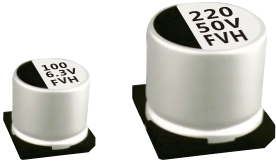


WIDE TEMPERATURE

Upgrade
升级

宽温品

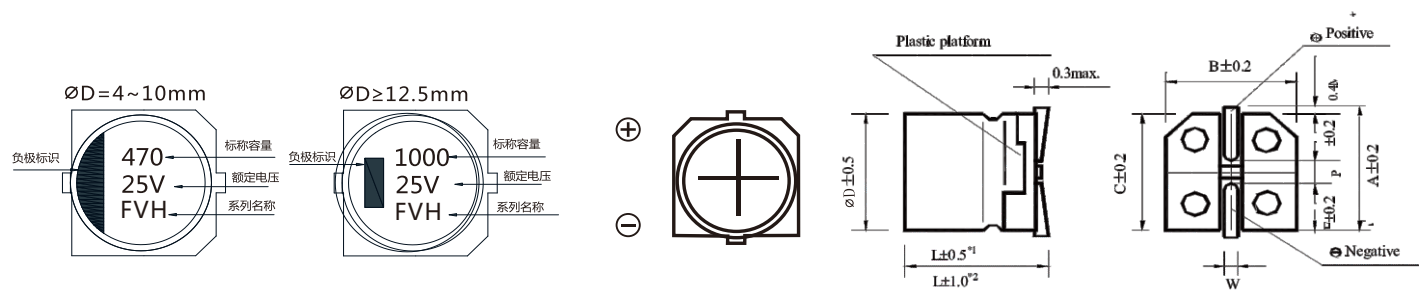
- Operating with wide temperature range -55~+105°C
适用于 -55~+105° C 的宽温范围
- Load life of 2000 hours
负荷寿命2000 小时
- Comply with the RoHS directive
符合 RoHS 指令



SPECIFICATIONS 特性表

Items 项目	Characteristics 主要特性												
Operation Temperature Range 使用温度范围	-55 ~ +105℃												
Voltage Range 额定工作电压范围	4 ~ 450V												
Capacitance Range 静电容量范围	0.1 ~ 6800 μF												
Capacitance Tolerance 静电容量允许偏差	±20% at 120Hz, 20℃												
Leakage Current 漏电流	Rated Voltage 额定工作电压	6.3 ~ 100V								160 ~ 450V			
	Case size 尺寸	Ø4-Ø10				Ø12.5-Ø16				Ø6.3-Ø16			
	Time 时间	after 2min. (application of rated voltage) 2 分钟后（施加额定工作电压）				after 1min. (application of rated voltage) 1 分钟后（施加额定工作电压）				after 2min.(application of rated voltage) 2 分钟后（施加额定工作电压）			
	Leakage current 漏电流	≤ 0.01CV or 3 μA, whichever is greater ≤ 0.01CV 或 3 μA, 取较大值				≤ 0.03CV or 4 μA, whichever is greater ≤ 0.03CV 或 4 μA, 取较大值				≤ 0.04CV+100 μA, whichever is greater ≤ 0.04CV+100 μA, 取较大值			
Dissipation Factor (tan δ) 损耗角正切	Measurement frequency 测试频率: 120Hz, Temperature 温度: 20℃												
	Rated Voltage(V) 额定工作电压	4	6.3	10	16	25	35	50	63	100	160~250	350~450	
	tan δ(max.) 最大损耗角正切	Ø4-Ø10 Ø12.5-Ø16	0.35 0.40	0.30 0.38	0.24 0.34	0.20 0.30	0.18 0.28	0.16 0.22	0.14 0.18	0.14 0.16	0.20 0.20	0.25 0.25	
Stability at Low Temperature 低温特性	Measurement frequency 测试频率: 120Hz												
	Rated Voltage (V) 额定工作电压		4	6.3	10	16	25	35	50~63	100	160~250	350~450	
	Impedance Ratio 阻抗比 ZT/Z20 (max.)	Ø4~Ø10 Ø12.5-Ø16	Z(-25℃)/Z(20℃)	7	4	3	2	2	2	3	2	3	
			Z(-55℃)/Z(20℃)	15	8	6	4	4	3	4	3	6	
			Z(-25℃)/Z(20℃)	7	5	4	3	2	2	2	2	4	
			Z(-55℃)/Z(20℃)	17	12	10	8	5	4	3	3	6	10
Load Life 高温负荷特性	After 2000 hrs. application of the rated voltage at 105℃, they meet the characteristics listed below. 在 105℃ 环境中施加额定工作电压2000 小时后, 电容器的特性符合下表的要求。												
	Capacitance Change 静电容量变化率		Within ±20% of initial value (Within ±30% of initial value for capacitors of 10V or less) 初始值的 ±20% 以内 (≤10V 为初始值的 ±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										
Shelf Life 高温贮存特性	After leaving capacitors under no load at 105℃ for 1000 hours, they meet the specified value for load life characteristics listed above. 在105℃ 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。												
	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。												
Resistance to Soldering Heat 耐焊接热特性	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										
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~Ø10×13.5 适用于 Ø4~Ø10×13.5

