



# 广东容硕半导体有限公司

## Guangdong Roso Semiconductor Co.,Ltd

### 系列规格书

系列类型：标准品 **CS**

产品名称：贴片铝电解电容器

APPROVAL		
APPROVAL	CHECK	PREPARE
技术部 陈小英	副总 黄杰	总经理 徐永康

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# 貼片鋁電解電容器代碼標志

Code Sign SMD(V-Chip) Aluminum Electrolytic Capacitor



# CS Series

## STANDARD

### 标准品

- Operating with general temperature range -40 ~ +105°C  
適用於 -40 ~ +105°C 的常規溫度範圍
- Load life of 1000 hours  
負荷壽命 1000 小時
- Comply with the RoHS directive  
符合 RoHS 指令

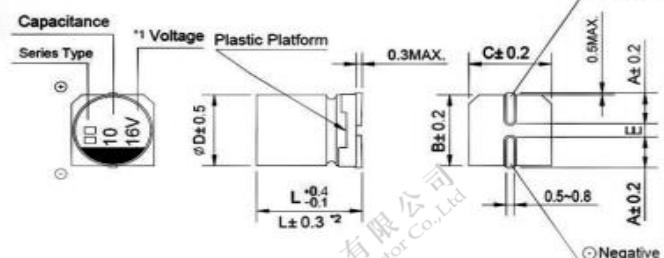


### □ SPECIFICATIONS 特性表

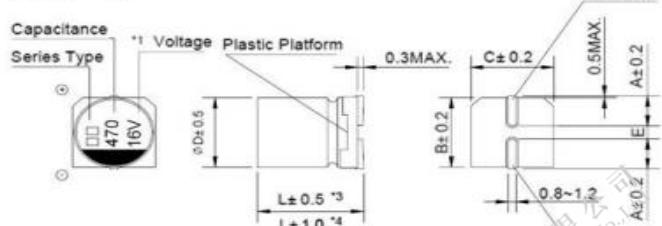
Items 項目	Characteristics 主要特性																																																				
Operation Temperature Range 使用溫度範圍	-40 ~ +105°C																																																				
Voltage Range 額定工作電壓範圍	4 ~ 100V																																																				
Capacitance Range 靜電容量範圍	0.1 ~ 6800μF																																																				
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C																																																				
Leakage Current 漏電流	Leakage current ( $\phi 4 \sim \phi 10$ ) $\leq 0.01\text{CV}$ or $3\mu\text{A}$ , whichever is greater (after 2 minutes application of rated voltage) Leakage current ( $\phi 12.5 \sim \phi 16$ ) $\leq 0.03\text{CV}$ or $4\mu\text{A}$ , whichever is greater (after 1 minute application of rated voltage) 漏電流 ( $\phi 4 \sim \phi 10$ ) $\leq 0.01\text{CV}$ 或 $3\mu\text{A}$ , 取較大值 (施加額定工作電壓 2 分鐘後) 漏電流 ( $\phi 12.5 \sim \phi 16$ ) $\leq 0.03\text{CV}$ 或 $4\mu\text{A}$ , 取較大值 (施加額定工作電壓 1 分鐘後)																																																				
Dissipation Factor (tan δ) 損耗角正切	Measurement frequency 測試頻率: 120Hz, Temperature 溫度: 20°C <table border="1"> <tr> <th>Rated Voltage (V) 額定工作電壓</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> <tr> <td>tan δ (max.)</td> <td><math>\phi 4 \sim \phi 10</math></td> <td>0.35</td> <td>0.30</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> <tr> <td>最大損耗角正切</td> <td><math>\phi 12.5 \sim \phi 16</math></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> </table>									Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50	63	100	tan δ (max.)	$\phi 4 \sim \phi 10$	0.35	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10	最大損耗角正切	$\phi 12.5 \sim \phi 16$	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 低溫特性	Measurement frequency 測試頻率: 120Hz <table border="1"> <tr> <th>Rated Voltage (V) 額定工作電壓</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50~100</th> </tr> <tr> <td>Impedance Ratio 阻抗比</td> <td><math>\phi 4 \sim \phi 10</math></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> </tr> <tr> <td>ZT/Z20 (max.)