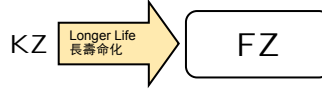


LONG LIFE WITH EXTRA LOWER IMPEDANCE

長壽命極低阻抗品

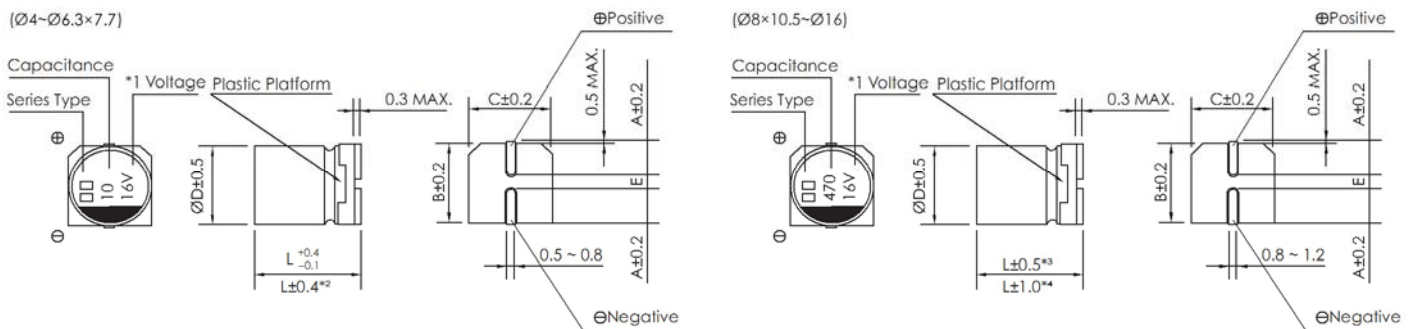
- Extra lower impedance with temperature range -55~+105°C  
極低阻抗和適用於 -55~+105°C 的溫度範圍
- Load life of 2000~5000 hours  
負荷壽命 2000~5000 小時
- Impedance 5~25% less than KZ series  
阻抗值比 KZ 系列低 5~25%
- Comply with the RoHS directive  
符合 RoHS 指令



