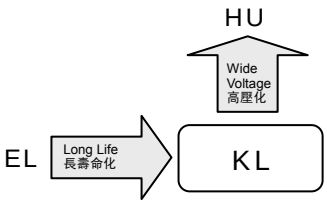
KL Series

5000 HOURS LONG LIFE ASSURANCE
5000 小時長壽命品

- Wide temperature range -55 ~ +105°C
  適用於 -55 ~ +105°C 的寬溫範圍
- Load life of 3000~5000 hours
  負荷壽命 3000~5000 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 ~ 100V
Capacitance Range 靜電容量範圍	0.1 ~ 1500μF
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

Rated Voltage (V) 額定工作電壓		6.3	10	16	25	35	50~100
tan δ (max.) 最大損耗角正切	∅4~∅10	0.28	0.24	0.20	0.16	0.13	0.12
	∅12.5~∅16	0.38	0.34	0.30	0.26	0.22	0.18

Stability at Low Temperature 低溫特性

Measurement frequency 測試頻率: 120Hz

Rated Voltage (V) 額定工作電壓			6.3	10	16	25	35	50~100
Impedance Ratio 阻抗比 ZT/Z20 (max.)	∅4~∅10	Z(-25°C) / Z(20°C)	3	3	2	2	2	2
		Z(-55°C) / Z(20°C)	8	5	4	3	3	3
	∅12.5~∅16	Z(-25°C) / Z(20°C)	5	4	3	2	2	2
		Z(-55°C) / Z(20°C)	12	10	8	5	4	3

Load Life 高溫負荷特性

After 5000 hrs. (3000 hrs. for ∅4~∅6.3×5.4 & ∅8×6.2) 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~∅6.3×5.4 和∅8×6.2 為 3000 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 ±30% of initial value 初始值的±30%以內
Dissipation Factor 損耗角正切	300% or less of initial specified value 不大於規範值的 300%
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。

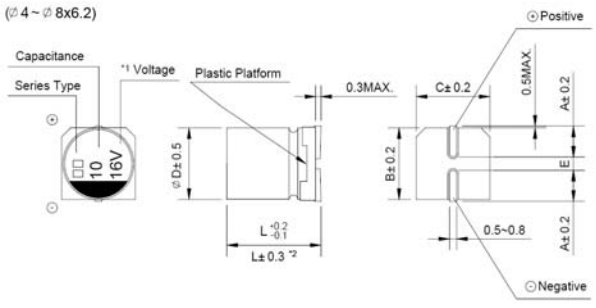
Resistance to Soldering Heat 耐焊接熱特性

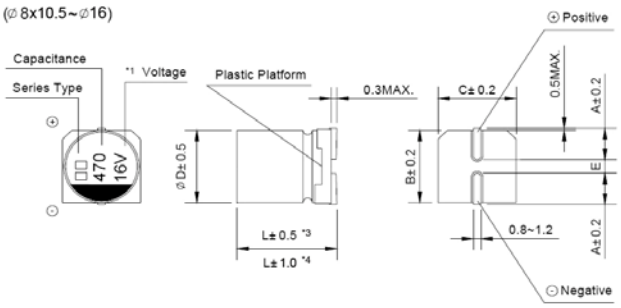
After reflow soldering and restored at room temperature, they meet the characteristics listed below.
經過回流焊並冷卻至室溫後，電容器的特性符合下表的要求。

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

Marking 標示: 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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PACO ELECTRONICS CO LTD
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☐ DIMENSIONS (Unit: mm) 尺寸表

