

# CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

## ULR series

### FEATURES 特性

- Ultra low E.S.R  
超低阻抗
- Enabled high ripple current  
耐高紋波
- Guaranteed at 105°C 2000 hours.  
保證壽命 105°C 2000 小時



### SPECIFICATIONS

Item 項目	Characteristics 特性		
Operating Temperature Range 工作溫度範圍	-55°C ~ +105°C		
Rated Voltage Range 額定電壓範圍	2.5~35 W.V		
Capacitance Range 靜電容量範圍	10~3300uF		
Capacitance Tolerance 靜電容量誤差	±20% (20°C, 120Hz)		
Leakage Current 洩漏電流	$I \leq 0.2CV$ or 280(uA) whichever is greater. (After 2 minutes) $\leq 0.2CV$ or 280 $\mu A$ 取較大值. (2 分鐘後) $I$ =Leakage Current( $\mu A$ ) $C$ =Nominal Capacitance( $\mu F$ ) $V$ =Rated Voltage(V) $I$ =洩漏電流( $\mu A$ ) , $C$ =額定容量( $\mu F$ ) , $V$ =額定電壓(V)		
Dissipation Factor ( $\tan \delta$ ) 散逸因素 (損失角正切值)	Rated Voltage 額定電壓 (V dc)	2.5~35	MAX  (20°C 120Hz)
	Tan $\delta$ 損失角正切值	0.10	
Temperature Characteristics Impedance Ratio 溫度特性 阻抗變化率	$Z(-55^\circ C)/Z(+20^\circ C)$	$\leq 1.25$	100KHZ
	$Z(+105^\circ C)/Z(+20^\circ C)$	$\leq 1.25$	

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※1. Endurance 壽命	The following specifications shall be satisfied when the capacitors are restored 20°C after the rated voltage is applied for 2,000 hours at 105°C 電容在 105°C 下印加額定電壓 2000 小時, 放置在 20°C 的環境下, 電容需符合以下規格值。	
	Capacitance Change 容量變化率	Within ±20% of the initial value. 初始值±20%以內
	Dissipation Factor 散逸因素	Not more than 150% of the specified value 不超出規格值的 1.5 倍
	Leakage Current 洩漏電流	Not more than the specified value 不超出規格值
Damp heat 耐濕性	60°C, 90 to 95%, R.H, 1000hrs	
	Capacitance Change 容量變化率	Within ±20% of the initial value. 初始值±20%以內
	Dissipation Factor 散逸因素	Not more than 150% of the specified value 不超出規格值的 1.5 倍
	Leakage Current 洩漏電流	Not more than the specified value 不超出規格值
Surge Voltage(V) 湧浪電壓(V)	At normal temperature, charge at surge voltage for 30sec and discharge via a 1kΩ protective resistor for 330sec. Repeat for 1000 cycles. 常溫下, 印加湧浪電壓充電 30 秒, 通過 1 kΩ 的保護電阻放電 330 秒, 循環 1000 次。	$\Delta C/C$ : Within ±20% of the initial measured value. 初始值±20%以內
		$\tan \delta$ : $\leq 150\%$ of initial specified value 不超出規格值的 1.5 倍
		$ESR$ : $\leq 150\%$ of initial specified value 不超出規格值的 1.5 倍
		$LC$ : $\leq$ initial specified value 不超出規格值

※ 1. In case of some problems for measured values, measure after applying rated voltage for 120 minutes at 105°C

