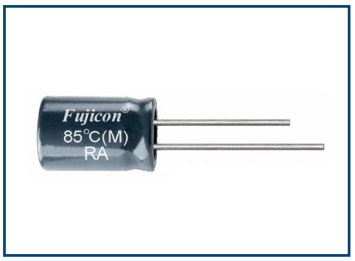
RA Series

STANDARD

標準品



- Standard series for general purpose
  標準品通用型
- High performance and high reliability
  高性能與高可靠
- Endurance 2000 hours at 85°C
  在 85°C 環境中耐久性 2000 小時
- Comply with the RoHS & REACH
  符合 RoHS 與 REACH

RA → Higher Temperature 寬溫化 → RK

☐ SPECIFICATIONS 特性表

Items 項目	Characteristics 主要特性	
Category Temperature Range 工作温度範圍	-40 ~ +85°C	-25 ~ +85°C
Voltage Range 額定工作電壓範圍	6.3 ~ 100V	160 ~ 450V
Capacitance Range 靜電容量範圍	0.1 ~ 22000μF	0.47 ~ 1000μF
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C	
Leakage Current 漏電流	Leakage current ≤0.01CV or 3μA, whichever is greater (after 2 minutes application of rated voltage at 20°C) 漏電流 ≤0.01CV 或 3μA 取較大值(在 20°C 環境中施加額定工作電壓 2 分鐘後)	Leakage current ≤0.02CV + 15μA (after 5 minutes application of rated voltage at 20°C) 漏電流 ≤0.02CV + 15μA(在 20°C 環境中施加額定工作電壓 5 分鐘後)
	C: Nominal capacitance (μF) 標稱靜電容量, V: Rated voltage (V) 額定電壓	

Dissipation Factor (tan δ) 損耗角正切

When nominal capacitance is over 1000μF, tan δ shall be added 0.02 to the listed value with increase of every 1000μF.
當標稱靜電容量大於 1000μF，其標稱靜電容量每增加 1000μF，損耗角正切增加 0.02。
Measurement frequency 測試頻率: 120Hz, Temperature 温度: 20°C

Rated Voltage (V) 額定工作電壓	6.3	10	16	25	35	50	63	100	160~250	350~450
tan δ (max.) 最大損耗角正切	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20

Stability at Low Temperature 低温特性

Measurement frequency 測試頻率: 120Hz

Rated Voltage (V) 額定工作電壓		6.3	10	16	25	35~100	160	200~350	400,450
Impedance Ratio 阻抗比	Z(-25°C) / Z(+20°C)	4	3	2	2	2	4	8	16
	Z(-40°C) / Z(+20°C)	10	8	6	4	3	8	12	—

Endurance 耐久性

When the capacitors are restored to 20°C after 2000 hours application of the rated voltage at 85°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，待電容器恢復至 20°C 時進行測量，電容器的特性符合下表要求。

Capacitance Change 靜電容量變化率	Within ±20% of initial measured value 初始值的±20%以內
Dissipation Factor 損耗角正切	≤200% of initial specified value 不大於規範值的 200%
Leakage Current 漏電流	≤initial specified value 不大於規範值

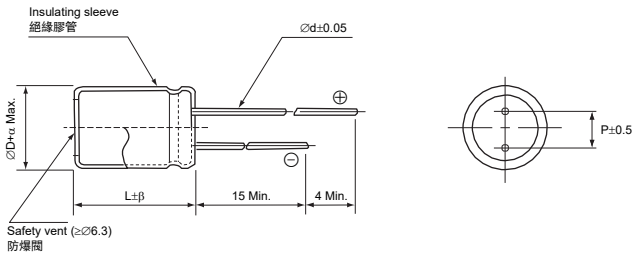
Shelf Life 高温貯存特性

When the capacitors are restored to 20°C after leaving under no load at 85°C for 1000 hours, they meet the specified value for endurance characteristics listed above.
在 85°C 環境中無負荷放置 1000 小時後，待電容器恢復至 20°C 時進行測量，電容器的特性符合耐久性特性中所列的規定值。

Marking 標識

Printed with white colour on navy blue sleeve (PVC) or printed with white colour on green sleeve (PET).
深藍色膠管白字印刷（PVC）或綠色膠管白字印刷（PET）。