ØD 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 規格尺寸及最大允許紋波電流

WV / μF / Code 代碼		6.3		10		16		25	
		0J		1A		1C		1E	
10	100					4 × 5.8	18	5 × 5.8	27
22	220	4 × 5.8	22	5 × 5.8	30	5 × 5.8	30	6.3 × 5.8	44
33	330	5 × 5.8	35	5 × 5.8	36	6.3 × 5.8	48	6.3 × 5.8	50
47	470	5 × 5.8	38	6.3 × 5.8	50	6.3 × 5.8	50	6.3 × 7.7 (8 × 6.2)	63 (63)
100	101	6.3 × 5.8	69	6.3 × 7.7 (8 × 6.2)	81 (81)	6.3 × 7.7 (8 × 6.2)	81 (81)	8 × 10.5	116
150	151	6.3 × 7.7 (8 × 6.2)	85 (85)	8 × 10.5	125	8 × 10.5	125	10 × 10.5	320
220	221	6.3 × 7.7 (8 × 6.2)	120 (120)	8 × 10.5	141	10 × 10.5	216	10 × 10.5	320
330	331	8 × 10.5	290	10 × 10.5	290	10 × 10.5	290	10 × 10.5	320
470	471	10 × 10.5	320	10 × 10.5	320	10 × 10.5	320	12.5 × 13.5 (10 × 13.5)	400 (350)
680	681	10 × 10.5	320	10 × 10.5	320	10 × 13.5	420	12.5 × 13.5	415
1000	102	10 × 10.5	410	10×13.5	390	12.5 × 13.5	550	12.5 × 13.5	460
1500	152	10 × 13.5	450	12.5 × 13.5	480	12.5 × 13.5	650	12.5 × 16	700
2200	222	12.5 × 13.5	680	12.5 × 16 (12.5 × 13.5)	750 (510)	16 × 16.5	800		
3300	332	12.5 × 16 (12.5 × 13.5)	850 (800)	16 × 16.5	800			Case size 尺寸	Ripple current 紋波電流

WV / μF / Code 代碼		35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4 × 5.8	1.0				
0.22	R22			4 × 5.8	2.6				
0.33	R33			4 × 5.8	3.2				
0.47	R47			4 × 5.8	5				
1	010			4 × 5.8	8				
2.2	2R2			4 × 5.8	12				
3.3	3R3			4 × 5.8	17			6.3 × 7.7 (8 × 6.2)	30 (30)
4.7	4R7	4 × 5.8	16	5 × 5.8	22			8 × 10.5	50
10	100	5 × 5.8	27	6.3 × 5.8	32	6.3 × 7.7 (8 × 6.2)	45 (45)	8 × 10.5	55
22	220	6.3 × 5.8	44	6.3 × 7.7 (8 × 6.2)	58 (58)	8 × 10.5	65	10 × 10.5	70
33	330	6.3 × 7.7 (8 × 6.2)	57 (57)	8 × 10.5	140	10 × 10.5	80	10 × 10.5	80
47	470	8 × 10.5	92	10 × 10.5	310	10 × 10.5	90	12.5 × 13.5 (10 × 13.5)	250 (150)
100	101	10 × 10.5	151	10 × 10.5	310	10 × 13.5	150	12.5 × 13.5	300
150	151	10 × 10.5	290	10 × 10.5	310			16 × 16.5 (12.5 × 16) (12.5 × 13.5)	600 (420) (380)
220	221	10 × 10.5	375	12.5 × 13.5 （10 × 13.5）	340 (320)	12.5 × 13.5	470		
330	331	12.5 × 13.5 (10 × 13.5)	380 (375)	12.5 × 16 (12.5 × 13.5)	600 (500)	16 × 16.5 (12.5 × 16)	650 (550)		
470	471	12.5 × 13.5	520	16 × 16.5	700				
680	681	12.5 × 13.5	550						
1000	102	16 × 16.5 (12.5 × 16)	750 (600)					Case size 尺寸	Ripple current 紋波電流

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C 120Hz •尺寸∅D×L(mm)，紋波電流(mA rms)於 105°C 120Hz

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☐ 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	Ø4 ~ Ø10		0.70	1.00	1.17	1.36	1.50
	Ø12.5 ~ Ø16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 470μF	0.80	1.00	1.23	1.34	1.50
		680 ~ 3300μF	0.85	1.00	1.10	1.13	1.15

- 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。