






# 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：宽温标准品 **CK**

产品名称：贴片铝电解电容器

APPROVAL		
APPROVAL	CHECK	PREPARE
		

公司电话：0752-6633993

公司网址：WWW.GDRSDR.COM

公司邮箱：SALES-1@GDRSDR.COM

公司地址：广东省惠州市博罗县泰美镇泰良路8号

# 貼片鋁電解電容器代碼標志

Code Sign SMD(V-Chip) Aluminum Electrolytic Capacitor



(1, 2)		(3, 4)		(5~7)		(8)		(10)			(12)		(13, 14)	
Series 系列	Voltage (W.V.) 電壓	Code 代碼	Capacitance (μF) 靜電容量	Code 代碼	Cap. Tolerance (%) 容量允差	Code 代碼	Type 類型	Code 代碼	(11)		Diameter (∅) 直徑	Code 代碼	Length (mm) 高度	Code 代碼
VT	4	0G	0.1	0R1	+10	K	Chip 貼片	C			3	S	5.4	54
CS	6.3	0J	0.22	R22	-10		L			4	C	5.8	58	
CK	10	1A	0.33	R33	+15	M		Type 類型	Lead Configuration 引線結構	Code 代碼	5	D	6.2	62
VE	16	1C	0.47	R47	-15		V	Chip 貼片	Taping & Reel 編帶與卷盤	R	6.3	E	7.7	77
LZ	25	1E	1	010	+20						8	F	10.5	10
VD	35	1V	2.2	2R2	-20						10	G	11 (11.5)	11
FZ	40	1G	3.3	3R3	+20						12.5	I	12.5	12
	50	1H	4.7	4R7	-20						13.5		13.5	13
	63	1J	6.8	6R8	-10						16 (16.5)		16 (16.5)	16
	75	1T	10	100							21		21	21
	80	1K	15	150										
	85	1R	22	220										
	100	2A	33	330										
	125	2B	47	470										
	150	2C	68	680										
	180	2Z	100	101										
	200	2D	150	151										
	220	2N	220	221										
	250	2E	330	331										
	315	2F	470	471										
	330	2U	680	681										
	350	2V	1000	102										
	360	2X	1200	122										
	400	2G	1500	152										
	420	2M	1800	182										
	450	2W	2200	222										
			2700	272										
			3300	332										
			4700	472										
			5600	562										
			6800	682										

# CK Series

## WIDE TEMPERATURE 寬溫標準品

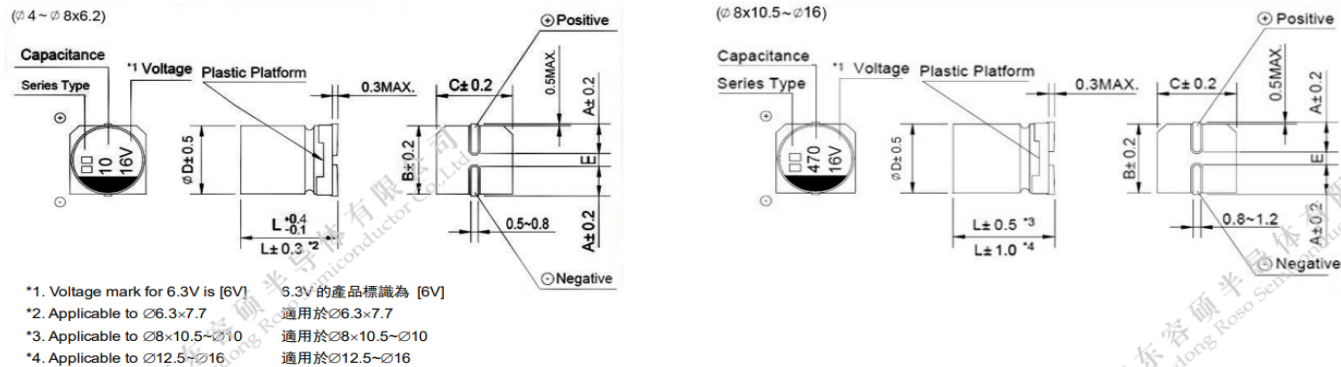
- Operating with wide temperature range -40 ~ +105°C  
適用於 -40 ~ +105°C 的寬溫範圍
- Load life of 2000 hours  
負荷壽命 2000 小時
- Comply with the RoHS directive  
符合 RoHS 指令



