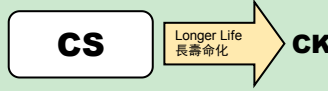


## STANDARD Upgrade 升級

### 標準品

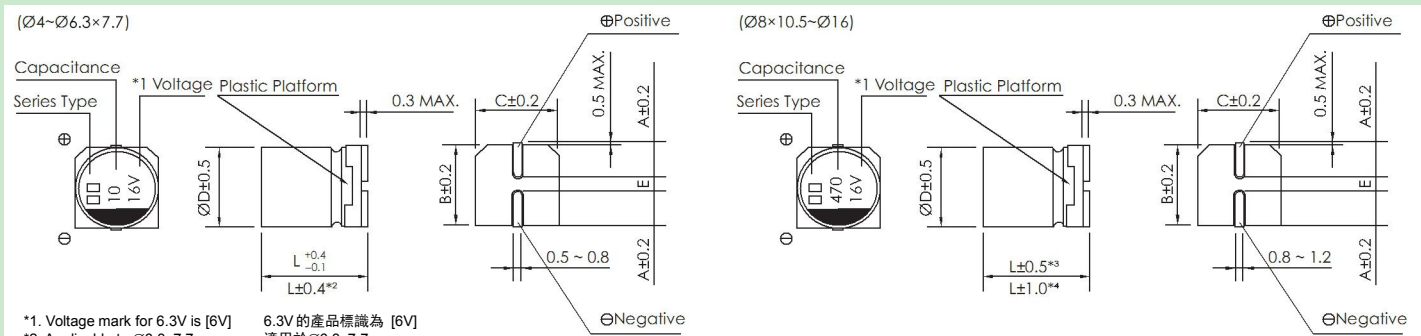
- Operating with general temperature range -40~+105°C  
適用於 -40~+105°C 的常規溫度範圍
- Load life of 2000 hours  
負荷壽命 2000 小時
- Comply with the RoHS directive  
符合 RoHS 指令



### SPECIFICATIONS 特性表

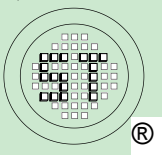
Items 項目	Characteristics 主要特性											
Operation Temperature Range 使用溫度範圍	-40 ~ +105°C											
Voltage Range 額定工作電壓範圍	4 ~ 450V											
Capacitance Range 靜電容量範圍	0.1 ~ 6800µF											
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C											
Leakage Current 漏電流	Rated Voltage 額定工作電壓	6.3 ~ 100V		160 ~ 450V								
	Case size 尺寸	Ø4~Ø10		Ø12.5~Ø16								
	Time 時間	after 2 min. (application of rated voltage) 2 分鐘後 (施加額定工作電壓)		after 1 min. (application of rated voltage) 1 分鐘後 (施加額定工作電壓)								
	Leakage current 漏電流	≤0.01CV or 3µA, whichever is greater ≤0.01CV 或 3µA, 取較大值		≤0.03CV or 4µA, whichever is greater ≤0.03CV 或 4µA, 取較大值								
Dissipation Factor (tan δ) 損耗角正切	Measurement frequency 測試頻率: 120Hz, Temperature 溫度: 20°C											
	Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50	63	100	160~250	350~450
Stability at Low Temperature 低溫特性	Measurement frequency 測試頻率: 120Hz											
	Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50~100	160~250	350~450		
	Impedance Ratio 阻抗比 ZT/Z20 (max.)	Ø4~Ø10	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2	2	3
		Ø12.5~Ø16	Z(-40°C)/Z(20°C)	15	8	6	4	4	3	3	3	6
Z(-25°C)/Z(20°C)	Z(-40°C)/Z(20°C)		7	5	4	3	2	2	2	2	4	
	Leakage Current 漏電流	Z(-40°C)/Z(20°C)	17	12	10	8	5	4	3	6	10	
Load Life 高溫負荷特性		After 2000 hours application of the rated voltage at 105°C, they meet the characteristics listed below. 在 85°C 環境中施加額定工作電壓 2000 小時後，電容器的特性符合下表的要求。										
	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%										
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。											
	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。											
	Capacitance Change 靜電容量變化率	Within ±10% of initial value 初始值的±10%以內										
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。											
	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										
Marking 標識	Black print on the case top. 鋁殼頂部黑字印刷。											

### DRAWING (Unit: mm) 外形圖



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ISO/TS 16949:2009 Certificate No. 16019360  
 ISO 14001:2004 Certificate No. 7116  
 ISO 9001:2008 Certificate No. 5071949  
 BS-OHSAS 18001:2007 Certificate No. 7116  
 IECQ QC 080000 Certificate No. PIC-1676-1674