</td> <td><math>\phi 12.5 \sim \phi 16</math></td> <td>Z(-40°C) / Z(20°C)</td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td></td> <td></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> </tr> <tr> <td></td> <td></td> <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> </tr> </table>									Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50~100	Impedance Ratio 阻抗比	$\phi 4 \sim \phi 10$	Z(-25°C) / Z(20°C)	7	4	3	2	2	2	ZT/Z20 (max.)	$\phi 12.5 \sim \phi 16$	Z(-40°C) / Z(20°C)	15	8	6	4	3	3			Z(-25°C) / Z(20°C)	7	5	4	3	2	2			Z(-40°C) / Z(20°C)	17	12	10	8	5	4
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		Z(-40°C) / Z(20°C)	17	12	10	8	5	4																																													
Load Life 高溫負荷特性	After 1000 hrs. application of the rated voltage at 105°C, they meet the characteristics listed below. 在 105°C 環境中施加額定工作電壓 1000 小時 (後), 電容器的特性符合下表的要求。 <table border="1"> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20% 以內 (4V 為±30% 以內)</td> </tr> <tr> <td>Dissipation Factor 損耗角正切</td> <td>200% or less of initial specified value 不大於規範值的 200%</td> </tr> <tr> <td>Leakage Current 漏電流</td> <td>initial specified value or less 不大於規範值</td> </tr> </table>									Capacitance Change 靜電容量變化率	Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20% 以內 (4V 為±30% 以內)	Dissipation Factor 損耗角正切	200% or less of initial specified value 不大於規範值的 200%	Leakage Current 漏電流	initial specified value or less 不大於規範值																																						
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Shelf Life 高溫貯存特性	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 環境中無負荷放置 1000 小時後, 電容器的特性符合高溫負荷特性中所列的規定值。																																																				
Resistance to Soldering Heat 耐焊接熱特性	After reflow soldering and restored at room temperature, they meet the characteristics listed below. 經過回流焊並冷卻至室溫後, 電容器的特性符合下表的要求。 <table border="1"> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±10% of initial value 初始值的±10% 以內</td> </tr> <tr> <td>Dissipation Factor 損耗角正切</td> <td>initial specified value or less 不大於規範值</td> </tr> <tr> <td>Leakage Current 漏電流</td> <td>initial specified value or less 不大於規範值</td> </tr> </table>									Capacitance Change 靜電容量變化率	Within ±10% of initial value 初始值的±10% 以內	Dissipation Factor 損耗角正切	initial specified value or less 不大於規範值	Leakage Current 漏電流	initial specified value or less 不大於規範值																																						
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Marking	Black print on the case top. 鋁殼頂部黑字印刷。																																																				

