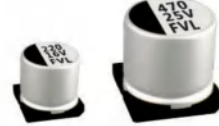


LONG LIFE WITH EXTRA LOWER IMPEDANCE

长寿命极低阻抗品

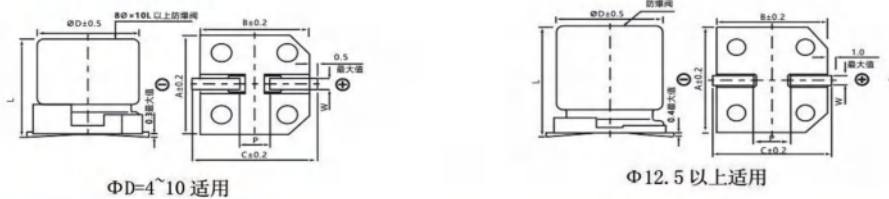
- Extra lower impedance with temperature range -55~+105°C  
极低阻抗和适用于 -55~+105°C的温度范围
- Load life of 3000~5000 hours  
负荷寿命3000~5000 小时
- Impedance 20~40% less than FVZ series  
阻抗值比FVZ系列低20~40%
- Comply with the RoHS directive  
符合 RoHS 指令



□ 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	3.3 ~ 4700µF																											
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 3µA, whichever is greater (after 2 minutes 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) Leakage current (∅12.5-∅16) ≤0.03CV or 4µA, whichever is greater (after 2 minute application of rated voltage) 漏电流(∅12.5-∅16) ≤0.03CV或 4µA, 取较大值(施加额定工作电压 2分钟后)																											
Dissipation Factor (tanδ) 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> <th>63-80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tan δ(max.) ∅4-∅10</td> <td>0.26</td> <td>0.20</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>最大损耗角正切 ∅12.5-∅16</td> <td>0.26</td> <td>0.20</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>0.12</td> </tr> </tbody> </table>	Rated Voltage (V) 额定工作电压	6.3	10	16	25	35	50	63-80	100	tan δ(max.) ∅4-∅10	0.26	0.20	0.18	0.16	0.14	0.12	0.12	0.12	最大损耗角正切 ∅12.5-∅16	0.26	0.20	0.18	0.16	0.14	0.12	0.12	0.12
Rated Voltage (V) 额定工作电压	6.3	10	16	25	35	50	63-80	100																				
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最大损耗角正切 ∅12.5-∅16	0.26	0.20	0.18	0.16	0.14	0.12	0.12	0.12																				
Stability at Low Temperature 低温特性	Measurement frequency 测试频率: 120Hz <table border="1"> <thead> <tr> <th>Rated Voltage (V) 额定工作电压</th> <th>6.3 ~ 16</th> <th>25 ~ 100</th> </tr> </thead> <tbody> <tr> <td>Impedance Ratio Z(-25°C) / Z(20°C)</td> <td>2</td> <td>2</td> </tr> <tr> <td>阻抗比 Z(-40°C) / Z(20°C)</td> <td>3</td> <td>3</td> </tr> <tr> <td>ZT/Z20 (max.) Z(-55°C) / Z(20°C)</td> <td>4</td> <td>3</td> </tr> </tbody> </table>	Rated Voltage (V) 额定工作电压	6.3 ~ 16	25 ~ 100	Impedance Ratio Z(-25°C) / Z(20°C)	2	2	阻抗比 Z(-40°C) / Z(20°C)	3	3	ZT/Z20 (max.) Z(-55°C) / Z(20°C)	4	3															
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ZT/Z20 (max.) Z(-55°C) / Z(20°C)	4	3																										
Load Life 高温负荷特性	After 5000 hrs. (3000hrs. for ∅4-∅6.3×5.8) 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5000小时(∅4-∅6.3×5.8为3000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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Leakage Current 漏电流	initial specified value or less 不大于规范值																											
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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Leakage Current 漏电流	initial specified value or less 不大于规范值																											
Marking 标识	Black print on the case top. 铝壳顶部黑字印刷。																											

□ Diagram of Dimensions 尺寸图



□ 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



□ DRAWING (Unit: mm) 外形图



□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT & IMPEDANCE 规格尺寸及最大允许纹波电流及阻抗值