□ 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 ~ 100V																													
Capacitance Range 靜電容量範圍	3.3 ~ 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) Leakage current (∅12.5~∅16) ≤0.03CV or 4µA, whichever is greater (after 1 minute 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) 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"> <thead> <tr> <th>Rated Voltage (V) 額定工作電壓</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63~80</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tan δ (max.)</td> <td>∅4~∅10</td> <td>0.26</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.07</td> </tr> <tr> <td>最大損耗角正切</td> <td>∅12.5~∅16</td> <td>0.26</td> <td>0.19</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.10</td> <td>0.08</td> <td>0.07</td> </tr> </tbody> </table>	Rated Voltage (V) 額定工作電壓	6.3	10	16	25	35	50	63~80	100	tan δ (max.)	∅4~∅10	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.07	最大損耗角正切	∅12.5~∅16	0.26	0.19	0.18	0.16	0.14	0.10	0.08	0.07
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最大損耗角正切	∅12.5~∅16	0.26	0.19	0.18	0.16	0.14	0.10	0.08	0.07																					
Stability at Low Temperature 低溫特性	Measurement frequency 測試頻率: 120Hz <table border="1"> <thead> <tr> <th>Rated Voltage (V) 額定工作電壓</th> <th>6.3 ~ 16</th> <th>25 ~ 100</th> </tr> </thead> <tbody> <tr> <td>Impedance Ratio 阻抗比</td> <td>Z(-25°C) / Z(20°C)</td> <td>2</td> </tr> <tr> <td>ZT/Z20 (max.)</td> <td>Z(-40°C) / Z(20°C)</td> <td>3</td> </tr> <tr> <td></td> <td>Z(-55°C) / Z(20°C)</td> <td>4</td> </tr> </tbody> </table>	Rated Voltage (V) 額定工作電壓	6.3 ~ 16	25 ~ 100	Impedance Ratio 阻抗比	Z(-25°C) / Z(20°C)	2	ZT/Z20 (max.)	Z(-40°C) / Z(20°C)	3		Z(-55°C) / Z(20°C)	4																	
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Load Life 高溫負荷特性	After 5000 hrs. (2000 hrs. for ∅4~∅6.3×5.8) 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 5000 小時 (∅4~∅6.3×5.8 為 2000 小時) 後, 電容器的特性符合下表的要求。 <table border="1"> <tbody> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±30% of initial value 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 ±30% of initial value 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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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"> <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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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 ∅6.3×7.7      適用於 ∅6.3×7.7  
 \*3. Applicable to ∅8×10.5~∅10      適用於 ∅8×10.5~∅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 5.8	5 x 5.8	6.3 x 5.8	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	2.0	2.2	2.6	2.6	3.0	3.3	3.3	4.9	4.9	5.8
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
E ± 0.2	1.0	1.4	1.9	1.9	3.1	4.7	4.7	4.7	4.7	6.4
L	5.8	5.8	5.8	7.7	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	6.3			10			16		
	0J			1A			1C		
10 100							4 x 5.8	1.35	90
15 150							4 x 5.8	1.35	90
22 220	4 x 5.8	1.35	90	4 x 5.8	1.35	90	5 x 5.8	0.70	160
33 330	5 x 5.8 (4 x 5.8)	0.76 (1.35)	160 (90)	5 x 5.8	0.76	160	5 x 5.8	0.76	160
47 470	5 x 5.8 (4 x 5.8)	0.76 (1.35)	160 (90)	6.3 x 5.8	0.44	240	6.3 x 5.8	0.44	240
56 560	5 x 5.8	0.76	160	6.3 x 5.8	0.44	240	6.3 x 5.8 (5 x 5.8)	0.44 (0.76)	240 (160)
68 680	6.3 x 5.8	0.44	240	6.3 x 5.8	0.44	240	6.3 x 5.8	0.44	240
100 101	6.3 x 5.8	0.44	240	6.3 x 7.7	0.34	300	6.3 x 7.7 (6.3 x 5.8)	0.34 (0.44)	300 (240)
150 151	6.3 x 5.8	0.44	240	6.3 x 7.7	0.34	300	6.3 x 7.7 (6.3 x 5.8)	0.34 (0.44)	300 (240)
220 221	6.3 x 7.7 (6.3 x 5.8)	0.34 (0.44)	300 (240)	6.3 x 7.7	0.34	300	6.3 x 7.7	0.34	300
330 331	8 x 10.5	0.17	600	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)	8 x 10.5 (6.3 x 7.7)	0.17 (0.34)	600 (300)
470 471	8 x 10.5	0.17	600	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)	10 x 10.5 (8 x 10.5)	0.08 (0.17)	850 (600)
680 681	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)	10 x 10.5	0.09	850	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)
1000 102	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)	10 x 13.5 (10 x 10.5)	0.07 (0.09)	950 (850)	16 x 16.5 (12.5 x 16) (12.5 x 13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)
1500 152	10 x 13.5	0.09	950	12.5 x 13.5	0.06	1100	16 x 16.5	0.05	1450
2200 222	12.5 x 13.5	0.06	1100	12.5 x 16	0.055	1200			
3300 332	12.5 x 16	0.055	1200	16 x 16.5	0.05	1450			
4700 472	16 x 16.5	0.05	1450				Case size 尺寸	Impedance 阻抗值	Ripple current 紋波電流

