

# V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS



## SS Standard 标准品

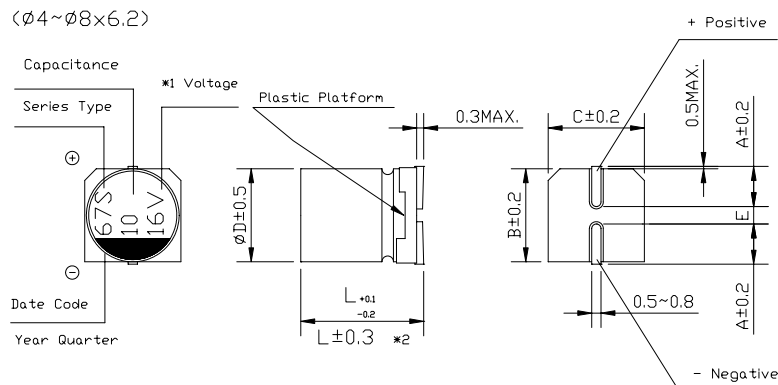
- Designed for surface mounting on density circuit board.
- Emboss carrier tape packing system is available for automatic insertion.
- Lead-free reflow soldering is available subject to customers' request.



### ◆ Specifications 特性

Items 项目	Performance Characteristics 主要特性																																																			
Operating Temperature Range 使用温度范围	-40~+85°C																																																			
Voltage Range 额定工作电压范围	4~100V																																																			
Capacitance Range 静电容量范围	0.1~6800 μF																																																			
Capacitance Tolerance 静电容量允许偏差	±20% at 120 Hz, 20°C																																																			
Leakage Current 漏电流	For φ4~φ10, after 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater. For φ12.5~φ16, after 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4(μA), whichever is greater. φ4~φ10: 施加额定工作电压 2 分钟, LC≤0.01CV 或 3(μA), 取较大值; φ12.5~φ16: 施加额定工作电压 1 分钟, LC≤0.03CV 或 4(μA), 取较大值。																																																			
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.DC) 额定工作电压</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Tan δ φ4~φ10</td> <td>0.35</td> <td>0.26</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> </tr> <tr> <td>损耗角正切(max) φ12.5~φ16</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> </tbody> </table>	Rated voltage (V.DC) 额定工作电压	4	6.3	10	16	25	35	50	63	100	Tan δ φ4~φ10	0.35	0.26	0.20	0.16	0.14	0.12	0.12	0.10	0.10	损耗角正切(max) φ12.5~φ16	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 border="1"> <thead> <tr> <th colspan="2">Rated voltage (V.DC) 额定工作电压</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance ratio 阻抗比 ZT/Z20 (max)</td> <td rowspan="2">φ4~φ10</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> <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> <td>3</td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">φ12.5~φ16</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> <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> <td>3</td> </tr> </tbody> </table>	Rated voltage (V.DC) 额定工作电压		4	6.3	10	16	25	35	50	63	100	Impedance ratio 阻抗比 ZT/Z20 (max)	φ4~φ10	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2	2	Z(-40°C)/Z(20°C)	15	8	6	4	4	3	3	3		φ12.5~φ16	Z(-25°C)/Z(20°C)	7	5	4	3	2	2	2	2	Z(-40°C)/Z(20°C)	17	12	10	8	5	4	3	3
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Load Life 高温负荷特性	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right. 在 85°C 环境中施加额定工作电压 2000 小时后, 电容器的特性符合右表的要求。 <table border="1"> <tbody> <tr> <td>Capacitance Change 静电容量变化率</td> <td>Within ±20% of the initial value 初始值的±20%以内 (Within ±30% of the initial value for 4V) 4V 产品为±30%以内</td> </tr> <tr> <td>Tan δ 损耗角正切</td> <td>200% or less of the 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> </tbody> </table>	Capacitance Change 静电容量变化率	Within ±20% of the initial value 初始值的±20%以内 (Within ±30% of the initial value for 4V) 4V 产品为±30%以内	Tan δ 损耗角正切	200% or less of the 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 高温储存特性	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for load life characteristics listed above. 在 85°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 requirements listed at right. 经过回流焊并冷却至室温后, 电容器的特性符合右表的要求。 <table border="1"> <tbody> <tr> <td>Capacitance Change 静电容量变化率</td> <td>Within ±10% of the initial value 初始值的±10%以内</td> </tr> <tr> <td>Tan δ 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 the initial value 初始值的±10%以内	Tan δ 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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Applicable Standards 适用标准	JIS C-5141 and JIS C-5102																																																			