☐ DRAWING & DIMENSIONS 外形圖及尺寸 (Unit: mm)



ØD	5	6.3	8 (L≤11.5)	8 (L≥16)	10	13	16	18	22	25
P	2.0	2.5	3.5		5.0		7.5		10.0	12.5
Ød	0.5			0.6			0.8			
β	1.5					2.0				
α	0.5								1.0	

☐ 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	0.1 ~ 47μF	0.75	1.0	1.35	1.55	2.0
	68 ~ 680μF	0.80	1.0	1.25	1.34	1.5
	1000 ~ 22000μF	0.85	1.0	1.10	1.13	1.15

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5~10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced. 鋁電解電容器在疊加紋波電流後會引起發熱，溫度每上升 5~10°C 壽命會減半。若要保持長壽命性能，請在使用過程中適當降低紋波電流。

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CAT.2026/V2.1

RA Series

□ DIMENSIONS & STANDARD RATINGS 規格尺寸及標準參數

WV / Code / μF / 代碼		6.3		10		16		25		35		50		63	
		0J		1A		1C		1E		1V		1H		1J	
0.1	0R1											5 × 11	6.4	5 × 11	7
0.22	R22											5 × 11	9.5	5 × 11	11
0.33	R33											5 × 11	11	5 × 11	13
0.47	R47											5 × 11	14	5 × 11	15
0.68	R68											5 × 11	17	5 × 11	19
1	010											5 × 11	20	5 × 11	22
2.2	2R2											5 × 11	29	5 × 11	34
3.3	3R3											5 × 11	35	5 × 11	40
4.7	4R7											5 × 11	42	5 × 11	48
6.8	6R8											5 × 11	50	5 × 11	60
10	100					5 × 11	50	5 × 11	65	5 × 11	60	5 × 11	65	5 × 11	70
22	220			5 × 11	50	5 × 11	55	5 × 11	90	5 × 11	95	5 × 11	100	5 × 11	120
33	330			5 × 11	65	5 × 11	85	5 × 11	95	5 × 11	110	5 × 11 (6.3 × 11.5)	125 (136)	6.3 × 11.5	145
47	470			5 ×11	80	5 × 11	90	5 × 11	115	5 × 11	130	6.3 × 11.5	165	6.3 × 11.5	170
68	680			5 × 11	80	5 × 11	104	5 × 11	140	6.3 × 11.5	170	6.3 × 11.5	195	8 × 11.5	245
100	101	5 × 11	134	5 × 11	140	5 × 11	180	5 × 11	190	6.3 × 11.5	210	8 × 11.5	260	8 × 11.5	370
220	221	5 × 11	200	5 × 11	220	6.3 × 11.5	260	6.3 × 11.5	330	8 × 11.5	385	8 × 16 (10 × 12)	425 (482)	10 × 16	490
330	331	6.3 × 11.5	240	6.3 × 11.5	290	6.3 × 11.5 (8 × 11.5)	300 (340)	8 × 11.5	440	10 × 12	490	10 × 16	585	10 × 20	710
470	471	6.3 × 11.5	340	6.3 × 11.5 (8 × 11.5)	350 (410)	8 × 11.5	440	8 × 11.5 (8 × 16)	530 (550)	10 × 16	740	10 × 20	755	13 × 21	900
680	681	8 × 11.5	468	8 × 11.5	470	8 × 16	560	10 × 16	645	10 × 20	930	13 × 21	925	13 × 25	1100
1000	102	8 × 11.5	580	8 × 16 (10 × 12)	550 (650)	8 × 16 (10 × 16)	770 (845)	10 × 16 (10 × 20)	860 (955)	13 × 21	1145	13 × 25	1300	16 × 25 (16 × 31)	1340 (1450)
2200	222	8 × 20 (10 × 16)	660 (845)	10 × 20	1070	10 × 20	1210	13 × 21 (13 × 25)	1300 (1400)	16 × 25	1540	16 × 31 (18 × 35)	1700 (2040)	18 × 35	2100
3300	332	10 × 20	1185	13 × 21	1420	13 × 25	1400	13 × 21 (16 × 25)	1500 (1600)	16 × 31	2070	18 × 35	2500	22 × 40	2575
4700	472	13 × 21	1545	13 × 25	1780	16 × 25	1700	16 × 31	2100	16 × 31 (18 × 35)	2200 (2700)	22 × 40	3040	25 × 40	3200
6800	682	13 × 25	1870	16 × 25	1880	16 × 31	2100	18 × 35	2550	22 × 35	2900	25 × 40	3185		
10000	103	16 × 31	2215	16 × 35	2250	18 × 35	2590	18 ×40 (22 × 40)	2815 (3080)						
15000	153	18 × 31	2250	18 × 35	2820	22 × 40	3100								
22000	223	22 × 35 (22 × 40)	2680 (3140)												