※ 如測試數據時遇到問題, 請在 105°C 下印加額定電壓 120 分鐘後再測試。

## MULTIPLIER FOR RIPPLE CURRENT

### Frequency coefficient for ripple current

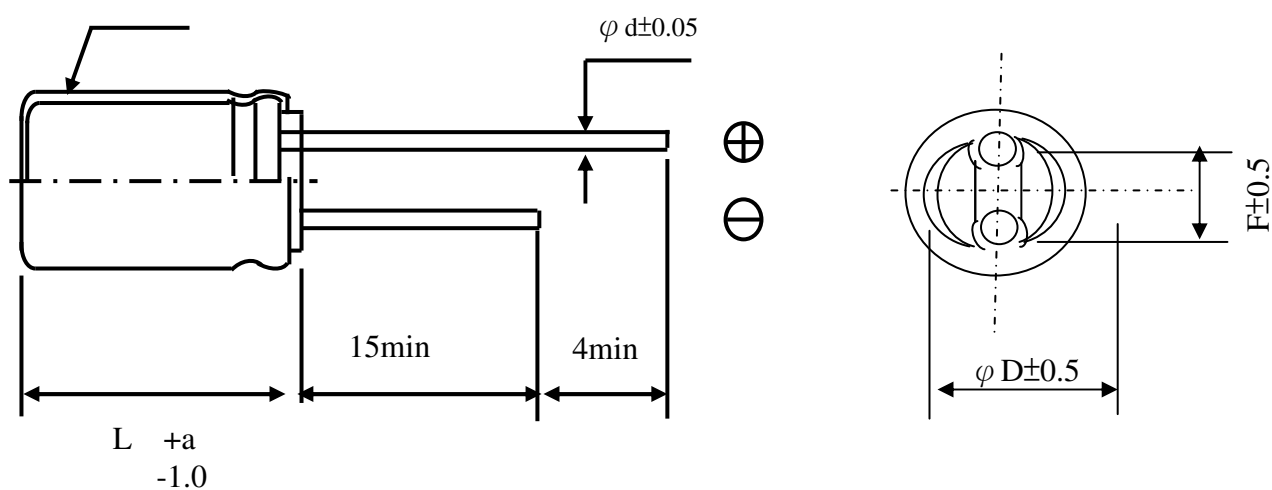
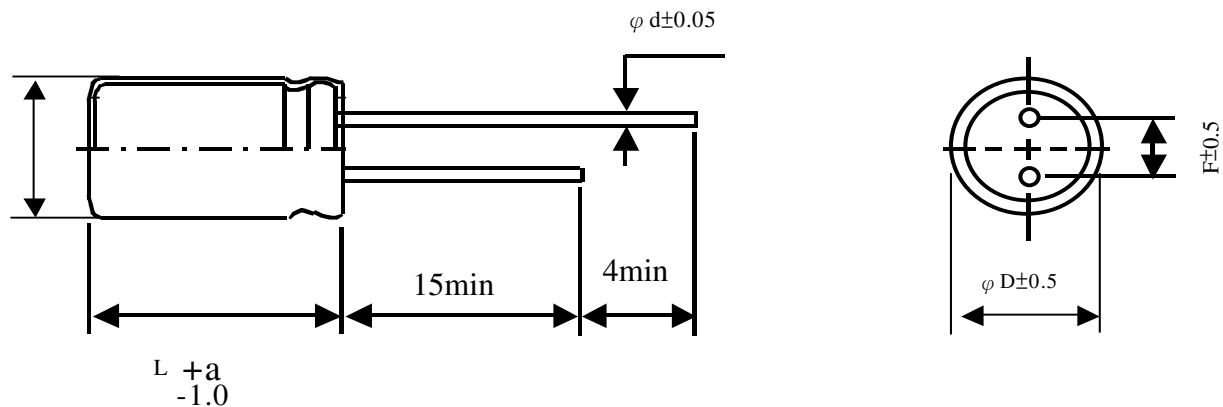
紋波電流頻率系數

Frequency (HZ) 頻率	$120 \leq f < 1K$	$1K \leq f < 10K$	$10K \leq f < 100K$	$100K \leq f \leq 500K$
Coefficient 系數	0.05	0.30	0.70	1.00

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### DIMENSIONS 尺寸 (mm)



