	50	6.3 × 7.7	60		
22	220	6.3 × 7.7	84	8 × 10.5	130	8 × 10.5	130
33	330	8 × 10.5	130	8 × 10.5	130	10 × 10.5	200
47	470	8 × 10.5	130	10 × 10.5	190	12.5 × 13.5	240
100	101	10 × 10.5	190	12.5 × 13.5	220	12.5 × 13.5	280
150	151	12.5 × 13.5	240	12.5 × 16	290	12.5 × 16.5	340
220	221	12.5 × 16	320	16 × 16.5	410	16 × 16.5	340
330	331	16 × 16.5	450	16 × 16.5	510		
470	471	16 × 16.5	540			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

FVU | Chip Type 贴片式



□ 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	∅4 ~ ∅10	0.1 ~ 100 $\mu$ F	0.70	1.00	1.17	1.36	1.50
		150 ~ 1500 $\mu$ F	0.85	1.00	1.08	1.20	1.30
	∅12.5 ~ ∅16	~ 470 $\mu$ F	0.75	1.00	1.35	1.57	2.00
		680 ~ 3300 $\mu$ F	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。