

LSR

+105°C High Frequency Low Impedance Radial Lead Aluminum Electrolytic Capacitors



For all applications including switching power supplies

FEATURES

- Highest reliability, up to 5,000 hours
- Low impedance
- Wide capacitance range: .47 μ F to 6,800 μ F
- Voltage range: 6.3 WVDC to 63 WVDC
- Solvent tolerant end seals standard

SPECIFICATIONS

Capacitance Tolerance		$\pm 20\%$ at 120Hz, 20°C									
Operating Temperature Range		-55°C to +105°C									
Dissipation Factor 120Hz, 20°C	WVDC	6.3	10	16	25	35	50	63			
	tan δ	.24	.20	.16	.14	.12	.10	.09			
Note: For above D.F. specifications, add .02 for every 1,000 μ F above 1,000 μ F											
Impedance Ratio (Max.) @120Hz	WVDC	6.3	10	16	25	35	50	63			
	-55/20°C	4	4	3	3	3	2	2			
Leakage Current	WVDC	≤ 63 WVDC									
	Time	1 minute					2 minutes				
		.03 CV or 4 μ A					.01 CV or 3 μ A				
whichever is greater											
Load Life	5,000 hours at 105°C with rated WVDC and rated ripple current (D \leq 6.3: 2000 hrs, D=8: 3000 hrs.)										
	Capacitance change Dissipation factor Leakage current					$< 20\%$ of initial measured values $< 200\%$ of initial specified value $<$ Initial specified value					
Shelf Life	1,000 hours at 105°C with no voltage applied. Units will meet load life specifications.										
Ripple Current Multipliers			Frequency(Hz)					Temperature(°C)			
	Capacitance (μ F)		60	120	300	1K	10K	+105°C	+85°C	+65°C	+45°C
	≤ 47		0.75	1.0	1.35	1.57	2.0	1.0	1.7	2.2	2.4
	100-470		0.8	1.0	1.23	1.34	1.5	1.0	1.7	2.2	2.4
1,000+		0.85	1.0	1.1	1.13	1.15	1.0	1.7	2.2	2.4	

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

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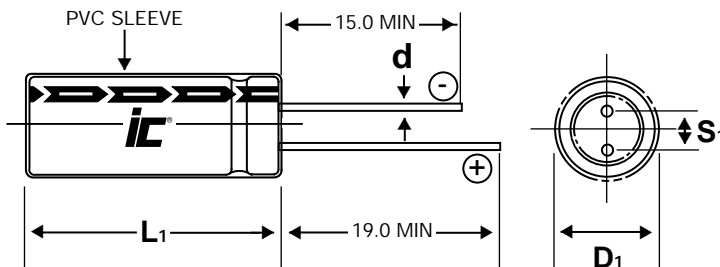
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PHYSICAL DIMENSIONS

WVDC (SV) (μF)	6.3 (8)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)
0.47						5x11	
1.0						5x11	
2.2						5x11	
3.3						5x11	
4.7						5x11	
6.8						5x11	
10							5x11
22					5x11		6.3x11
33				5x11		6.3x11	
47			5x11		6.3x11		8x11.5
68		5x11		6.3x11		8x11.5	10x12.5
100	5x11		6.3x11	6.3x15	8x11.5	10x15	10x20
150		6.3x11		8x11.5	10x12.5	10x20	10x25
220		6.3x11	8x11.5	10x12.5	10x15	10x25	12.5x20
330	6.3x11	8x11.5	10x12.5	10x15	10x20	10x31.5	12.5x25
470	8x11.5	10x12.5	10x15	10x20	10x31.5	12.5x25	16x25
680		10x15	10x20	10x31.5	12.5x25	16x20	16x31.5
1,000		10x20	10x31.5	12.5x25	12.5x31.5	16x31.5	16x35.5
1,500		10x31.5	12.5x25	12.5x31.5	12.5x40	16x40	
2,200	10x31.5	12.5x25	12.5x31.5	12.5x40	16x35.5	18x40	
3,300	12.5x25	12.5x35.5	12.5x40	16x35.5	18x40		
4,700	12.5x35.5	16x31.5	16x35.5	18x40			
6,800	16x31.5	16x35.5	18x35.5				
10,000	16x40						
15,000	18x40						

Convert to inches, divide by 25.4

DxL(mm)



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

D	5.0	6.3	8.0	10.0	12.5	16	18
S	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
B	0.5	0.5	0.5	0.5	0.8	0.5	0.5

(mm)

L ≤ 20, L₁ = L + 1.5mm Max.
L > 20, L₁ = L + 2.0mm Max.
D₁ = D + B Max.
D = 12.5 and L > 25, d = 0.8
S₁ = S ± 0.5 Max.