$\varphi \times L$	5x7	5x8	5x9	6.3x6	6.3x8	6.3x11	8x8	8x11.5	10x12.5
$F \pm 0.5$	2.0	2.0	2.0	2.5	2.5	2.5	3.5	3.5	5.0
$\varphi d$	0.5	0.6	0.6	0.45	0.6	0.6	0.6	0.6	0.6
a	L < 11; a = 1.0; L ≥ ; a = 1.5								

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## STANDARD SIZE

 $\phi$  D x L(mm)

Rated Voltage(V)	Cap(uF)	Case size	ESR(m $\Omega$ )(max) 100KHz to 300KHz at 20 $^{\circ}$ C	Rated Ripple Current 100KHz (mA rms at 105 $^{\circ}$ C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
2.5	220	6.3x6	15	3400	10	280
2.5	330	5x6	25	3350	10	280
2.5	390	6.3x6	15	3400	10	280
2.5	470	5x9	7	4180	10	280
2.5	470	6.3x8	7	4600	10	280
2.5	560	5x8	7	4180	10	280
2.5	560	5x9	7	4180	10	280
2.5	560	6.3x6	15	3400	10	280
2.5	560	6.3x8	7	4000	10	280
2.5	560	8x8	7	6100	10	280
2.5	680	6.3x7	20	4450	10	395
2.5	680	8x6.5	8	4900	10	395
2.5	820	6.3x8	7	5600	10	410
2.5	820	8x7	8	5600	10	410
2.5	820	8x11.5	7	6100	10	410
2.5	1000	8x8	7	6100	10	500
2.5	1000	8x11.5	7	6100	10	500
2.5	1200	8x8	7	6100	10	600
2.5	1200	8x10.2	7	6100	10	600
2.5	1500	8x11.5	7	6100	10	750
2.5	1500	10x12.5	7	6100	10	750
2.5	2700	10x12.5	8	5560	10	1350
4	270	6.3x8	12	3200	10	280
4	560	6.3x8	7	5600	10	448
4	560	8x8	7	6100	10	448
4	560	8x11.5	7	6100	10	448
4	680	8x8	7	6100	10	544
4	680	8x11.5	7	6100	10	544
4	820	8x8	7	6100	10	656
4	820	8x11.5	7	6100	10	656
4	1000	8x8	7	6100	10	800
4	1000	10x12.5	7	6640	10	800
4	1200	8x8	7	6100	10	960
4	1200	10x12.5	8	5600	10	960
4	2700	10x12.5	8	6900	10	2160
6.3	22	5x6	100	900	10	280
6.3	47	6.3x6	80	990	10	280
6.3	100	5x7	80	1090	10	280
6.3	100	6.3x5.5	80	1200	10	280
6.3	100	6.3x6	80	1200	10	280
6.3	150	4x6.5	100	2000	10	280
6.3	220	5x7	11	3700	10	280
6.3	220	6.3x4.2	100	3100	10	280
6.3	220	6.3x5.9	20	3160	10	280