WV / Code / μF / 代碼		100		160		200		250		350		400		450	
		2A		2C		2D		2E		2V		2G		2W	
0.1	0R1	5 × 11	7.2												
0.22	R22	5 × 11	11												
0.33	R33	5 × 11	13												
0.47	R47	5 × 11	16	5 × 11	12	5 × 11	12	5 × 11	12	6.3 × 11.5	16	6.3 × 11.5	17		
0.68	R68	5 × 11	20	5 × 11	15	5 × 11	15	5 × 11	15	6.3 × 11.5	20	6.3 × 11.5	20		
1	010	5 × 11	25	5 × 11	18	5 × 11	18	6.3 × 11.5	20	6.3 × 11.5	24	6.3 × 11.5	24	8 × 11.5	28
2.2	2R2	5 × 11	33	6.3 × 11.5	25	6.3 × 11.5	33	6.3 × 11.5	33	6.3 × 11.5	37	8 × 11.5	37	8 × 11.5 (10 × 12)	45 (55)
3.3	3R3	5 × 11	40	6.3 × 11.5	35	6.3 × 11.5	46	6.3 × 11.5	46	8 × 11.5	50	8 × 11.5	50	10 × 12	65
4.7	4R7	5 × 11	48	6.3 × 11.5	42	6.3 × 11.5	50	8 × 11.5	55	8 × 11.5	60	10 × 12	80	10 × 16	90
6.8	6R8	5 × 11	55	8 × 11.5	58	8 × 11.5	67	8 × 11.5	77	10 × 12	85	10 × 16	100	10 × 20	125
10	100	5 × 11	65	10 × 12	75	10 × 12	85	10 × 12 (10 × 16)	100 (125)	10 × 16	110	10 × 20	120	13 × 21 (13 × 25)	168 (185)
22	220	6.3 × 11.5	124	10 × 16	130	10 × 16	135	10 × 20	150	13 × 21	190	13 × 21 (13 × 25)	200 (235)	13 × 25	300
33	330	8 × 11.5	177	10 × 16	175	10 × 20	180	13 × 21	215	13 × 25	275	13 × 25	275	16 × 25	320
47	470	10 × 12	235	13 × 21	235	13 × 21	250	13 × 21	290	16 × 25	380	16 × 25	360	16 × 31	390
68	680	10 × 16	293	13 × 21	330	13 × 25	340	16 × 25	380	16 × 31	450	16 × 35	435	16 × 35	460
100	101	10 × 20	405	13 × 25	440	16 × 25	460	16 × 25	510	16 × 35 (18 × 35)	510 (620)	18 × 31 (18 × 35)	520 (586)	18 × 40	580
220	221	13 × 25	640	16 × 31	790	16 × 35 (18 × 31)	830 (850)	18 × 35	890						
330	331	13 × 25	757	18 × 31	970	18 × 35	1150								
470	471	16 × 25	910	18 × 40	1150										
680	681	16 × 31	1365											Case size 尺寸	Ripple current 紋波電流
1000	102	18 × 40	1820												

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

- Please refer to page 21 “Taping Specifications” & page 23 “Lead Forming & Cutting” about the taped or formed product spec. 編帶與引線成型標準請查閱第 21 頁“編帶標準”及第 23 頁“引線成型與剪腳”。
- Please refer to page 22 “Packaging Specifications” for the minimum package quantity. 最小包裝數量請查閱第 22 頁“包裝標準”。
- Please refer to page 18 for the Part Number System. 產品編碼規則請查閱第 18 頁。

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