### □ 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 ~ 450V																																																			
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	<p>Leakage current (∅4~∅10) ≅ 0.01CV or 3μA, whichever is greater (after 2 minutes application of rated voltage) 漏電流 (∅4~∅10) ≅ 0.01CV 或 3μA, 取較大值 (施加額定工作電壓 2 分鐘後)</p> <p>Leakage current (∅12.5~∅16) ≅ 0.03CV or 4μA, whichever is greater (after 1 minute application of rated voltage) 漏電流 (∅12.5~∅16) ≅ 0.03CV 或 4μA, 取較大值 (施加額定工作電壓 1 分鐘後)</p> <p>Leakage current (∅6.3~∅16) ≅ 0.04CV or 100μA, whichever is greater (after 5 minutes application of rated voltage) 漏電流 (∅6.3~∅16) ≅ 0.04CV 或 100μA, 取較大值 (施加額定工作電壓 5 分鐘後)</p>																																																			
Dissipation Factor (tan δ) 損耗角正切	<p>Measurement frequency 測試頻率: 120Hz, Temperature 溫度: 20°C</p> <table border="1"> <thead> <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> <th>160~250</th> <th>350~450</th> </tr> </thead> <tbody> <tr> <td>tan δ (max.)</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>0.12</td> <td>0.20</td> <td>0.25</td> </tr> <tr> <td>最大損耗角正切</td> <td>∅12.5~∅16</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>0.20</td> <td>0.25</td> </tr> </tbody> </table>	Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50	63	100	160~250	350~450	tan δ (max.)	0.35	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.12	0.20	0.25	最大損耗角正切	∅12.5~∅16	0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.20	0.25															
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Stability at Low Temperature 低溫特性	<p>Measurement frequency 測試頻率: 120Hz</p> <table border="1"> <thead> <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>50~63</th> <th>100</th> <th>160~250</th> <th>350~450</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio 阻抗比 ZT/Z20 (max.)</td> <td rowspan="2">∅4~∅10</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>3</td> <td>3</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>4</td> <td>3</td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">∅12.5~∅16</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) 額定工作電壓	4	6.3	10	16	25	35	50~63	100	160~250	350~450	Impedance Ratio 阻抗比 ZT/Z20 (max.)	∅4~∅10	Z(-25°C) / Z(20°C)	7	4	3	2	2	2	3	3	Z(-40°C) / Z(20°C)	15	8	6	4	4	3	4	3		∅12.5~∅16	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 高溫負荷特性	<p>After 2000 hrs. (1000 hrs. for ∅4~∅6.3x5.4) 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 2000 小時 (∅4~∅6.3x5.4 為 1000 小時) 後, 電容器的特性符合下表的要求。</p> <table border="1"> <tbody> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±20% of initial value for capacitors of 10V or more (Within ±30% of initial value for capacitors of 4V or less) ≥10V 為初始值的±20%以內 (≤4V 為初始值的±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> </tbody> </table>	Capacitance Change 靜電容量變化率	Within ±20% of initial value for capacitors of 10V or more (Within ±30% of initial value for capacitors of 4V or less) ≥10V 為初始值的±20%以內 (≤4V 為初始值的±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	<p>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。</p>																																																			
Resistance to Soldering Heat 耐焊接熱特性	<p>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。</p> <table border="1"> <tbody> <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> </tbody> </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 標示	Black print on the case top. 鋁殼頂部黑字印刷。																																																			