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Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
6.3	220	6.3x8	20	3400	10	280
6.3	270	5x7	11	3700	10	340
6.3	270	6.3x6	20	3160	10	340
6.3	330	5x8	12	2900	10	416
6.3	330	5.5x8	12	2900	10	416
6.3	330	6.3x5.5	20	3160	10	416
6.3	330	6.3x6	20	3160	10	416
6.3	330	6.3x8	10	4500	10	416
6.3	330	8x8	8	5700	10	416
6.3	390	5x9	11	3100	10	492
6.3	390	8x8	8	5700	10	492
6.3	450	6.3X6	11	3100	10	567
6.3	470	5x9.5	10	3100	10	592
6.3	470	5x11	11	3700	10	592
6.5	470	5.5x10	11	3100	10	592
6.3	470	6.3x6.1	20	3160	10	592
6.3	470	6.3x8	8	4700	10	592
6.3	470	8x8	8	5700	10	592
6.3	470	8x11.5	7	6100	10	592
6.3	500	5x9	11	2800	10	706
6.3	560	5.5x8	12	2800	10	706
6.3	560	6.3x7	16	3500	10	706
6.3	560	6.3x8	8	4700	10	706
6.3	560	8x8	8	5700	10	706
6.3	680	5.5x10	11	4270	10	857
6.3	680	6.3x7.5	8	4700	10	857
6.3	680	6.3x8	8	4700	10	857
6.3	680	8x8	8	5700	10	857
6.3	680	8x11.5	7	6100	10	857
6.3	680	10x12.5	7	6640	10	857
6.3	820	5x10	12	3640	10	1033
6.3	820	5.5x10	11	3640	10	1033
6.3	820	6.3x8.5	8	4700	10	1033
6.3	820	8x8	7	6100	10	1033
6.3	820	8x11	7	6100	10	1033
6.3	820	10x12.5	7	6640	10	1033
6.3	1000	6.3x10	8	4700	10	1260
6.3	1000	8x7	7	6100		1260
6.3	1000	8x11.5	7	6100	10	1260
6.3	1200	6.3x13	11	6100	10	1512
6.3	1200	8x8	7	6100	10	1512
6.3	1200	8x11.5	7	6100	10	1512
6.3	1500	8x9	15	5500	10	1890
6.3	1500	10x10	12	5560	10	1890
6.3	1500	10x12.5	10	5560	10	1890
6.3	1800	10x12.5	10	6110	10	2268
6.3	1900	8x11.5	7	6520	10	2394
6.3	2200	10x12.5	10	7000	10	2772



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Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
6.3	2500	8x16	7	7070	10	3150
6.3	2500	10x12.5	10	7070	10	3150
6.3	3300	10x15	10	7150	10	4158
6.8	270	5x7	12	3100	10	367
6.8	470	5x9	11	3400	10	639
6.8	680	6.3x8	20	3700	10	925
6.8	820	6.3x7.5	20	4210	10	1115
6.8	1000	6.3x11	11	4650	10	1033
7	150	5x6	12	2900	10	280
7	330	5x9	11	3100	10	462
7	820	6.3x10	10	4930	10	1148
7	820	8x8	10	5030	10	1148
7.5	100	5x7	12	2900	10	280
7.5	270	5x8	12	3000	10	405
7.5	270	6.3x8	11	3000	10	405
7.5	330	5x9	12	3100	10	495
7.5	330	6.3x8	10	3410	10	495
7.5	390	5.5x9	15	3750	10	585
7.5	470	5.5x9	15	4050	10	705
7.5	470	6.3x6.5	12	4050	10	705
7.5	500	5x8.5	12	4000	10	750
7.5	680	6.3x8.5	8	4700	10	1020
7.5	820	6.3x10	11	4700	10	1230
7.5	820	8x8	8	4700	10	1230
7.5	1000	6.3x11	11	4980	10	1500
7.5	1000	8x11.5	7	4980	10	1500
7.5	1200	6.3x13	11	5220	10	1800
7.5	1200	8x11.5	7	5220	10	1800
10	22	6.3x8	45	1870	10	280
10	33	6.3x8	35	2000	10	280
10	47	6.3x6	35	2100	10	280
10	47	6.3x8	32	2100	10	280
10	100	5x9	11	2160	10	280
10	120	6.3x6	32	2220	10	280
10	150	6.3x11	25	2820	10	300
10	220	5x11	15	2700	10	440
10	220	6.3x6	15	2700	10	440
10	220	6.3x8	12	3200	10	440
10	270	6.3x8	12	4400	10	540
10	270	8x8	14	4420	10	540
10	270	8x11.5	11	5100	10	540
10	330	6.3x8	11	3500	10	660
10	330	8x8	11	5000	10	660
10	330	8x11.5	17	3950	10	660
10	390	8x8	11	5000	10	780
10	390	8x11.5	9	6100	10	780
10	470	6.3x8.5	12	3500	10	940
10	470	8x8	11	5000	10	940