### □ DRAWING (Unit: mm) 外形圖

( $\phi 4 \sim \phi 8 \times 6.2$ )



( $\phi 8 \times 10.5 \sim \phi 16$ )



\*1. Voltage mark for 6.3V is [6V] 6.3V 的產品標識為 [6V]

\*2. Applicable to  $\phi 6.3 \times 7.7$  適用於  $\phi 6.3 \times 7.7$

\*3. Applicable to  $\phi 8 \times 10.5 \sim \phi 10$  適用於  $\phi 8 \times 10.5 \sim \phi 10$

\*4. Applicable to  $\phi 12.5 \sim \phi 16$  適用於  $\phi 12.5 \sim \phi 16$

### □ DIMENSIONS (Unit: mm) 尺寸表

ØD	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 7.7	8 x 6.2	8 x 10.5	10 x 10.5	10 x 12.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	1.9	2.2	2.6	2.6	3.3	3.2	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

# CS Series

## DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

WV Code 代碼	$\mu\text{F}$	4		6.3		10		16		25		
		0G	0J	0J	1A	1C	1E					
4.7	4R7									$4 \times 5.4$	13	
10	100			$4 \times 5.4$	18			$4 \times 5.4$	18	$5 \times 5.4$	20	
22	220			$4 \times 5.4$	22	$5 \times 5.4$ ( $4 \times 5.4$ )	25 (20)	$5 \times 5.4$	27	$(5 \times 5.4)$	(14)	
33	330	$5 \times 5.4$ ( $4 \times 5.4$ )	30 (18)	$5 \times 5.4$ ( $4 \times 5.4$ )	27 (22)	$5 \times 5.4$ ( $4 \times 5.4$ )	30 (22)	$6.3 \times 5.4$ ( $5 \times 5.4$ )	40 (28)	$6.3 \times 5.4$ ( $5 \times 5.4$ )	36	
47	470	$5 \times 5.4$ ( $4 \times 5.4$ )	36 (24)	$5 \times 5.4$ ( $4 \times 5.4$ )	33 (25)	$6.3 \times 5.4$ ( $5 \times 5.4$ )	41 (30)	$6.3 \times 5.4$ ( $5 \times 5.4$ )	48 (31)	$5 \times 5.4$	44	
100	101	$6.3 \times 5.4$ ( $5 \times 5.4$ )	60 (43)	$6.3 \times 5.4$ ( $5 \times 5.4$ )	50 (39)	$6.3 \times 5.4$	39 (53)	$6.3 \times 5.4$ ( $8 \times 6.2$ )	60 (120)	$6.3 \times 7.7$ ( $8 \times 6.2$ )	85 (91)	
150	151	$6.3 \times 5.4$	52	$6.3 \times 5.4$	55	$6.3 \times 5.4$	62	$6.3 \times 7.7$	95	$8 \times 10.5$ ( $6.3 \times 7.7$ )	140 (100)	
220	221	$6.3 \times 5.4$	57	$6.3 \times 7.7$ ( $6.3 \times 5.4$ )	105 (67)	$6.3 \times 5.4$ ( $6.3 \times 7.7$ )	67 (105)	$8 \times 10.5$ ( $8 \times 6.2$ )	150 (85)	$6.3 \times 7.7$ ( $8 \times 10.5$ )	120 (175)	
330	331	$6.3 \times 7.7$	100	$6.3 \times 7.7$ $8 \times 6.2$	105 105	$6.3 \times 7.7$ $8 \times 10.5$	105 196	$8 \times 10.5$	195	$10 \times 10.5$ ( $8 \times 10.5$ )	240 (220)	
470	471	$6.3 \times 7.7$	105	$8 \times 10.5$ ( $6.3 \times 7.7$ )	210 (120)	$6.3 \times 7.7$ $10 \times 10.5$ ( $8 \times 10.5$ )	120 260 (210)	$10 \times 10.5$ ( $8 \times 10.5$ )	295 (230)	$10 \times 10.5$ ( $8 \times 10.5$ )	310 (240)	
680	681	$8 \times 10.5$	210	$8 \times 10.5$	210	$10 \times 10.5$	270	$10 \times 10.5$	315	$10 \times 10.5$	350 (400)	
1000	102	$8 \times 10.5$	230	$10 \times 10.5$ ( $8 \times 10.5$ )	300 (230)	$10 \times 10.5$ ( $8 \times 10.5$ )	315 (230)	$12.5 \times 13.5$ ( $10 \times 12.5$ )	500 (390)	$12.5 \times 13.5$	580	
1500	152	$10 \times 10.5$	315	$10 \times 12.5$ ( $10 \times 10.5$ )	450 (315)	$10 \times 12.5$	460	$12.5 \times 13.5$	550	$12.5 \times 16$	850	
2200	222	$10 \times 12.5$ ( $10 \times 10.5$ )	440 (340)	$12.5 \times 13.5$	620 (500)	$12.5 \times 13.5$	680	$16 \times 16.5$ ( $12.5 \times 16$ )	950 (750)	$16 \times 16.5$	1050	
3300	332	$10 \times 12.5$	490	$12.5 \times 16$ ( $12.5 \times 13.5$ )	700 (660)	$16 \times 16.5$	1000	$16 \times 16.5$	1000			
4700	472	$12.5 \times 13.5$	600	$16 \times 16.5$	1000							
6800	682	$16 \times 16.5$ ( $12.5 \times 16$ )	950 (650)									
										Case size 尺寸	Ripple current 紋波電流	
