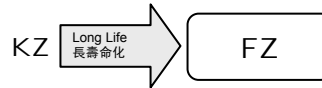
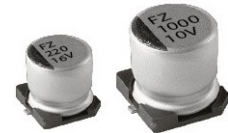


LONG LIFE WITH EXTRA LOWER IMPEDANCE

長壽命極低阻抗品

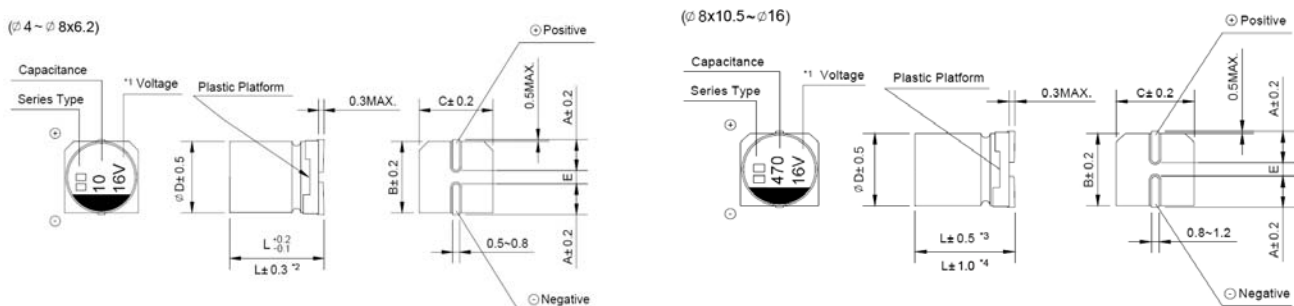
- Extra lower impedance with temperature range -55 ~ +105°C
極低阻抗和適用於 -55 ~ +105°C 的溫度範圍
- Load life of 2000~5000 hours
負荷壽命 2000~5000 小時
- Impedance 5~25% less than KZ series
阻抗值比 KZ 系列低 5~25%
- Comply with the RoHS directive
符合 RoHS 指令



□ 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~∅6.3x5.4 & ∅8x6.2) 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~∅6.3x5.4 和 ∅8x6.2 為 2000 小時為) 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 標示	Black print on the case top. 鉛殼頂部黑字印刷。																													

□ 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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FZ Series

□ 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 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

μF	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 (4 x 5.8)	0.70 (1.35)	160 (90)
33	330	5 x 5.8 (4 x 5.8)	0.70 (1.35)	160 (90)	5 x 5.8 (4 x 5.8)	0.70 (1.35)	160 (90)	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)
47	470	5 x 5.8 (4 x 5.8)	0.70 (1.35)	160 (90)	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)
56	560	5 x 5.8	0.70	160	6.3 x 5.8	0.36	240	6.3 x 5.8	0.36	240
68	680	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 5.8	0.36	240	6.3 x 7.7 (6.3 x 5.8)	0.26 (0.36)	300 (240)
100	101	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 7.7 (6.3 x 5.8)	0.26 (0.36)	300 (240)	6.3 x 7.7 (6.3 x 5.8)	0.26 (0.36)	300 (240)
150	151	6.3 x 5.8	0.36	240	6.3 x 7.7	0.26	300	6.3 x 7.7	0.26	300
220	221	6.3 x 7.7 (6.3 x 5.8) (8 x 6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3 x 7.7 (8 x 6.2)	0.26 (0.26)	300 (300)	8 x 10.5 (6.3 x 7.7)	0.16 (0.26)	600 (300)
330	331	6.3 x 7.7 (8 x 6.2)	0.26 (0.26)	300 (300)	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)
470	471	8 x 10.5	0.16	600	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)
680	681	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 10.5	0.08	850	10 x 13.5 (10 x 10.5)	0.07 (0.08)	950 (850)
1000	102	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 13.5 (10 x 10.5)	0.07 (0.08)	950 (850)	16x16.5 (12.5x16) (12.5x13.5)	0.05 (0.055) (0.06)	1450 (1200) (1100)
1500	152	10 x 13.5 (10 x 10.5)	0.07 (0.08)	950 (850)	12.5x13.5	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