WV Code 代碼	25			35			50		
	1E			1V			1H		
4.7 4R7				4 x 5.8	1.35	90	5 x 5.8	1.52	85
10 100	4 x 5.8	1.35	90	5 x 5.8	0.76	160	6.3 x 5.8 (5 x 5.8)	0.88 (1.35)	165 (115)
15 150	5 x 5.8	0.76	160	5 x 5.8	0.76	160	6.3 x 5.8	0.88	165
22 220	6.3 x 5.8 (5 x 5.8)	0.44 (0.76)	240 (160)	6.3 x 5.8	0.44	240	6.3 x 7.7 (6.3 x 5.8)	0.68 (0.88)	195 (165)
33 330	6.3 x 5.8	0.44	240	6.3 x 5.8	0.44	240	6.3 x 7.7	0.68	195
47 470	6.3 x 7.7 (6.3 x 5.8)	0.34 (0.44)	300 (240)	6.3 x 7.7 (6.3 x 5.8)	0.34 (0.88)	300 (165)	8 x 10.5 (6.3 x 7.7)	0.34 (0.68)	350 (195)
56 560	6.3 x 7.7	0.34	300	6.3 x 7.7	0.34	300	8 x 10.5	0.34	350
68 680	6.3 x 7.7	0.34	300	8 x 10.5	0.17	600	8 x 10.5	0.34	350
100 101	8 x 10.5 (6.3 x 7.7)	0.17 (0.34)	600 (300)	8 x 10.5	0.17	600	10 x 10.5 (8 x 10.5)	0.18 (0.34)	670 (350)
150 151	8 x 10.5 (6.3 x 7.7)	0.16 (0.34)	600 (300)	10 x 10.5	0.09	850	10 x 13.5 (10 x 10.5)	0.14 (0.18)	780 (670)
220 221	8 x 10.5	0.17	600	10 x 10.5 (8 x 10.5)	0.09 (0.16)	850 (600)	(10 x 13.5) (10 x 10.5)	(0.14) (0.26)	(780) (750)
330 331	10 x 10.5 (8 x 10.5)	0.09 (0.17)	850 (600)	(10 x 13.5) (10 x 10.5)	(0.07) (0.10)	(950) (850)	12.5 x 13.5	0.12	900
470 471	10 x 13.5 (10 x 10.5)	0.07 (0.09)	950 (850)	12.5 x 13.5 (10 x 13.5) (10 x 10.5)	0.06 (0.07) (0.10)	1100 (1000) (950)	16 x 16.5 (12.5 x 16) (12.5 x 13.5)	0.08 (0.10) (0.08)	1250 (1050) (1100)
680 681	12.5 x 13.5	0.06	1100	12.5 x 16 (12.5 x 13.5)	0.055 (0.06)	1200 (1100)			
1000 102	16 x 16.5 (12.5 x 16) (12.5 x 13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)	16 x 16.5	0.05	1450			
1500 152	16 x 16.5	0.05	1450				Case size 尺寸	Impedance 阻抗值	Ripple current 紋波電流

•Case size 尺寸 ∅D×L(mm), Impedance 阻抗值 (Ω) at 20°C, 100KHz, Ripple current 紋波電流 (mA rms) at 105°C, 100KHz

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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	μF	63			80			100		
		1J			1K			2A		
3.3	3R3				5 × 5.8	5.0	25			
4.7	4R7	5 × 5.8	3.0	50	6.3 × 5.8	3.0	40			
10	100	6.3 × 7.7 (6.3 × 5.8)	1.2 (1.5)	120 (80)	6.3 × 7.7	2.4	60	8 × 10.5	1.3	130
22	220	8 × 10.5 (6.3 × 7.7)	0.65 (1.2)	250 (120)	8 × 10.5	1.3	130	10 × 10.5 (8 × 10.5)	0.7 (1.3)	200 (160)
33	330	8 × 10.5	0.65	250	10 × 10.5	0.7	200	10 × 13.5	0.7	200
47	470	10 × 10.5 (8 × 10.5)	0.50 (0.65)	300 (250)	10 × 13.5	0.45	300	12.5 × 13.5	0.32	500
68	680	12.5 × 13.5 (10 × 10.5)	0.16 (0.50)	800 (300)	12.5 × 13.5	0.32	500	12.5 × 13.5	0.32	500
100	101	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	0.16 (0.25) (0.50)	800 (400) (300)	12.5 × 13.5 (10 × 13.5)	0.32 (0.18)	500 (750)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	0.17 (0.26) (0.32)	795 (550) (500)
150	151	12.5 × 13.5 (10 × 13.5)	0.16 (0.25)	800 (650)	12.5 × 13.5	0.32	500			
220	221	12.5 × 13.5	0.16	800	12.5 × 16 (12.5 × 13.5)	0.26 (0.12)	550 (900)	Case size 尺寸	Impedance 阻抗值	Ripple current 紋波電流
330	331	16 × 16.5	0.082	1400	16 × 16.5	0.17	795			

•Case size 尺寸  $\varnothing D \times L$ (mm), Impedance 阻抗值 ( $\Omega$ ) at 20°C, 100KHz, Ripple current 紋波電流 (mA rms) at 105°C, 100KHz

□ 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	$\varnothing 4 \sim \varnothing 10$	4.7 ~ 68 $\mu$ F	0.35	0.50	0.64	0.83	1.00
		100 ~ 1500 $\mu$ F	0.40	0.55	0.70	0.85	1.00
	$\varnothing 12.5 \sim \varnothing 16$	~ 68 $\mu$ F	0.40	0.55	0.70	0.85	1.00
		100 ~ 680 $\mu$ F	0.45	0.65	0.80	0.90	1.00
		1000 ~ 4700 $\mu$ F	0.65	0.85	0.95	1.00	1.00

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

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