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Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
10	470	8x11.5	9	5650	10	940
10	470	10x12.5	8	6100	10	940
10	560	8x8	9	5600	10	1120
10	560	8x11.5	9	5650	10	1120
10	560	10x12.5	8	5700	10	1120
10	680	6.3x11	11	5750	10	1360
10	680	8x7	10	5800	10	1360
10	680	8x11.5	10	5800	10	1360
10	680	10x12.5	8	6100	10	1360
10	820	6.3x13	8	6100	10	1640
10	820	8x11.5	8	6100	10	1640
10	1000	8x11.5	10	5200	10	2000
10	1000	10x12.5	9	6100	10	2000
10	1200	10x12.5	8	6200	10	2400
10	1500	8x13	10	6300	10	3000
10	1500	10x12.5	8	6300	10	3000
10	2200	10x16	8	6400	10	4400
12	330	5x9	12	2690	10	792
12	330	5.5x9	12	2690	10	792
12	330	6.3x11	11	2690	10	792
12	470	5.5x10	12	2950	10	1128
12	560	5.5x10	12	3800	10	1344
12	560	6.3x9	12	3800	10	1344
12	680	6.3x11	11	3910	10	1632
12	820	6.3x13	11	4020	10	1968
12	820	8x11.5	10	4020	10	1968
14	560	6.3x9	12	3800	10	1568
14	680	6.3x13	11	3910	10	1904
16	22	5x6	100	1200	10	280
16	22	6.3x6	80	1200	10	280
16	39	6.3x6	80	1230	10	280
16	47	6.3x4.5	90	1350	10	280
16	47	6.3x6	80	1350	10	280
16	56	8x11.5	10	1480	10	280
16	68	6.3x6	80	1620	10	280
16	100	5x7	80	2700	10	320
16	100	5x9	24	2820	10	320
16	100	5.5x7	25	2700	10	320
16	100	6.3x5	25	2700	10	320
16	100	6.3x6	25	2700	10	320
16	100	6.3x8	24	2820	10	320
16	100	10x12	12	2820	10	320
16	150	6.3x5	25	3100	10	480
16	180	6.3x7	24	3800	10	576
16	180	8x11.5	13	5000	10	576
16	220	6.3x8	25	3000	10	704
16	220	6.3x11	20	3100	10	704
16	220	8x8	13	4300	10	704

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Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
16	220	8x11.5	13	5000	10	704
16	270	5.5x9	25	3000	10	864
16	270	6.3x8	24	3100	10	864
16	270	6.3x11	20	3100	10	864
16	270	8x8	13	4300	10	864
16	270	8x11.5	13	5000	10	864
16	270	10x12.5	13	5000	10	864
16	330	6.3x9	25	3200	10	1056
16	330	6.3x10	18	3200	10	1056
16	330	6.3x11	18	3200	10	1056
16	330	8x7	13	4300	10	1056
16	330	8x8	13	4300	10	1056
16	330	10x12.5	10	6100	10	1056
16	470	5.5x10.5	24	4500	10	1504
16	470	6.3x11	18	4500	10	1504
16	470	8x8	18	5000	10	1504
16	470	8x11.5	11	5100	10	1504
16	470	10x9	18	5100	10	1504
16	470	10x12.5	10	6100	10	1504
16	560	6.3x10	18	4700	10	1792
16	560	8x8	18	4700	10	1792
16	560	10x10	15	5000	10	1792
16	680	8x11.5	11	5100	10	2176
16	680	10x10	15	5100	10	2176
16	680	10x12.5	10	6100	10	2176
16	820	8x11.5	11	5300	10	2624
16	820	10x9	18	5300	10	2624
16	820	10x12.5	10	6100	10	2624
16	1000	8x16	10	5950	10	3200
16	1000	10x11.5	10	6100	10	3200
16	1000	10x12.5	10	6100	10	3200
16	1500	8x20	12	6000	10	4800
16	1500	10x16	10	6700	10	4800
20	10	5x6	100	1700	10	280
20	33	6.3x8	35	2000	10	280
20	47	8x8	33	2100	10	280
20	68	6.3x8	35	2500	10	280
20	100	8x11.5	32	2750	10	400
20	150	10x12.5	28	2900	10	600
20	180	8x8	35	3100	10	720
20	330	8x11.5	32	3410	10	1320
20	390	8x11.5	32	3750	10	1560
20	470	8x11.5	32	4100	10	1880
20	560	10x12.5	28	4500	10	2240
20	680	8x16	32	4920	10	2720
20	680	10x11.5	28	4920	10	2720
20	820	8x16	32	5200	10	3280
20	1000	10x16	28	5700	10	4000

