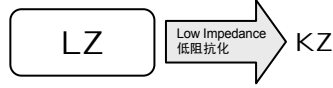


## LOW IMPEDANCE

### 低阻抗品

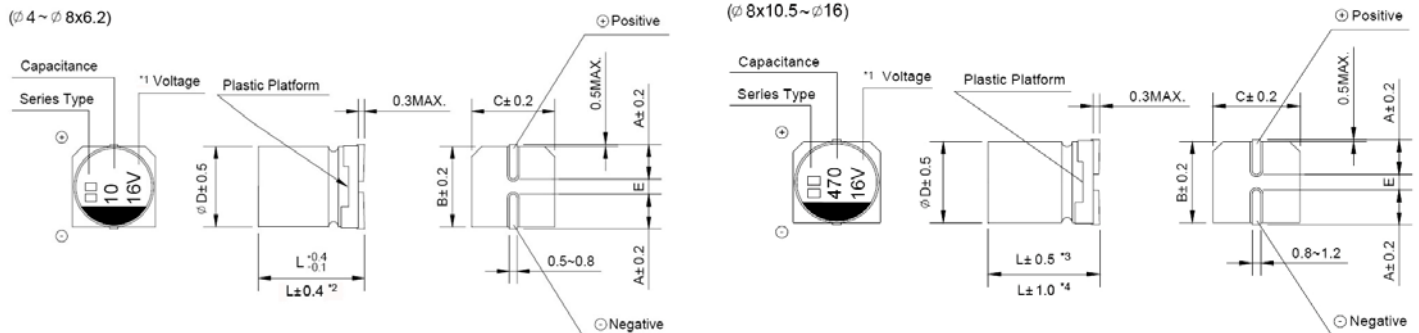
- Low impedance with temperature range -55 ~ +105°C  
低阻抗和適用於 -55 ~ +105°C 的溫度範圍
- Load life of 1000 ~ 2000 hours  
負荷壽命 1000 ~ 2000 小時
- Comply with the RoHS directive  
符合 RoHS 指令



### SPECIFICATIONS 特性表

Items 項目	Characteristics 主要特性																																						
Operation Temperature Range 使用溫度範圍	-55 ~ +105°C																																						
Voltage Range 額定工作電壓範圍	6.3 ~ 50V																																						
Capacitance Range 靜電容量範圍	1 ~ 4700µF																																						
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C																																						
Leakage Current 漏電流	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) 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)																																						
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> <td>Rated Voltage (V) 額定工作電壓</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>tan δ (max.)</td> <td>∅4~∅10</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> <tr> <td>最大損耗角正切</td> <td>∅12.5~∅16</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.12</td> </tr> </table>	Rated Voltage (V) 額定工作電壓	6.3	10	16	25	35	50	tan δ (max.)	∅4~∅10	0.22	0.19	0.16	0.14	0.12	最大損耗角正切	∅12.5~∅16	0.26	0.22	0.18	0.16	0.12																	
Rated Voltage (V) 額定工作電壓	6.3	10	16	25	35	50																																	
tan δ (max.)	∅4~∅10	0.22	0.19	0.16	0.14	0.12																																	
最大損耗角正切	∅12.5~∅16	0.26	0.22	0.18	0.16	0.12																																	
Stability at Low Temperature 低溫特性	Measurement frequency 測試頻率: 120Hz <table border="1"> <tr> <td colspan="2">Rated Voltage (V) 額定工作電壓</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td rowspan="2">Impedance Ratio 阻抗比</td> <td rowspan="2">∅4~∅10</td> <td>Z(-25°C) / Z(20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C) / Z(20°C)</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2">ZT/Z20 (max.)</td> <td rowspan="2">∅12.5~∅16</td> <td>Z(-25°C) / Z(20°C)</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C) / Z(20°C)</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table>	Rated Voltage (V) 額定工作電壓		6.3	10	16	25	35	50	Impedance Ratio 阻抗比	∅4~∅10	Z(-25°C) / Z(20°C)	2	2	2	2	2	Z(-55°C) / Z(20°C)	5	4	4	3	3	3	ZT/Z20 (max.)	∅12.5~∅16	Z(-25°C) / Z(20°C)	3	3	2	2	2	Z(-55°C) / Z(20°C)	10	8	6	4	3	3
Rated Voltage (V) 額定工作電壓		6.3	10	16	25	35	50																																
Impedance Ratio 阻抗比	∅4~∅10	Z(-25°C) / Z(20°C)	2	2	2	2	2																																
		Z(-55°C) / Z(20°C)	5	4	4	3	3	3																															
ZT/Z20 (max.)	∅12.5~∅16	Z(-25°C) / Z(20°C)	3	3	2	2	2																																
		Z(-55°C) / Z(20°C)	10	8	6	4	3	3																															
Load Life 高溫負荷特性	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。 <table border="1"> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±20% of initial value 初始值的±20%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 初始值的±20%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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Leakage Current 漏電流	initial specified value or less 不大於規範值																																						
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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Leakage Current 漏電流	initial specified value or less 不大於規範值																																						
Marking 標識	Black print on the case top. 鋁殼頂部黑字印刷。																																						