## □ 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	8 x 13.5	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	3.0	3.0	3.3	3.3	4.9	4.9	5.8
B	4.3	5.3	6.6	6.6	8.4	8.4	8.4	10.4	10.4	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.4	8.4	8.4	10.4	10.4	13.0	13.0	17.0
E ± 0.2	1.0	1.4	1.9	1.9	2.2	3.1	3.1	4.7	4.7	4.7	4.7	6.4
L	5.4	5.4	5.4	7.7	6.2	10.5	13.5	10.5	13.5	13.5	16.0	16.5

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

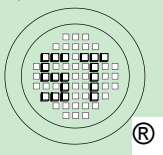
WV Code 代碼	4		6.3		10		16		25		
	0G		0J		1A		1C		1E		
4.7	4R7									4 x 5.4	13
10	100							4 x 5.4	18	5 x 5.4 (4 x 5.4)	20 (14)
22	220			4 x 5.4	22	5 x 5.4 (4 x 5.4)	25 (20)	5 x 5.4 (4 x 5.4)	27 (20)	6.3 x 5.4 (5 x 5.4)	36 (25)
33	330	5 x 5.4 (4 x 5.4)	30 (18)	5 x 5.4 (4 x 5.4)	27 (22)	5 x 5.4 (4 x 5.4)	30 (22)	6.3 x 5.4 (5 x 5.4)	40 (28)	6.3 x 5.4 (5 x 5.4)	44 (29)
47	470	5 x 5.4 (4 x 5.4)	36 (24)	5 x 5.4 (4 x 5.4)	33 (25)	5 x 5.4 (4 x 5.4)	30 (25)	6.3 x 5.4 (5 x 5.4)	48 (31)	6.3 x 5.4	48
100	101	6.3 x 5.4 (5 x 5.4)	60 (43)	6.3 x 5.4 (5 x 5.4)	50 (39)	6.3 x 5.4 (5 x 5.4)	53 (45)	6.3 x 5.4	60	6.3 x 7.7 (8 x 6.2)	91 (115)
150	151	6.3 x 5.4	52	6.3 x 5.4	55	6.3 x 5.4	62	6.3 x 7.7	95	8 x 10.5 (6.3 x 7.7)	140 (100)
220	221	6.3 x 5.4	57	6.3 x 7.7 (6.3 x 5.4)	105 (67)	6.3 x 7.7 (6.3 x 5.4)	105 (67)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	150 (105) (85)	8 x 10.5	175
330	331	6.3 x 7.7	100	6.3 x 7.7	105	8 x 10.5	196	8 x 10.5	195	10 x 10.5 (8 x 10.5)	240 (220)
470	471	6.3 x 7.7	105	8 x 10.5 (6.3 x 7.7)	210 (120)	8 x 10.5 (6.3 x 7.7)	210 (120)	10 x 10.5 (8 x 10.5)	295 (230)	10 x 10.5	280
680	681	8 x 10.5	210	8 x 10.5	210	10 x 10.5	270	10 x 10.5	315	10 x 13.5	400
1000	102	8 x 10.5	230	10 x 10.5 (8 x 10.5)	300 (230)	10 x 10.5 (8 x 10.5)	315 (230)	12.5 x 13.5 (10 x 13.5) (10 x 10.5)	500 (390) (340)	12.5 x 13.5	580
1500	152	10 x 10.5	315	10 x 13.5 (10 x 10.5)	450 (315)	10 x 13.5	460	12.5 x 13.5	550	12.5 x 16	850
2200	222	10 x 13.5 (10 x 10.5)	440 (340)	12.5 x 13.5 (10 x 13.5)	620 (500)	12.5 x 13.5	680	16 x 16.5 (12.5 x 16)	950 (750)	16 x 16.5	1050
3300	332	10 x 13.5	490	12.5 x 16 (12.5 x 13.5)	700 (660)	16 x 16.5	1000	16 x 16.5	1000		
4700	472	12.5 x 13.5	600	16 x 16.5	1000					Case size 尺寸	Ripple current 紋波電流
6800	682	16 x 16.5 (12.5 x 16)	950 (650)								

WV Code 代碼	35		50		63		100	
	1V		1H		1J		2A	
0.1	0R1			4 x 5.4	0.7	4 x 5.4	0.7	
0.22	R22			4 x 5.4	1.6	4 x 5.4	1.6	
0.33	R33			4 x 5.4	2.5	4 x 5.4	2.5	
0.47	R47			4 x 5.4	3.5	4 x 5.4	3.5	
1	010			4 x 5.4	7	4 x 5.4	7	4 x 5.4
2.2	2R2			4 x 5.4	11	4 x 5.4	11	6.3 x 5.4
3.3	3R3	4 x 5.4	13	4 x 5.4	13	5 x 5.4	13	6.3 x 7.7 (6.3 x 5.4)
4.7	4R7	4 x 5.4	14	5 x 5.4 (4 x 5.4)	16 (13)	5 x 5.4	16	6.3 x 7.7 (6.3 x 5.4)
10	100	5 x 5.4 (4 x 5.4)	21 (14)	6.3 x 5.4 (5 x 5.4)	24 (21)	6.3 x 7.7 (6.3 x 5.4)	39 (24)	8 x 10.5 (6.3 x 7.7)
22	220	6.3 x 5.4 (5 x 5.4)	38 (30)	6.3 x 7.7 (6.3 x 5.4)	51 (42)	8 x 10.5 (6.3 x 7.7)	98 (49)	10 x 10.5 (8 x 10.5)
33	330	6.3 x 5.4	42	6.3 x 7.7	60	8 x 10.5	112	10 x 10.5
47	470	6.3 x 7.7 (6.3 x 5.4)	70 (50)	8 x 10.5 (6.3 x 7.7)	120 (63)	10 x 10.5 (8 x 10.5)	160 (119)	12.5 x 13.5 (10 x 13.5) (10 x 10.5)
68	680					Case size 尺寸	Ripple current 紋波電流	12.5 x 13.5 (10 x 13.5)
								300 (180)