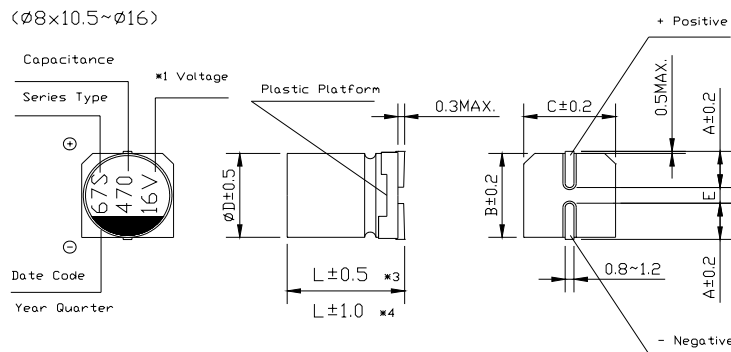
### ◆ Dimensions & Marking 尺寸及印字





# V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

## SS Series



\*1 Voltage mark [6V] represents 6.3V for  $\Phi 4 \sim \Phi 10$ ;

\*2 [L±0.3] is applicable to  $\Phi 6.3 \times 7.7$  and  $\Phi 8 \times 6.2$ ;

\*3 [L±0.5] is applicable to  $\Phi 8 \times 10.5 \sim \Phi 10$ ;

\*4 [L±1.0] is applicable to  $\Phi 12.5 \sim \Phi 16$ .

Re: Date code and series type — 1<sup>st</sup> digit for Year; 2<sup>nd</sup> digit for Quarter, 4 quarter codes in one year are 1, 4, 7, 0; 3<sup>rd</sup> character for Series; SS Series = S.

(mm)

DxL	$\Phi 4 \times 5.4$	$\Phi 5 \times 5.4$	$\Phi 6.3 \times 5.4$	$\Phi 6.3 \times 7.7$	$\Phi 8 \times 6.2$	$\Phi 8 \times 10.5$	$\Phi 10 \times 10.5$	$\Phi 10 \times 13.5$	$\Phi 12.5 \times 13.5$	$\Phi 12.5 \times 16$	$\Phi 16 \times 16.5$
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
E ± 0.2	1.0	1.3	2.2	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	6.2	10.5	10.5	13.5	13.5	16.0	16.5

### ◆ Standard size & Maximum permissible ripple current 规格壳号及最大允许纹波电流

容量 Cap. (μF)	WV 电压	4		6.3		10		16		25	
		0G	0J	0J	1A	1A	1C	1C	1E	1E	
4.7	4R7									4x5.4	19
10	100							4x5.4	25	5x5.4 (4x5.4)	28 (20)
15	150							4x5.4	28	5x5.4	34
22	220			4x5.4	31	5x5.4 (4x5.4)	35 (28)	5x5.4 (4x5.4)	39 (28)	6.3x5.4 (5x5.4)	52 (35)
33	330	4x5.4	26	5x5.4 (4x5.4)	39 (31)	5x5.4 (4x5.4)	43 (32)	6.3x5.4 (5x5.4)	57 (40)	6.3x5.4 (5x5.4)	63 (42)
47	470	4x5.4	34	5x5.4 (4x5.4)	47 (36)	6.3x5.4 (5x5.4)	59 (43)	6.3x5.4 (5x5.4)	68 (44)	6.3x5.4	68
56	560	4x5.4	39	5x5.4	46	6.3x5.4	57	6.3x5.4	74	6.3x5.4	82
68	680	5x5.4	45	6.3x5.4 (5x5.4)	62 (52)	6.3x5.4	72	6.3x5.4	80	6.3x5.4	94
100	101	5x5.4	61	6.3x5.4 (5x5.4)	71 (55)	6.3x5.4	76	6.3x5.4 (8x6.2)	86 (200)	6.3x7.7 (8x6.2)	130 (91)
150	151	6.3x5.4	74	6.3x5.4	78	6.3x5.4	88	6.3x7.7	135	8x10.5 (6.3x7.7)	200 (130)
220	221	6.3x5.4	82	6.3x5.4	95	6.3x7.7 (8x6.2)	150 (250)	8x10.5 (6.3x7.7) (8x6.2)	215 (150) (135)	8x10.5	250
330	331	6.3x7.7	150	6.3x7.7 (8x6.2)	150 (300)	8x10.5	280	8x10.5	280	10x10.5 (8x10.5)	340 (310)
470	471	6.3x7.7	150	8x10.5 (6.3x7.7)	300 (150)	10x10.5 (8x10.5)	320 (300)	10x10.5 (8x10.5)	420 (330)	10x10.5	400
680	681	8x10.5	300	8x10.5	300	10x10.5	380	10x10.5	450	10x13.5	550
1000	102	8x10.5	330	10x10.5 (8x10.5)	430 (330)	10x10.5	450	12.5x13.5 (10x13.5) (10x10.5)	710 (550) (490)	12.5x13.5	820
1500	152	10x10.5	450	10x13.5 (10x10.5)	650 (450)	10x13.5	650	12.5x13.5	750	12.5x16	1000
2200	222	10x13.5 (10x10.5)	620 (480)	12.5x13.5 (10x13.5)	890 (720)	12.5x13.5	960	16x16.5 (12.5x16)	1150 (1000)	16x16.5	1250
3300	332	10x13.5	700	12.5x16 (12.5x13.5)	1000 (900)	16x16.5 (12.5x16)	1300 (1050)	16x16.5	1350		
4700	472	12.5x13.5	850	16x16.5	1400	16x16.5	1450				
6800	682	16x16.5 (12.5x16)	1350 (900)							Case Size	Ripple Current