### DRAWING (Unit: mm) 外形圖



- \*1. Voltage mark for 6.3V is [6V]      6.3V 的產品標識為 [6V]  
 \*2. Applicable to ∅6.3x7.7      適用於∅6.3x7.7  
 \*3. Applicable to ∅8x10.5~∅10      適用於∅8x10.5~∅10  
 \*4. Applicable to ∅12.5~∅16      適用於∅12.5~∅16

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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 6.2	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	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

## □ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT & IMPEDANCE 規格尺寸及最大允許紋波電流及阻抗值

WV Code 代碼	μF	6.3			10			16		
		0J			1A			1C		
10	100							4 x 5.4	3.0	60
15	150							5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)
22	220	4 x 5.4	3.0	60	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)
33	330	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)
47	470	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)
68	680	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 5.4	1.0	140	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)
100	101	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)
150	151	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)	6.3 x 7.7	0.6	230
220	221	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)	6.3 x 7.7	0.6	230	8 x 10.5 (6.3 x 7.7)	0.30 (0.6)	450 (230)
330	331	6.3 x 7.7	0.6	230	8 x 10.5	0.30	450	10 x 10.5 (8 x 10.5)	0.15 (0.30)	670 (450)
470	471	8 x 10.5	0.30	450	8 x 10.5	0.30	450	10 x 10.5 (8 x 10.5)	0.15 (0.30)	670 (450)
680	681	8 x 10.5	0.30	450	10 x 10.5	0.15	670	10 x 10.5	0.15	670
1000	102	10 x 10.5 (8 x 10.5)	0.15 (0.30)	670 (450)	10 x 10.5	0.15	670	10 x 10.5	0.15	670
1500	152	10 x 13.5 (10 x 10.5)	0.13 (0.15)	750 (670)	12.5 x 13.5 (10 x 13.5)	0.11 (0.13)	820 (750)	12.5 x 13.5	0.11	820
2200	222	12.5 x 13.5 (10 x 10.5)	0.11 (0.13)	820 (750)	12.5 x 16	0.09	950	16 x 16.5 (12.5 x 16)	0.08 (0.09)	1260 (950)
3300	332	12.5 x 16 (12.5 x 13.5)	0.09 (0.11)	950 (820)	16 x 16.5	0.08	1260	16 x 16.5	0.08	1260
4700	472	16 x 16.5	0.08	1260	16 x 16.5	0.08	1260			

