

# RLS

## +85°C Low Leakage Radial Lead Aluminum Electrolytic Capacitors



*For timing applications*

### FEATURES

- Alternative to Tantalum Capacitors
- Low Leakage Current
- Capacitance Range: .1  $\mu\text{F}$  to 1,000  $\mu\text{F}$
- Voltage Range: 10 WVDC to 50 WVDC
- Solvent Tolerant End Seals Standard

### SPECIFICATIONS

Capacitance Tolerance		$\pm 20\%$ at 120Hz, 25°C													
Operating Temperature Range		-40°C to +85°C													
Dissipation Factor 120Hz, 25°C	WVDC	10	16	25	35	50									
	$\tan \delta$	.2	.16	.14	.12	.10									
Impedance Ratio (Max.) 120Hz	WVDC	10	16	25	35	50									
	-25°C/25°C	3	2	2	2	2									
	-40°C/25°C	6	4	4	3	3									
Leakage Current	WVDC	$\leq 50$ WVDC													
	Time	2 minutes													
		.002CV or .4 $\mu\text{A}$ whichever is greater													
Load Life	2,000 hours, at 85°C with rated voltage														
	Capacitance change Dissipation factor Leakage current	$\leq 20\%$ of initial measured value $\leq 200\%$ of initial specified value $\leq$ initial specified value													
Shelf Life	1,000 hours at + 85°C with no voltage applied. Units will meet load life specification														
Ripple Current Multipliers		Frequency (Hz)						Temperature (°C)							
	Capacitance ( $\mu\text{F}$ )	50	120	400	1K	10K	100K	+85	+70	+60	+45				
	$C \leq 10$	0.8	1.0	1.3	1.45	1.65	1.7	1.0	1.3	1.5	1.8				
	$10 < C \leq 100$	0.8	1.0	1.23	1.36	1.48	1.53	1.0	1.3	1.5	1.8				
	$100 < C \leq 1000$	0.8	1.0	1.16	1.25	1.35	1.38	1.0	1.3	1.5	1.8				
	$C > 1000$	0.8	1.0	1.11	1.17	1.25	1.28	1.0	1.3	1.5	1.8				

### SPECIAL ORDER OPTIONS

(See pages 37 thru 41)

- Special tolerances:  $\pm 10\%$  (K), -10% + 30% (Q)
- Tape and Reel/Ammo Pack
- Cut, Formed, Cut and Formed, and Snap In Leads
- Epoxy end seal
- Polyester sleeve



**ILLINOIS CAPACITOR, INC.** 3757 W. Touhy Ave., Lincolnwood, IL 60712 • (847) 675-1760 • Fax (847) 673-2850 • www.illcap.com

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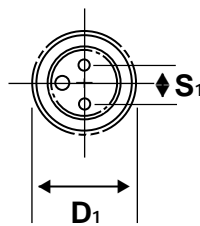
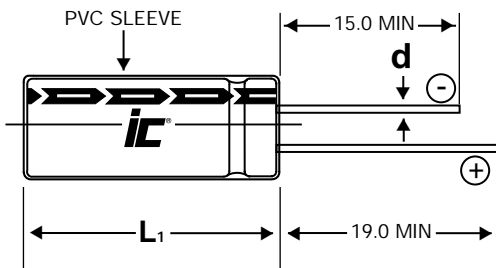
## PHYSICAL DIMENSIONS

WVDC (SV) (μF)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)
0.1					5x11
0.15					5x11
0.22					5x11
0.33					5x11
0.47					5x11
0.68					5x11
1					5x11
1.5					5x11
2.2					5x11
3.3					5x11
4.7					5x11
6.8					5x11
10				5x11	5x11
15				5x11	6.3x11
22		5x11	5x11	6.3x11	6.3x11
33		5x11		6.3x11	8x11.5
47	5x11	6.3x11	6.3x11		8x11.5
68		6.3x11		8x11.5	10x12.5
100	6.3x11	8x11.5	8x11.5	10x12.5	10x16
150		8x11.5	10x12.5	10x16	10x20
220	8x11.5	10x12.5	10x16	10x20	12.5x20
330	10x12.5	10x16	10x20	12.5x20	
470	10x16	10x20			
1000	12.5x20				

Convert to inches, divide by 25.4

DxL(mm)

Aluminum Electrolytic



D	5.0	6.3	8.0	10.0	12.5
S	2.0	2.5	3.5	5.0	5.0
d	0.5	0.5	0.6	0.6	0.6
B	0.5	0.5	0.5	0.5	0.8

D ≤ 8.0, L<sub>1</sub> = L + 1.0 Max.  
D > 8.0, L<sub>1</sub> = L + 1.5 Max.  
D<sub>1</sub> = D + B Max.  
S<sub>1</sub> = S ± 0.05mm Max.