μF	WV Code 代码	6.3			10			16		
		0J			1A			1C		
10	100							4 × 5.8	1.35	90
15	150							4 × 5.8	1.35	90
22	220	4 × 5.8	1.35	90	4 × 5.8	1.35	90	5 × 5.8	0.76	160
33	330	5 × 5.8 (4 × 5.8)	0.76 (1.35)	160 (90)	5 × 5.8	0.76	160	5 × 5.8	0.76	160
47	470	5 × 5.8 (4 × 5.8)	0.76 (1.35)	160 (90)	6.3 × 5.8	0.44	240	6.3 × 5.8	0.44	240
56	560	5 × 5.8	0.76	160	6.3 × 5.8	0.44	240	6.3 × 5.8 (5 × 5.8)	0.44 (0.76)	240 (160)
68	680	6.3 × 5.8	0.44	240	6.3 × 5.8	0.44	240	6.3 × 5.8	0.44	240
100	101	6.3 × 5.8	0.44	240	6.3 × 7.7	0.34	300	6.3 × 7.7 (6.3 × 5.8)	0.34 (0.44)	300 (240)
150	151	6.3 × 5.8	0.44	240	6.3 × 7.7	0.34	300	6.3 × 7.7 (6.3 × 5.8)	0.34 (0.44)	300 (240)
220	221	6.3 × 7.7 (6.3 × 5.8)	0.34 (0.44)	300 (240)	6.3 × 7.7	0.34	300	6.3 × 7.7	0.34	300
330	331	8 × 10.5	0.17	600	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)	8 × 10.5 (6.3 × 7.7)	0.17 (0.34)	850 (300)
470	471	8 × 10.5	0.17	600	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)
680	681	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)	10 × 10.5	0.09	850	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)
1000	102	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)	10 × 13.5 (10 × 10.5)	0.07 (0.09)	950 (850)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)
1500	152	10 × 13.5	0.07	950	12.5 × 13.5	0.06	1100	16 × 16.5	0.05	1450
2200	222	12.5 × 13.5	0.06	1100	12.5 × 16	0.055	1200	Case size ∅D×L(mm) 尺寸	Impedance (Ω) at 20°C, 100KHz 阻抗值	Ripple current (mA rms) at 105°C, 100KHz 纹波电流
3300	332	12.5 × 16	0.055	1200	16 × 16.5	0.05	1450			
4700	472	16 × 16.5	0.05	1450						

FVL | Chip Type 贴片式

μF	WV Code 代码	25			35			50		
		1E			1V			1H		
4.7	4R7				4 × 5.8	1.35	90	5 × 5.8	1.52	85
10	100	4 × 5.8	1.35	90	5 × 5.8	0.76	160	6.3 × 5.8 (5 × 5.8)	0.88 (1.52)	165 (115)
15	150	5 × 5.8	0.76	160	5 × 5.8	0.76	160	6.3 × 5.8	0.88	165
22	220	6.3 × 5.8 (5 × 5.8)	0.44 (0.76)	240 (160)	6.3 × 5.8	0.44	240	6.3 × 7.7 (6.3 × 5.8)	0.68 (0.88)	195 (165)
33	330	6.3 × 5.8	0.44	240	6.3 × 5.8	0.44	240	6.3 × 7.7	0.68	195
47	470	6.3 × 7.7 (6.3 × 5.8)	0.34 (0.44)	300 (240)	6.3 × 7.7 (6.3 × 5.8)	0.34 (0.44)	300 (165)	8 × 10.5 (6.3 × 7.7)	0.34 (0.68)	350 (195)
56	560	6.3 × 7.7	0.34	300	6.3 × 7.7	0.34	300	8 × 10.5	0.34	350
68	680	6.3 × 7.7	0.34	300	8 × 10.5	0.17	600	8 × 10.5	0.34	350
100	101	8 × 10.5 (6.3 × 7.7)	0.17 (0.34)	600 (300)	8 × 10.5	0.17	600	10 × 10.5 (8 × 10.5)	0.18 (0.34)	670 (350)
150	151	8 × 10.5 (6.3 × 7.7)	0.16 (0.34)	600 (300)	10 × 10.5	0.09	850	10 × 13.5 (10 × 10.5)	0.14 (0.18)	780 (670)
220	221	8 × 10.5	0.17	600	10 × 10.5 (8 × 10.5)	0.09 (0.16)	850 (600)	(10 × 13.5) (10 × 10.5)	(0.14) (0.18)	(780) (670)
330	331	10 × 10.5 (8 × 10.5)	0.09 (0.17)	850 (600)	(10 × 13.5) (10 × 10.5)	(0.07) (0.09)	(950) (850)	12.5 × 13.5	0.12	900
470	471	10 × 13.5 (10 × 10.5)	0.07 (0.09)	950 (850)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	0.06 (0.07) (0.09)	1100 (1000) (850)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	0.08 (0.10) (0.12)	1250 (1050) (900)
680	681	12.5 × 13.5	0.06	1100	12.5 × 16 (12.5 × 13.5)	0.055 (0.06)	1200 (1100)			
1000	102	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)	16 × 16.5	0.05	1450	Case size ∅D×L(mm) 尺寸	Impedance (Ω) at 20°C, 100KHz 阻抗值	Ripple current (mA rms) at 105°C, 100KHz 纹波电流
1500	152	16 × 16.5	0.05	1450						