### □ DRAWING (Unit: mm) 外形圖



### □ DIMENSIONS (Unit: mm) 尺寸表

∅D	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

# CK Series

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

μF	WV Code 代碼	4		6.3		10		16		25	
		0G		0J		1A		1C		1E	
4.7	4R7									4 × 5.4	13
10	100			4 × 5.4	18			4 × 5.4	18	5 × 5.4 (4 × 5.4)	20 (14)
22	220			4 × 5.4	22	5 × 5.4 (4 × 5.4)	25 (20)	5 × 5.4 (4 × 5.4)	27 (20)	6.3 × 5.4 (5 × 5.4)	36 (25)
33	330	5 × 5.4 (4 × 5.4)	30 (18)	5 × 5.4 (4 × 5.4)	27 (22)	5 × 5.4 (4 × 5.4)	30 (22)	6.3 × 5.4 (5 × 5.4)	40 (28)	6.3 × 5.4 (5 × 5.4)	44 (29)
47	470	5 × 5.4 (4 × 5.4)	36 (24)	5 × 5.4 (4 × 5.4)	33 (25)	6.3 × 5.4 (5 × 5.4) (4 × 5.4)	41 (30) (25)	6.3 × 5.4 (5 × 5.4)	48 (31)	5 × 5.4 6.3 × 5.4	35 48
100	101	6.3 × 5.4 (5 × 5.4)	60 (43)	6.3 × 5.4 (5 × 5.4)	50 (39)	5 × 5.4 6.3 × 5.4	39 (53)	6.3 × 5.4 (8 × 6.2)	60 (120)	6.3 × 7.7 (8 × 6.2)	85 91
150	151	6.3 × 5.4	52	6.3 × 5.4	55	6.3 × 5.4	62	6.3 × 7.7	95	8 × 10.5 (6.3 × 7.7)	140 (100)
220	221	6.3 × 5.4	57	6.3 × 7.7 (6.3 × 5.4)	105 (67)	6.3 × 5.4 6.3 × 7.7 (8 × 6.2)	67 105 (105)	8 × 10.5 (6.3 × 7.7)	150 (105) (85)	6.3 × 7.7 8 × 10.5	120 175
330	331	6.3 × 7.7	100	6.3 × 7.7 8 × 6.2	105 105	6.3 × 7.7 8 × 10.5	105 196	8 × 10.5	195	10 × 10.5 (8 × 10.5)	240 (220)
470	471	6.3 × 7.7	105	8 × 10.5 (6.3 × 7.7)	210 (120)	6.3 × 7.7 10 × 10.5 (8 × 10.5)	120 260 (210)	10 × 10.5 (8 × 10.5)	295 (230)	10 × 10.5 8 × 10.5	310 240
680	681	8 × 10.5	210	8 × 10.5	210	10 × 10.5	270	10 × 10.5	315	10 × 10.5 12.5 × 13.5 (10 × 12.5) (10 × 10.5)	400 580
1000	101	8 × 10.5	230	10 × 10.5 (8 × 10.5)	300 (230)	10 × 10.5 (8 × 10.5)	315 (230)	10 × 10.5	390 (340)	12.5 × 13.5 (10 × 12.5) (340)	580
1500	152	10 × 10.5	315	10 × 12.5 (10 × 10.5)	450 (315)	10 × 12.5	460	12.5 × 13.5	550	12.5 × 13.5 (10 × 12.5)	850
2200	222	10 × 12.5 (10 × 10.5)	440 (340)	12.5 × 13.5 (10 × 12.5)	620 (500)	12.5 × 13.5	680	16 × 16.5 (12.5 × 16)	950 (750)	16 × 16.5	1050
3300	332	10 × 12.5	490	12.5 × 16 (12.5 × 13.5)	700 (660)	16 × 16.5	1000	16 × 16.5	1000		
4700	472	12.5 × 13.5	600	16 × 16.5	1000					Case size 尺寸	Ripple current 紋波電流
6800	682	16 × 16.5 (12.5 × 16)	950 (650)								