WV Code 代碼	$\mu\text{F}$	35		50		63		100		2A		
		1V		1H		1J		1J		2A		
0.1	0R1			$4 \times 5.4$	0.7	$4 \times 5.4$	0.7					
0.22	R22			$4 \times 5.4$	1.6	$4 \times 5.4$	1.6					
0.33	R33			$4 \times 5.4$	2.5	$4 \times 5.4$	2.5					
0.47	R47			$4 \times 5.4$	3.5	$4 \times 5.4$	3.5					
1	010			$4 \times 5.4$	7	$4 \times 5.4$	7	$4 \times 5.4$	7			
2.2	2R2			$4 \times 5.4$	11	$4 \times 5.4$	11	$6.3 \times 5.4$			14	
3.3	3R3	$4 \times 5.4$	13	$4 \times 5.4$	13	$5 \times 5.4$	13					
4.7	4R7	$4 \times 5.4$	14	$5 \times 5.4$ ( $4 \times 5.4$ )	16 (13)	$5 \times 5.4$	16			$5 \times 5.4$	18	
10	100	$5 \times 4.5$ ( $4 \times 5.4$ )	18 (21)	$5 \times 5.4$ $6.3 \times 5.4$	21 (24)	$6.3 \times 7.7$ ( $6.3 \times 5.4$ )	39 (24)			$6.3 \times 7.7$ ( $8 \times 6.2$ )	(35)	
22	220	$5 \times 5.4$ $6.3 \times 5.4$	30 (38)	$6.3 \times 7.7$ ( $6.3 \times 5.4$ )	51 (42)	$8 \times 10.5$ ( $6.3 \times 7.7$ )	98 (49)			$10 \times 10.5$ ( $8 \times 10.5$ )	126 (84)	
33	330	$6.3 \times 5.4$ ( $8 \times 6.2$ )	42 (84)	$6.3 \times 7.7$ $8 \times 6.2$	60 (84)	$8 \times 10.5$	112			$10 \times 10.5$	133	
										Case size 尺寸	Ripple current 紋波電流	
WV Code 代碼	$\mu\text{F}$	35		50		63		100		2A		
		1V		1H		1J		1J		2A		
47	470	$6.3 \times 7.7$ ( $6.3 \times 5.4$ )	70 (50)	$8 \times 6.2$ $8 \times 10.5$ ( $6.3 \times 7.7$ )	95 (120) (63)	$10 \times 10.5$ ( $8 \times 10.5$ )	160 (119)	$12.5 \times 13.5$ ( $10 \times 12.5$ )	250 (160) (140)			
68	680	$6.3 \times 5.4$ $6.3 \times 7.7$	75 75				$10 \times 10.5$	175	$12.5 \times 13.5$ ( $10 \times 12.5$ )	300 (180)		
100	101	$8 \times 6.2$ $8 \times 10.5$ $6.3 \times 5.4$ ( $6.3 \times 7.7$ )	110 120 75 (84)	$10 \times 10.5$ ( $8 \times 10.5$ )	170 (140)	$12.5 \times 13.5$ ( $10 \times 12.5$ )	270 (210) (196)	$16 \times 16.5$ ( $12.5 \times 13.5$ )	450 (380)			
150	151	$8 \times 10.5$	155	$10 \times 10.5$	170	$10 \times 12.5$	225					
220	221	$10 \times 10.5$ ( $8 \times 10.5$ )	220 (190)	$10 \times 12.5$ ( $10 \times 10.5$ )	280 (220)	$16 \times 16.5$ ( $12.5 \times 13.5$ )	560 (470) (235)	$16 \times 16.5$	550			
330	331	$10 \times 10.5$	245	$16 \times 16.5$ ( $12.5 \times 13.5$ ) $10 \times 10.5$	600 (420) (295) 285	$16 \times 16.5$ ( $12.5 \times 16$ ) $12.5 \times 13.5$	700 (510) 460					
470	471	$12.5 \times 13.5$ $10 \times 10.5$ ( $10 \times 12.5$ )	520 305 (375)	$12.5 \times 13.5$ $16 \times 16.5$ ( $12.5 \times 16$ )	240 700 (520)	$16 \times 16.5$	750					
680	681	$12.5 \times 13.5$ ( $10 \times 12.5$ )	530 (395)	$16 \times 16.5$	750							
1000	102	$16 \times 16.5$ ( $12.5 \times 16$ )	750 (600)	$16 \times 16.5$	800							
										Case size 尺寸	Ripple current 紋波電流	
WV Code 代碼	$\mu\text{F}$	160		200		200		200		200		
		2C		2D		2D		2D		2D		
1	010	$6.3 \times 7.7$	45									
47	470			$16 \times 16.5$	320							
										Case size 尺寸	Ripple current 紋波電流	

• Case size  $\varnothing D \times L$  (mm), ripple current (mA rms) at  $105^\circ\text{C} 120\text{Hz}$  • 尺寸  $\varnothing D \times L$  (mm), 紋波電流 (mA rms)於  $105^\circ\text{C} 120\text{Hz}$

## FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紹波電流頻率補償系數

Coefficient 系數	Frequency 頻率		50Hz	120Hz	300Hz	1KHz	10KHz
	$\varnothing 4 \sim \varnothing 10$	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
	$\varnothing 12.5 \sim \varnothing 16$	~ 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