•Case size ∅DxL(mm), ripple current (mA rms) at 85°C, 120Hz •尺寸∅DxL(mm), 紋波電流(mA rms)於 85°C, 120Hz

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 ISO 14001:2004 Certificate No. 7116  
 ISO 9001:2008 Certificate No. 5075949  
 BS-OHSAS 18001:2007 Certificate No. 7116  
 IECQ QC 080000 Certificate No. PIC-029-054

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

WV Code 代碼	35		50		63		100		160		
	1V		1H		1J		2A		2C		
22	220									10 × 13.5	50
33	330									12.5 × 13.5	95
47	470									12.5 × 13.5 (16 × 16.5)	205 (240)
100	101	8 × 10.5 (6.3 × 7.7)	120 (84)	10 × 10.5 (8 × 10.5)	170 (140)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	270 (210) (196)	16 × 16.5 (12.5 × 13.5)	450 (380)	16 × 16.5	250
150	151	8 × 10.5	155	10 × 10.5	170	10 × 13.5	225				
220	221	10 × 10.5 (8 × 10.5)	220 (190)	10 × 13.5 (10 × 10.5)	280 (220)	16 × 16.5 (12.5 × 13.5)	560 (470)	16 × 16.5	550		
330	331	10 × 10.5	245	16 × 16.5 (12.5 × 13.5) (10 × 13.5)	600 (420) (295)	16 × 16.5 (12.5 × 16)	700 (510)				
470	471	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	520 (375) (280)	16 × 16.5 (12.5 × 16)	700 (520)	16 × 16.5	750				
680	681	12.5 × 13.5	530	16 × 16.5	750						
1000	102	16 × 16.5 (12.5 × 16)	750 (600)							Case size 尺寸	Ripple current 紋波電流

WV Code 代碼	200		250		350		400		450		
	2D		2E		2V		2G		2W		
2.2	2R2			8 × 13.5	24	8 × 13.5	24	8 × 13.5	26	10 × 13.5	31
3.3	3R3			8 × 13.5	34	8 × 13.5	34	8 × 13.5 10 × 13.5	34 40	10 × 13.5	40
4.7	4R7	8 × 13.5	40	8 × 13.5	40	8 × 13.5 10 × 13.5	38 85	8 × 13.5 10 × 13.5 (12.5 × 13.5)	42 45 (48)	10 × 13.5 (12.5 × 13.5)	42 45
10	100	10 × 13.5	75	10 × 13.5	75	12.5 × 13.5	105	12.5 × 13.5	50	12.5 × 13.5	55
22	220	12.5 × 13.5	105	12.5 × 13.5	105	16 × 16.5	130	16 × 16.5	85	16 × 16.5	85
33	330	12.5 × 13.5	120	16 × 16.5	135						
47	470	16 × 16.5	220								
100	101									Case size 尺寸	Ripple current 紋波電流

•Case size  $\varnothing D \times L$ (mm), ripple current (mA rms) at 85°C, 120Hz •尺寸 $\varnothing D \times L$ (mm), 紋波電流(mA rms)於 85°C, 120Hz

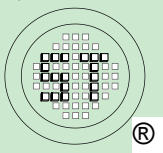
## □ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償系數

Frequency 頻率		50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient 系數	$\varnothing 4 \sim \varnothing 10$	0.1 ~ 68 $\mu$ F	0.70	1.00	1.17	1.36
		100 ~ 3300 $\mu$ F	0.85	1.00	1.08	1.20
	$\varnothing 12.5 \sim \varnothing 16$	~ 68 $\mu$ F	0.75	1.00	1.35	1.57
		100 ~ 680 $\mu$ F	0.80	1.00	1.23	1.34
		1000 ~ 6800 $\mu$ F	0.85	1.00	1.10	1.13

- 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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 ISO 14001:2004 Certificate No. 7116  
 ISO 9001:2008 Certificate No. 5071349  
 BS-OHSAS 18001:2007 Certificate No. 7116  
 IECQ QC 080000 Certificate No. PIC-0276-024