WV Code 代碼	μF	25			35			50		
		1E			1V			1H		
1	010				4 x 5.4	3.0	60	4 x 5.4	5.0	30
1.5	1R5				4 x 5.4	3.0	60	4 x 5.4	5.0	30
2.2	2R2				4 x 5.4	3.0	60	4 x 5.4	5.0	30
3.3	3R3				4 x 5.4	3.0	60	4 x 5.4	5.0	30
4.7	4R7	4 x 5.4	3.0	60	4 x 5.4	3.0	60	5 x 5.4	3.0	50
6.8	6R8	4 x 5.4	3.0	60	5 x 5.4	1.8	95	6.3 x 5.4	2.0	70
10	100	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	5 x 5.4 (4 x 5.4)	1.8 (3.0)	95 (60)	6.3 x 5.4	2.0	70
15	150	6.3 x 5.4	1.8	95	5 x 5.4	1.8	95	6.3 x 5.4	2.0	70
22	220	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 7.7 (6.3 x 5.4)	1.0 (2.0)	120 (70)
33	330	6.3 x 5.4 (5 x 5.4)	1.0 (1.8)	140 (95)	6.3 x 5.4	1.0	140	6.3 x 7.7	1.0	120
47	470	6.3 x 7.7 (6.3 x 5.4)	0.6 (1.0)	230 (140)	6.3 x 7.7 (6.3 x 5.4)	0.60 (1.0)	230 (140)	6.3 x 7.7	1.0	120
68	680	6.3 x 7.7	0.6	230	6.3 x 7.7	0.60	230	8 x 10.5	0.60	300
100	101	6.3 x 7.7	0.6	230	8 x 10.5	0.30	450	8 x 10.5	0.60	300
150	151	8 x 10.5 (6.3 x 7.7)	0.30 (0.6)	450 (230)	8 x 10.5	0.30	450	10 x 10.5 Case size ∅D x L (mm) 尺寸	Impedance (Ω) at 20°C 100KHz 阻抗值	Ripple current (mA rms) at 105°C 100KHz 紋波電流

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## □ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT & IMPEDANCE 規格尺寸及最大允許紋波電流及阻抗值

WV Code 代碼		25			35			50		
		1E			1V			1H		
220	221	8 x 10.5	0.30	450	10 x 10.5 (8 x 10.5)	0.15 (0.30)	670 (450)	10 x 10.5	0.30	500
330	331	10 x 10.5 (8 x 10.5)	0.15 (0.30)	670 (450)	10 x 10.5	0.15	670	16 x 16.5 (12.5 x 13.5) (10 x 13.5)	0.12 (0.20) (0.25)	1060 (650) (580)
470	471	10 x 10.5	0.15	670	10 x 10.5	0.15	670	16 x 16.5 (12.5 x 16)	0.12 (0.15)	1060 (700)
680	681	10 x 13.5	0.13	750	12.5 x 13.5 (10 x 13.5)	0.11 (0.13)	820 (750)	16 x 16.5	0.12	1060
1000	102	16 x 16.5 (12.5 x 13.5)	0.08 (0.11)	1260 (820)	16 x 16.5 (12.5 x 16)	0.08 (0.09)	1260 (950)			
1500	152	12.5 x 16	0.09	950	16 x 16.5	0.08	1260	Case size ∅D x L (mm) 尺寸	Impedance (Ω) at 20°C 100KHz 阻抗值	Ripple current (mA rms) at 105°C 100KHz 紋波電流
2200	222	16 x 16.5	0.08	1260						

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

Frequency 頻率		50Hz	120Hz	300Hz	1KHz	10KHz~	
Coefficient 系數	∅4 ~ ∅10	1 ~ 68μF	0.35	0.50	0.64	0.83	1.00
		100 ~ 2200μF	0.40	0.55	0.70	0.85	1.00
	∅12.5 ~ ∅16	~ 680μF	0.45	0.65	0.80	0.90	1.00
		1000 ~ 4700μF	0.65	0.85	0.95	1.00	1.00

- Taping specifications are given in page 14. 編帶標準請參閱第 14 頁。
- Please refer to page 15 for the minimum package quantity. 最小包裝數量請參閱第 15 頁。

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