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Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
25	10	6.3x6	80	1650	10	280
25	22	5x8	100	1800	10	280
25	22	6.3x6	80	1800	10	280
25	22	6.3x8	45	1870	10	280
25	33	6.3x8	45	2000	10	280
25	33	8x8	40	2050	10	280
25	47	5x8	80	2050	10	280
25	47	6.3x6	80	2050	10	280
25	47	8x8	36	2100	10	280
25	56	8x8	36	2180	10	280
25	68	6.3x6	80	2260	10	340
25	100	6.3x8	45	2420	10	500
25	100	8x11.5	32	2750	10	500
25	100	10x12.5	28	2750	10	500
25	150	6.3x11	40	2620	10	750
25	150	10x12.5	28	2700	10	750
25	180	8x11.5	32	2730	10	900
25	180	10x12.5	28	2730	10	900
25	220	8x11.5	32	2750	10	1100
25	220	10x12.5	28	2750	10	1100
25	270	8x11.5	32	2750	10	1350
25	270	10x12.5	28	2750	10	1350
25	330	8x11.5	32	2750	10	1650
25	330	10x10	45	2700	10	1650
25	330	10x12.5	45	2700	10	1650
25	390	10x11.5	45	2950	10	1950
25	470	8x11	32	3200	10	2350
25	470	10x12	45	3200	10	2350
25	560	8x16	32	3700	10	2800
25	560	10x12.5	45	3700	10	2800
25	680	8x15.5	16	4700	10	3400
25	680	8x16	16	4700	10	3400
25	680	10x12.5	16	4700	10	3400
25	820	10x16	10	6100	10	4100
25	1000	10x16	10	6700	10	5000
35	10	6.3x8	100	1400	10	280
35	22	6.3x7	100	1450	10	280
35	22	8x8	80	1450	10	280
35	33	6.3x6	100	1470	10	280
35	33	8x8	80	1470	10	280
35	47	6.3x6	100	1550	10	329
35	47	8x8	80	1550	10	329
35	68	6.3x8	100	1700	10	476
35	68	8x8	80	1700	10	476
35	100	6.3x9	100	2000	10	700
35	100	8x8	80	2000	10	700
35	100	8x11.5	55	2000	10	700
35	100	8x12	60	2000	10	700

# CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Rated Voltage(V)	Cap(uF)	Case size	ESR(mΩ)(max) 100KHz to 300KHz at 20°C	Rated Ripple Current 100KHz (mA rms at 105°C)	Tangent of Loss Angle (% max)	Leakage Current (uA)(max) after 2 minutes
35	100	10x12.5	60	2000	10	700
35	120	10x12.5	60	2250	10	840
35	220	8x11.5	55	2500	10	1540
35	220	10x12.5	50	2500	10	1540
35	330	10x12.5	60	2750	10	2310
35	470	10x12	60	3025	10	3290
35	560	10x16	60	3320	10	3920