Aluminum Electrolytic

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STANDARD PART LISTING

Capacitance (µF)	WVDC	IC [®] PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Ripple Current +105°C (mA) 100kHz/120Hz	Impedance 100kHz Ω 20°C/-10°C	Dimensions D x L (mm)
0.47	50	474LSR050M	352.74	24 / 12	3.900 / 7.800	5x11
1.0	50	105LSR050M	165.79	38 / 19	3.500 / 7.000	5x11
2.2	50	225LSR050M	75.36	56 / 28	3.000 / 6.000	5x11
3.3	50	335LSR050M	50.24	70 / 35	2.600 / 5.200	5x11
4.7	50	475LSR050M	35.27	82 / 41	2.200 / 4.400	5x11
6.8	50	685LSR050M	24.38	92 / 46	1.800 / 3.600	5x11
10	63	106LSR063M	14.92	135 / 66	1.060 / 2.120	5x11
22	35	226LSR035M	9.04	160 / 83	0.750 / 1.500	5x11
22	63	226LSR063M	6.78	215 / 110	0.520 / 1.040	6.3x11
33	25	336LSR025M	7.03	85 / 150	0.800 / 1.600	5x11
33	50	336LSR050M	5.02	235 / 130	0.430 / 0.860	6.3x11
47	16	476LSR016M	5.64	155 / 93	0.800 / 1.600	5x11
47	35	476LSR035M	4.23	265 / 155	0.340 / 0.680	6.3x11
47	63	476LSR063M	3.17	365 / 215	0.250 / 0.500	8.0x11.5
68	10	686LSR010M	4.88	155 / 97	0.800 / 1.600	5x11
68	25	686LSR025M	3.41	260 / 160	0.360 / 0.720	6.3x11
68	50	686LSR050M	2.44	410 / 255	0.200 / 0.400	8x11.5
68	63	686LSR063M	2.19	500 / 315	0.190 / 0.380	10x12.5
100	6.3	107LSR6R3M	3.98	150 / 100	0.850 / 1.700	5x11
100	16	107LSR016M	2.65	265 / 175	0.350 / 0.700	6.3x11
100	25	107LSR025M	2.32	380 / 250	0.240 / 0.480	6.3x15
100	35	107LSR035M	1.99	465 / 305	0.160 / 0.320	8x11.5
100	50	107LSR050M	1.66	565 / 370	0.160 / 0.320	10x15
100	63	107LSR063M	1.49	750 / 495	0.120 / 0.240	10x20
150	10	157LSR010M	2.21	260 / 180	0.350 / 0.700	6.3x11
150	25	157LSR025M	1.55	455 / 315	0.160 / 0.320	8x11.5
150	35	157LSR035M	1.33	625 / 435	0.120 / 0.240	10x12.5
150	50	157LSR050M	1.11	810 / 565	0.100 / 0.200	10x20
150	63	157LSR063M	0.99	950 / 660	0.090 / 0.180	10x25
220	10	227LSR010M	1.51	290 / 209	0.560 / 1.120	6.3x11
220	16	227LSR016M	1.21	460 / 335	0.160 / 0.320	8x11.5
220	25	227LSR025M	1.06	600 / 435	0.130 / 0.260	10x12.5
220	35	227LSR035M	0.90	760 / 550	0.090 / 0.180	10x15
220	50	227LSR050M	0.75	1030 / 745	0.075 / 0.150	10x25
220	63	227LSR063M	0.68	1100 / 800	0.072 / 0.144	12.5x20
330	6.3	337LSR6R3M	1.21	295 / 245	0.056 / 1.120	6.3x11
330	10	337LSR010M	1.00	460 / 350	0.160 / 0.320	8x11.5
330	16	337LSR016M	0.80	625 / 480	0.120 / 0.240	10x12.5
330	25	337LSR025M	0.70	745 / 570	0.095 / 0.190	10x15
330	35	337LSR035M	0.60	1030 / 790	0.060 / 0.120	10x20
330	50	337LSR050M	0.50	1240 / 950	0.055 / 0.110	10x31.5
330	63	337LSR063M	0.45	1420 / 1090	0.049 / 0.098	12.5x25
470	6.3	477LSR6R3M	0.85	500 / 415	0.290 / 0.580	8x11.5