*2. Applicable to Ø12.5~Ø16 适用于 Ø12.5~Ø16

* A pressure relief vent is attached to products over ØD=8×10.5

* ØD=8×10.5 以上产品有缓压防爆阀

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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 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	5.4	5.4	5.4	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

WV Code μF 代码	4		6.3		10		16		25	
	0G		0J		1A		1C		1E	
4.7 4R7							4 x 5.4	13	4 x 5.4	14
10 100							4 x 5.4	19	5 x 5.4 (4 x 5.4)	23 (16)
22 220	4 x 5.4	20	4 x 5.4	23	5 x 5.4 (4 x 5.4)	29 (20)	5 x 5.4 (4 x 5.4)	32 (25)	6.3 x 5.4 (5 x 5.4)	39 (32)
33 330	5 x 5.4 (4 x 5.4)	30 (25)	5 x 5.4 (4 x 5.4)	32 (30)	5 x 5.4 (4 x 5.4)	35 (22)	6.3 x 5.4 (5 x 5.4)	45 (35)	6.3 x 5.4 (5 x 5.4)	48 (35)
47 470	5 x 5.4 (4 x 5.4)	36 (30)	5 x 5.4 (4 x 5.4)	38 (35)	5 x 5.4	38	6.3 x 5.4 (5 x 5.4)	55 (40)	6.3 x 5.4	60
100 101	6.3 x 5.4 (5 x 5.4)	60 (49)	6.3 x 5.4 (5 x 5.4)	65 (54)	6.3 x 5.4 (5 x 5.4)	70 (60)	6.3 x 5.4	80	6.3 x 7.7 (6.3 x 5.4)	100 (80)
150 151	6.3 x 5.4	70	6.3 x 5.4	55	6.3 x 5.4	62	6.3 x 7.7	105	8 x 10.5 (6.3 x 7.7)	140 (120)
220 221	6.3 x 5.4	85	6.3 x 7.7 (6.3 x 5.4)	120 (95)	6.3 x 7.7 (6.3 x 5.4)	120 (95)	8 x 10.5 (6.3 x 7.7)	180 (120)	8 x 10.5	200
330 331	6.3 x 7.7	100	6.3 x 7.7	120	8 x 10.5 (6.3 x 7.7)	200 (135)	8 x 10.5	220	10 x 10.5 (8 x 10.5)	240 (250)
470 471	6.3 x 7.7	105	8 x 10.5 (6.3 x 7.7)	230 (120)	6.3 x 7.7 (8 x 10.5)	120 (230)	10 x 10.5 (8 x 10.5)	300 (270)	10 x 10.5	280
680 681	8 x 10.5	210	8 x 10.5	230	10 x 10.5 (8 x 10.5)	270 (220)	10 x 10.5	315	10 x 13.5	400
1000 102	8 x 10.5	230	10 x 10.5 (8 x 10.5)	340 (290)	10 x 10.5	315	12.5 x 13.5 (10 x 13.5) (10 x 10.5)	500 (390) (340)	12.5 x 13.5	580
1500 152	10 x 10.5	315	10 x 13.5 (10 x 10.5)	450 (410)	10 x 13.5	460	12.5 x 13.5	550	12.5 x 16	850
2200 222	10 x 13.5 (10 x 10.5)	440 (340)	12.5 x 13.5 (10 x 13.5)	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 13.5	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)								