\*Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 100KHz, Impedance (Ω) at 20°C 100KHz \*尺寸∅D×L(mm), 纹波电流(mA rms)于105°C, 100KHz, 阻抗值(Ω)于20°C 100KHz

□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT & IMPEDANCE 规格尺寸及最大允许纹波电流及阻抗值

μF	WV Code 代码	63			80			100		
		1J			1K			2A		
3.3	3R3				5 × 5.8	5.0	25			
4.7	4R7	5 × 5.8	3.0	50	6.3 × 5.8	3.0	40			
10	100	6.3 × 7.7 (6.3 × 5.8)	1.2 (1.5)	120 (80)	6.3 × 7.7	2.4	60	8 × 10.5	1.3	130
22	220	8 × 10.5 (6.3 × 7.7)	0.65 (1.2)	250 (120)	8 × 10.5	1.3	130	10 × 10.5 (8 × 10.5)	0.7 (1.3)	200 (160)
33	330	8 × 10.5	0.65	250	10 × 10.5	0.7	200	10 × 13.5	0.45	200
47	470	10 × 10.5 (8 × 10.5)	0.50 (0.65)	300 (250)	10 × 13.5	0.45	300	12.5 × 13.5	0.32	500
68	680	12.5 × 13.5 (10 × 10.5)	0.16 (0.50)	800 (300)	12.5 × 13.5	0.32	500	12.5 × 13.5	0.32	500
100	101	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	0.16 (0.25) (0.50)	800 (400) (300)	12.5 × 13.5 (10 × 13.5)	0.32 (0.45)	500 (300)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	0.17 (0.26) (0.32)	795 (550) (500)
150	151	12.5 × 13.5 (10 × 13.5)	0.16 (0.25)	800 (650)	12.5 × 13.5	0.32	500	Case size ∅D × L (mm) 尺寸	Impedance (Ω) at 20°C, 100KHz 阻抗值	Ripple current (mA rms) at 105°C, 100KHz 纹波电流
220	221	12.5 × 13.5	0.16	800	12.5 × 16 (12.5 × 13.5)	0.26 (0.32)	550 (500)			
330	331	16 × 16.5	0.082	1400	16 × 16.5	0.17	795			

• Case size ∅D × L (mm), ripple current (mA rms) at 105°C, 100KHz, Impedance (Ω) at 20°C 100KHz • 尺寸 ∅D × L (mm), 纹波电流 (mA rms) 于 105°C, 100KHz, 阻抗值 (Ω) 于 20°C 100KHz

□ 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	4.7 ~ 68μF	0.35	0.50	0.64	0.83	1.00
		100 ~ 1500μF	0.40	0.55	0.70	0.85	1.00
	∅12.5 - ∅16	~ 68μF	0.40	0.55	0.70	0.85	1.00
		100 ~ 680μF	0.45	0.65	0.80	0.90	1.00
		1000 ~ 4700μF	0.65	0.85	0.95	1.00	1.00

- 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。