- NOTE 1:** WVDC: MAXIMUM RATED DC WORKING VOLTAGE AT +105°C.
NOTE 2: SVDC: MAXIMUM RATED DC SURGE VOLTAGE AT +105°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 [®] PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Ripple Current +105°C (mA) 100kHz/120Hz	Impedance 100kHz Ω 20°C/-10°C	Dimensions D x L (mm)
470	10	477LSR010M	0.71	590 / 470	0.130 / 0.260	10x12.5
470	16	477LSR016M	0.56	760 / 605	0.090 / 0.180	10x15
470	25	477LSR025M	0.49	1010 / 800	0.065 / 0.130	10x20
470	35	477LSR035M	0.42	1420 / 1130	0.046 / 0.092	10x31.5
470	50	477LSR050M	0.35	1490 / 1190	0.044 / 0.088	12.5x25
470	63	477LSR063M	0.32	1640 / 1310	0.042 / 0.084	16x25
680	10	687LSR010M	0.49	775 / 640	0.090 / 0.180	10x15
680	16	687LSR016M	0.39	1030 / 850	0.065 / 0.130	10x20
680	25	687LSR025M	0.34	1380 / 1140	0.046 / 0.092	10x31.5
680	35	687LSR035M	0.29	1610 / 1330	0.035 / 0.072	12.5x25
680	50	687LSR050M	0.24	1630 / 1350	0.040 / 0.080	16x20
680	63	687LSR063M	0.22	2050 / 1700	0.032 / 0.064	16x31.5
1,000	10	108LSR010M	0.33	1060 / 915	0.060 / 0.120	10x20
1,000	16	108LSR016M	0.27	1400 / 1210	0.047 / 0.094	10x31.5
1,000	25	108LSR025M	0.23	1640 / 1420	0.036 / 0.072	12.5x25
1,000	35	108LSR035M	0.20	1970 / 1710	0.029 / 0.058	12.5x31.5
1,000	50	108LSR050M	0.17	2180 / 1890	0.030 / 0.060	16x31.5
1,000	63	108LSR063M	0.15	2360 / 2050	0.027 / 0.054	16x35.5
1,500	10	158LSR010M	0.24	1440 / 1290	0.045 / 0.090	10x31.5
1,500	16	158LSR016M	0.20	1620 / 1450	0.036 / 0.072	12.5x25
1,500	25	158LSR025M	0.18	1960 / 1760	0.029 / 0.058	12.5x31.5
1,500	35	158LSR035M	0.15	2360 / 2120	0.024 / 0.048	12.5x40
1,500	50	158LSR050M	0.13	2400 / 2160	0.026 / 0.052	16x40
2,200	6.3	228LSR6R3M	0.21	1470 / 1320	0.043 / 0.086	10x31.5
2,200	10	228LSR010M	0.18	1710 / 1530	0.034 / 0.068	12.5x25
2,200	16	228LSR016M	0.15	2010 / 1800	0.028 / 0.056	12.5x31.5
2,200	25	228LSR025M	0.14	2360 / 2120	0.024 / 0.048	12.5x40
2,200	35	228LSR035M	0.12	2700 / 2430	0.020 / 0.040	16x35.5
2,200	50	228LSR050M	0.11	2560 / 2300	0.024 / 0.048	18x40
3,300	6.3	338LSR6R3M	0.15	1690 / 1520	0.034 / 0.068	12.5x25
3,300	10	338LSR010M	0.13	2140 / 1920	0.026 / 0.052	12.5x35.5
3,300	16	338LSR016M	0.12	2390 / 2150	0.023 / 0.046	12.5x40
3,300	25	338LSR025M	0.10	2610 / 2340	0.020 / 0.040	16x35.5
3,300	35	338LSR035M	0.09	3040 / 2730	0.017 / 0.034	18x40
4,700	6.3	478LSR6R3M	0.12	2100 / 1890	0.028 / 0.056	12.5x35.5
4,700	10	478LSR010M	0.11	2440 / 2190	0.023 / 0.046	16x31.5
4,700	16	478LSR016M	0.09	2650 / 2380	0.020 / 0.040	16x35.5
4,700	25	478LSR025M	0.08	2960 / 2660	0.018 / 0.036	16x40
6,800	6.3	688LSR6R3M	0.09	2370 / 2130	0.024 / 0.048	16x31.5
6,800	10	688LSR010M	0.08	2690 / 2420	0.020 / 0.040	16x35.5
6,800	16	688LSR016M	0.08	2890 / 2600	0.018 / 0.036	18x35.5
10,000	6.3	109LSR6R3M	0.07	2750 / 2470	0.020 / 0.040	16x40
15,000	6.3	159LSR6R3M	0.05	2960 / 2660	0.018 / 0.036	18x40

- NOTE 5:** MAXIMUM LEAKAGE CURRENT; RATED WVDC, 1 MINUTE, +25°C.
NOTE 6: RMS RIPPLE CURRENT; 120Hz, +105°C
NOTE 7: CAPACITANCE TOLERANCE IS MEASURED AT 120 Hz, +25°C.
NOTE 8: ALL MEASUREMENTS ARE PERFORMED USING THE BRIDGE METHOD.