Ripple Current (mA rms) at 85°C 120Hz



# V-CHIP ALUMINUM ELECTROLYTIC CAPACITORS

## SS Series

### ◆ Standard size & Maximum permissible ripple current 规格壳号及最大允许纹波电流

WV 电压 容量 Cap.( $\mu$ F)		35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4x5.4	1.0	4x5.4	1.0		
0.22	R22			4x5.4	2.3	4x5.4	2.3		
0.33	R33			4x5.4	3.5	4x5.4	3.5		
0.47	R47			4x5.4	5.0	4x5.4	5.0		
1	010			4x5.4	10	4x5.4	10	4x5.4	10
1.5	1R5			4x5.4	12	4x5.4	12	6.3x5.4	15
2.2	2R2			4x5.4	15	4x5.4	15	6.3x5.4	20
3.3	3R3	4x5.4	18	4x5.4	18	5x5.4	20	6.3x7.7 (6.3x5.4) (8x6.2)	45 (28) (50)
4.7	4R7	4x5.4	20	5x5.4 (4x5.4)	23 (19)	6.3x5.4 (5x5.4)	30 (23)	6.3x7.7 (6.3x5.4) (8x6.2)	50 (30) (50)
10	100	5x5.4 (4x5.4)	30 (20)	6.3x5.4 (5x5.4)	34 (27)	6.3x7.7 (6.3x5.4)	55 (34)	8x10.5 (6.3x7.7) (8x6.2)	110 (50) (50)
22	220	6.3x5.4	54	6.3x5.4 (8x6.2)	60 (120)	8x10.5 (6.3x7.7) (8x6.2)	140 (70) (35)	10x10.5 (8x10.5)	180 (120)
33	330	6.3x5.4 (8x6.2)	60 (130)	6.3x7.7 (8x6.2)	85 (65)	8x10.5 (6.3x7.7)	160 (85)	10x10.5	190
47	470	6.3x5.4 (8x6.2)	70 (165)	10x10.5 (8x10.5) (6.3x7.7)	130 (110) (90)	10x10.5 (8x10.5)	230 (170)	12.5x13.5 (10x13.5) (10x10.5)	330 (220) (200)
56	560	6.3x7.7	80	6.3x7.7	110	10x10.5	250		
68	680	6.3x7.7	110	8x10.5	170	10x10.5	260	12.5x13.5 (10x13.5)	380 (250)
100	101	8x10.5 (6.3x7.7)	175 (120)	10x10.5 (8x10.5)	240 (200)	12.5x13.5 (10x13.5) (10x10.5)	380 (290) (280)	12.5x13.5	440
150	151	8x10.5	220	10x10.5	240	10x13.5	310		
220	221	10x10.5 (8x10.5)	310 (270)	10x13.5 (10x10.5)	400 (320)	12.5x13.5 (10x13.5)	580 (330)	16x16.5	700
330	331	10x10.5	350	12.5x13.5 (10x13.5)	600 (420)	16x16.5 (12.5x16)	820 (720)		
470	471	12.5x13.5 (10x13.5) (10x10.5)	600 (530) (400)	16x16.5 (12.5x16)	850 (740)	16x16.5	950		
680	681	12.5x13.5 (10x13.5)	750 (560)	16x16.5	950				
1000	102	16x16.5 (12.5x16)	1100 (800)					Case Size	Ripple Current

Ripple Current (mA rms) at 85°C 120Hz

### ◆ Frequency Correction Factor of Rated Ripple Current 纹波电流频率补偿系数

Frequency Capacitance ( $\mu$ F)		50Hz	120Hz	300Hz	1kHz	10kHz~
		$\Phi$ 4~ $\Phi$ 10	0.1~68	0.70	1.00	1.17
100~3300	0.85		1.00	1.08	1.20	1.30
$\Phi$ 12.5~ $\Phi$ 16	~68	0.75	1.00	1.35	1.57	2.00
	100~680	0.80	1.00	1.23	1.34	1.50
	1000~6800	0.85	1.00	1.10	1.13	1.15