NOTE: Case Vent is standard on all diameter ≥ 8.0mm

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## STANDARD PART LISTING

Capacitance (µF)	WVDC	ic <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +85°C	Dimensions DxL (mm)
0.1	50	104RLS050M	1657.86	6	5x11
0.15	50	154RLS050M	1105.243	7	5x11
0.22	50	224RLS050M	753.575	8	5x11
0.33	50	334RLS050M	502.383	9	5x11
0.47	50	474RLS050M	352.737	10	5x11
0.68	50	684RLS050M	243.804	10	5x11
1.0	50	105RLS050M	165.786	19	5x11
1.5	50	155RLS050M	110.524	28	5x11
2.2	50	225RLS050M	75.357	33	5x11
3.3	50	335RLS050M	50.238	38	5x11
4.7	50	475RLS050M	35.274	50	6.3x11
6.8	50	685RLS050M	24.380	63	5x11
10	35	106RLS035M	19.894	57	5x11
10	50	106RLS050M	16.579	80	5x11
15	35	156RLS035M	13.263	70	8x11
15	50	156RLS050M	11.052	110	6.3x11
22	16	226RLS016M	12.057	75	5x11
22	25	226RLS025M	10.550	81	5x11
22	35	226RLS035M	9.043	100	6.3x11
22	50	226RLS050M	7.536	140	6.3x11.5
33	16	336RLS016M	8.038	95	5x11
33	35	336RLS035M	6.029	120	6.3x11
33	50	336RLS050M	5.024	170	8x11.5
47	10	476RLS010M	7.055	105	5x11
47	16	476RLS016M	5.644	125	6.3x11
47	25	476RLS025M	4.938	136	6.3x11

- NOTE 1: WVDC: MAXIMUM RATED DC WORKING VOLTAGE AT +85°C.  
 NOTE 2: SVDC: MAXIMUM RATED DC SURGE VOLTAGE AT +85°C.  
 NOTE 3: DISSIPATION FACTOR (tan δ) MAXIMUM; 120 Hz, +25°C.  
 NOTE 4: ESR: MAXIMUM EQUIVALENT SERIES RESISTANCE; 120 Hz, +25°C MINIMUM CAPACITANCE, MAXIMUM DISSIPATION FACTOR.

Capacitance (µF)	WVDC	ic <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +85°C	Dimensions DxL (mm)
47	50	476RLS050M	3.527	230	8x11.5
68	16	686RLS016M	3.901	150	6.3x11
68	35	686RLS035M	2.926	200	8x11.5
68	50	686RLS050M	2.438	295	10x12.5
100	10	107RLS010M	3.316	160	6.3x11
100	16	107RLS016M	2.653	212	8x11.5
100	25	107RLS025M	2.321	220	8x11.5
100	35	107RLS035M	1.989	255	10x12.5
100	50	107RLS050M	1.658	400	10x16
150	16	157RLS016M	1.768	255	8x11.5
150	25	157RLS025M	1.547	265	10x12.5
150	35	157RLS035M	1.326	295	10x16
150	50	157RLS050M	1.105	450	10x20
220	10	227RLS010M	1.507	274	8x11.5
220	16	227RLS016M	1.206	322	10x12.5
220	25	227RLS025M	1.055	375	10x16
220	35	227RLS035M	0.904	442	10x20
220	50	227RLS050M	0.754	550	12.5x20
330	10	337RLS010M	1.005	355	10x12.5
330	16	337RLS016M	0.804	425	10x16
330	25	337RLS025M	0.703	500	10x20
330	35	337RLS035M	0.603	595	12.5x20
470	10	477RLS010M	0.705	460	10x16
470	16	477RLS016M	0.564	505	10x20
1000	10	108RLS010M	0.332	805	12.5x20

- NOTE 5: MAXIMUM LEAKAGE CURRENT; RATED WVDC, 2 MINUTES, +25°C.  
 NOTE 6: RMS RIPPLE CURRENT; 120 Hz, +85°C.  
 NOTE 7: CAPACITANCE TOLERANCE IS MEASURED AT 120 Hz, +25°C.  
 NOTE 8: ALL MEASUREMENTS ARE PERFORMED USING THE BRIDGE METHOD.