WV Code μF 代码	35		50		63		100	
	1V		1H		1J		2A	
0.1 0R1			4 x 5.4	2	4 x 5.4	2		
0.22 R22			4 x 5.4	4	4 x 5.4	4		
0.33 R33			4 x 5.4	4	4 x 5.4	4		
0.47 R47			4 x 5.4	5	4 x 5.4	5		
1 010			4 x 5.4	8	4 x 5.4	8	4 x 5.4	8
2.2 2R2			4 x 5.4	11	4 x 5.4	11	6.3 x 5.4 (5 x 5.4)	14 (12)
3.3 3R3	4 x 5.4	13	4 x 5.4	14	5 x 5.4	14	6.3 x 7.7 (6.3 x 5.4)	32 (20)
4.7 4R7	4 x 5.4	15	5 x 5.4 (4 x 5.4)	19 (14)	5 x 5.4	19	6.3 x 7.7 (6.3 x 5.4)	35 (21)
10 100	5 x 5.4 (4 x 5.4)	25 (18)	6.3 x 5.4 (5 x 5.4)	31 (20)	6.3 x 7.7 (6.3 x 5.4)	39 (24)	8 x 10.5 (6.3 x 7.7)	77 (35)
22 220	6.3 x 5.4 (5 x 5.4)	42 (34)	6.3 x 7.7 (6.3 x 5.4)	51 (42)	8 x 10.5 (6.3 x 7.7)	98 (49)	10 x 10.5 (8 x 10.5)	126 (84)
33 330	6.3 x 5.4	50	6.3 x 7.7	60	8 x 10.5	112	10 x 10.5	133
47 470	6.3 x 7.7 (6.3 x 5.4)	78 (58)	8 x 10.5 (6.3 x 7.7)	120 (63)	10 x 10.5 (8 x 10.5)	160 (119)	12.5 x 13.5 (10 x 13.5) (10 x 10.5)	250 (160) (140)
68 680					Case size 尺寸	Ripple current 纹波电流	12.5 x 13.5 (10 x 13.5)	300 (180)

•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

WV Code μF 代码	35		50		63		100		160	
	1V		1H		1J		2A		2C	
22	220								10 × 13.5	50
33	330								12.5 × 13.5	95
47	470								12.5 × 13.5 (16 × 16.5)	205 (240)
100	101	8 × 10.5 (6.3 × 7.7)	150 (92)	10 × 10.5 (8 × 10.5)	180 (160)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	270 (210) (196)	16 × 16.5 (12.5 × 13.5)	450 (380)	16 × 16.5 250
150	151	8 × 10.5	185	10 × 10.5	200	10 × 13.5	225			
220	221	10 × 10.5 (8 × 10.5)	250 (220)	10 × 13.5 (10 × 10.5)	280 (220)	16 × 16.5 (12.5 × 13.5)	560 (470)	16 × 16.5	550	
330	331	10 × 10.5	300	16 × 16.5 (12.5 × 13.5) (10 × 13.5)	600 (420) (295)	16 × 16.5 (12.5 × 16)	700 (510)			
470	471	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	520 (375) (310)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	700 (520) (470)	16 × 16.5	750			
680	681	12.5 × 13.5	530	16 × 16.5	750					
1000	102	16 × 16.5 (12.5 × 16)	750 (600)							Case size 尺寸
1500	152	16 × 16.5	750							

WV Code μF 代码	200		250		350		400		450	
	2D		2E		2V		2G		2W	
3.3	3R3						10 × 13.5 (8 × 10.5)	40 (35)	10 × 13.5 (8 × 12.5)	40 (38)
4.7	4R7			10 × 13.5	75	10 × 13.5	85	10 × 13.5 (12.5 × 13.5)	45 (48)	10 × 13.5 (12.5 × 13.5)
10	100	10 × 13.5	75	10 × 13.5	75	12.5 × 13.5	105	12.5 × 13.5	50	12.5 × 13.5
22	220	12.5 × 13.5	105	12.5 × 13.5	105	16 × 16.5	130	16 × 16.5	85	16 × 16.5
33	330	12.5 × 13.5	120	16 × 16.5	135					Case size 尺寸
47	470	16 × 16.5	220							

•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

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 ~ 68μF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300μF	0.85	1.00	1.08	1.20	1.30
	∅12.5 ~ ∅16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680μF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800μF	0.85	1.00	1.10	1.13	1.15

- The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime wiht every 5°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5℃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 20 “Taping Specifications”. 编带标准请参阅第 20 页 “编带标准”。
- Please refer to page 21 “Package Quantity” for the minimum package quantity. 最小包装数量请参阅第 21页 “包装数量”。

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