μF	WV Code 代碼	25			35			50		
		1E			1V			1H		
4.7	4R7				4 x 5.8	1.35	90	5 x 5.8 (4 x 5.8)	1.52 (2.9)	85 (60)
10	100	4 x 5.8	1.35	90	5 x 5.8 (4 x 5.8)	0.70 (1.35)	160 (90)	6.3 x 5.8 (5 x 5.8)	0.88 (1.52)	165 (85)
15	150	5 x 5.8	0.70	160	5 x 5.8	0.70	160	6.3 x 5.8	0.88	165
22	220	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 7.7 (6.3 x 5.8) (8 x 6.2)	0.68 (0.88) (0.68)	195 (165) (195)
33	330	6.3 x 5.8 (5 x 5.8)	0.36 (0.70)	240 (160)	6.3 x 5.8 (8 x 6.2)	0.36 (0.26)	240 (300)	6.3 x 7.7 (8 x 6.2)	0.68 (0.68)	195 (195)
47	470	6.3 x 7.7 (6.3 x 5.8) (8 x 6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3 x 7.7 (6.3 x 5.8) (8 x 6.2)	0.26 (0.36) (0.26)	300 (240) (300)	6.3 x 7.7 (8 x 6.2)	0.68 (0.68)	195 (195)
56	560	6.3 x 7.7 (6.3 x 5.8)	0.26 (0.36)	300 (240)	6.3 x 7.7	0.26	300	8 x 10.5	0.34	350
68	680	6.3 x 7.7	0.26	300	6.3 x 7.7	0.26	300	8 x 10.5	0.34	350
100	101	6.3 x 7.7 (8 x 6.2)	0.26 (0.26)	300 (300)	8 x 10.5	0.16	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 (0.26)	600 (300)	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 10.5	0.18	670
220	221	8 x 10.5	0.16	600	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 13.5 (10 x 10.5)	0.14 (0.18)	780 (670)
330	331	10 x 10.5 (8 x 10.5)	0.08 (0.16)	850 (600)	10 x 10.5	0.08	850	12.5x13.5	0.12	900
470	471	10 x 13.5 (10 x 10.5)	0.07 (0.08)	950 (850)	12.5 x 13.5 (10 x 13.5)	0.06 (0.07)	1100 (950)	16 x 16.5 (12.5 x 16)	0.08 (0.10)	1250 (1050)
680	681	12.5 x 13.5	0.06	1100	12.5 x 16	0.055	1200			
1000	102	16 x 16.5 (12.5 x 16)	0.05 (0.055)	1450 (1200)	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 ∅DxL(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

μF	WV Code 代碼	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 (8 × 6.2)	2.4 (2.4)	60 (60)	8 × 10.5	1.3	130
22	220	8 × 10.5 (6.3 × 7.7) (8 × 6.2)	0.65 (1.2) (1.2)	250 (120) (120)	8 × 10.5	1.3	130	10 × 10.5 (8 × 10.5)	0.7 (1.3)	200 (130)
33	330	8 × 10.5	0.65	250	8 × 10.5	1.3	130	10 × 10.5	0.7	200
47	470	8 × 10.5	0.65	250	10 × 10.5	0.7	200	12.5 × 13.5 (10 × 13.5)	0.32 (0.60)	500 (250)
68	680	12.5 × 13.5 (8 × 10.5)	0.16 (0.65)	800 (250)	12.5 × 13.5	0.32	500	12.5 × 13.5	0.32	500
100	101	12.5 × 13.5 (10 × 10.5)	0.16 (0.35)	800 (400)	12.5 × 13.5	0.32	500	16 × 16.5 (12.5 × 16)	0.17 (0.26)	795 (550)
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 (10 × 13.5)	0.16 (0.25)	800 (650)	12.5 × 16	0.26	550			
330	331	16 × 16.5	0.082	1400	16 × 16.5	0.17	795	Case size 尺寸	Impedance 阻抗值	Ripple current 紋波電流

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

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

Frequency 頻率		50Hz	120Hz	300Hz	1KHz	10KHz~	
Coefficient 係數	$\varnothing 4 \sim \varnothing 10$	4.7 ~ 68μF	0.35	0.50	0.64	0.83	1.00
		100 ~ 1500μF	0.40	0.55	0.70	0.85	1.00
	$\varnothing 12.5 \sim \varnothing 16$	~ 68μF	0.40	0.55	0.70	0.85	1.00
		100 ~ 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 11. 編帶標準請參閱第 11 頁。
- Please refer to page 12 for the minimum package quantity. 最小包裝數量請參閱第 12 頁。

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