μF	WV Code 代碼	35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4 × 5.4	0.7	4 × 5.4	0.7		
0.22	R22			4 × 5.4	1.6	4 × 5.4	1.6		
0.33	R33			4 × 5.4	2.5	4 × 5.4	2.5		
0.47	R47			4 × 5.4	3.5	4 × 5.4	3.5		
1	010			4 × 5.4	7	4 × 5.4	7	4 × 5.4	7
2.2	2R2			4 × 5.4	11	4 × 5.4	11	6.3 × 5.4	14
3.3	3R3	4 × 5.4	13	4 × 5.4	13	5 × 5.4	13	6.3 × 7.7 (6.3 × 5.4) (8 × 6.2)	32 (20) (30)
4.7	4R7	4 × 5.4	14	5 × 5.4 (4 × 5.4)	16 (13)	5 × 5.4	16	5 × 5.4 6.3 × 7.7 (6.3 × 5.4)	18 35 (21)
10	100	5 × 5.4 5 × 5.4 (4 × 5.4)	18 21 (14)	5 × 5.4 6.3 × 5.4	21 24	6.3 × 7.7 (6.3 × 5.4) (8 × 6.2)	39 (24) (25)	6.3 × 7.7 8 × 10.5	35 77
22	220	5 × 5.4 6.3 × 5.4	30 38	6.3 × 7.7 (6.3 × 5.4) (8 × 6.2)	51 (42) (70)	8 × 10.5 (6.3 × 7.7)	98 (49)	10 × 10.5 (8 × 10.5)	126 (84)
33	330	6.3 × 5.4 (8 × 6.2)	42 (84)	6.3 × 7.7 8 × 6.2	60 84	8 × 10.5	112	10 × 10.5	133
								Case size 尺寸	Ripple current 紋波電流

μF	WV Code 代碼	35		50		63		100	
		1V		1H		1J		2A	
47	470	6.3 × 7.7 (6.3 × 5.4)	70 (50)	8 × 6.2 8 × 10.5 (6.3 × 7.7)	95 120 (63)	10 × 10.5 (8 × 10.5)	160 (119)	12.5 × 13.5 (10 × 12.5) (10 × 10.5)	250 (160) (140)
68	680	6.3 × 5.4 6.3 × 7.7	75 75			10 × 10.5	175	12.5 × 13.5 (10 × 12.5)	300 (180)
100	101	8 × 6.2 8 × 10.5 6.3 × 5.4 (6.3 × 7.7)	110 120 75 (84)	10 × 10.5 (8 × 10.5) 6.3 × 7.7	170 (140) 105	12.5 × 13.5 (10 × 12.5) (10 × 10.5)	270 (210) (196)	16 × 16.5 (12.5 × 13.5)	450 (380)
150	151	8 × 10.5	155	10 × 10.5	170	10 × 12.5	225		
220	221	10 × 10.5 (8 × 10.5)	220 (190)	10 × 12.5 (10 × 10.5)	280 (220)	16 × 16.5 (12.5 × 13.5)	560 (470) (235)	16 × 16.5	550
330	331	10 × 10.5	245	16 × 16.5 (12.5 × 13.5) (10 × 12.5) 10 × 10.5	600 (420) (295) 285	16 × 16.5 (12.5 × 16) 12.5 × 13.5	700 (510) 460		
470	471	12.5 × 13.5 10 × 10.5 (10 × 12.5)	520 305 (375)	12.5 × 13.5 16 × 16.5 (12.5 × 16)	240 700 (520)	16 × 16.5	750		
680	681	12.5 × 13.5 (10 × 12.5)	530 (395)	16 × 16.5	750			Case size 尺寸	Ripple current 紋波電流
1000	102	16 × 16.5 (12.5 × 16)	750 (600)	16 × 16.5	800				

μF	WV Code 代碼	160		200					
		2C		2D					
1	101	6.3 × 7.7	45						
47	470			16 × 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°C 120Hz • 尺寸 $\varnothing D \times L$ (mm), 紋波電流(mA rms)於 105°C 120Hz

## ☐ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償係數

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