

# RZM

## +105°C High Frequency Radial Lead Aluminum Electrolytic Capacitors



For All Applications Including Switching Power Supplies

### FEATURES

- Up to 3,000 Hrs. of Load Life at +105°C and at Full Rated Voltage and Ripple Current
- Low Impedance
- Low ESR
- Capacitance Range: .47  $\mu$ F to 15,000  $\mu$ F
- Voltage Range: 6.3 WVDC to 50 WVDC
- 100 kHz Operating Frequency Range
- 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								
	$\tan \delta$	.26	.22	.18	.16	.14	.12								
Note: For above D.F. specifications, add .02 for every 1,000 $\mu$ F above 1,000 $\mu$ F															
Impedance Ratio (Max.) @120Hz	WVDC	6.3	10	16	25	35	50								
	-55°C/20°C	6	6	4	4	4	3								
Leakage Current	WVDC	$\leq 50$ WVDC													
	Time	1 minute													
		.03 CV													
Load Life	2,000 hours at +105°C with rated voltage and with ripple current, Case dia.(5.0, 6.3) 3,000 hours at +105°C with rated voltage and with ripple current, Case dia.(8.0 and larger)														
	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 +105°C with no voltage applied. Units will meet load life specifications														
Ripple Current Multipliers	Frequency (Hz)						Temperature(°C)								
	Capacitance ( $\mu$ F)	50	120	300	1K	10K	100K	+105	+85	+65	+50				
	$\leq 4.7$	.30	.43	.54	.70	.83	1.0	1.0	1.73	2.19	2.4				
	$4.7 < C \leq 33$	.38	.51	.62	.76	.87	1.0	1.0	1.73	2.19	2.4				
	$33 < C \leq 100$	.48	.60	.71	.85	.90	1.0	1.0	1.73	2.19	2.4				
	$100 < C \leq 270$	.60	.72	.80	.91	.95	1.0	1.0	1.73	2.19	2.4				
	$270 < C \leq 1000$	.68	.83	.90	.96	1.0	1.0	1.0	1.73	2.19	2.4				
$C > 1000$	.82	.91	.98	.98	1.0	1.0	1.0	1.73	2.19	2.4					

Aluminum Electrolytic

### SPECIAL ORDER OPTIONS

(See pages 33 thru 37)

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



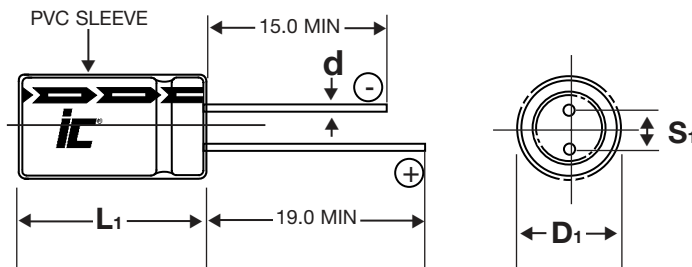
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## PHYSICAL DIMENSIONS

WVDC (μF) (SV)	6.3 (7.9)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)
0.47						5x11
0.68						5x11
1.0						5x11
1.5						5x11
2.2						5x11
3.3						5x11
4.7						5x11
6.8						5x11
10						5x11
15						5x11
22	→	5x11	5x11			5x11
33					→	5x11
47				→		6.3x11
68		→	5x11	6.3x11	→	8x11.5
100	→	5x11	→	6.3x11	→	8x11.5
150	→	6.3x11	6.3x15	8x11.5	8x15, 10x12.5	10x16
220	→	6.3x11	→	8x11.5	10x12.5	10x16
330	6.3x11	→	8x11.5	10x12.5	10x16	10x20, 16x15
470	→	8x11.5	10x12.5	10x16	10x20, 16x15	12.5x20, 18x15
680	10x12.5	10x16	10x16	12.5x20, 16x15	18x15, 12.5x20	12.5x25, 16x20
1,000	10x12.5	10x16	10x20, 16x15	12.5x20, 18x15	12.5x25, 16x20	16x25
1,500	10x20, 12.5x15	12.5x20, 16x15	18x15, 12.5x20	12.5x25, 16x20	12.5x40, 16x25, 18x20	16x40, 18x31.5
2,200	10x20, 12.5x20, 16x15	12.5x20, 18x15	12.5x25, 16x20	16x25, 18x20	16x31.5	18x35.5
3,300	12.5x20, 18x15	12.5x25, 16x20	12.5x40, 16x25, 18x20	16x31.5	18x35.5	
4,700	16x25, 18x20	16x25	16x31.5	18x35.5	18x40	
6,800	16x25	16x31.5	18x35.5			
10,000	16x31.5	18x35.5	18x40			
15,000	18x35.5	18x40				

Convert to inches, divide by 25.4

DxL(mm)



### LEAD INFORMATION V.S. CASE DIAMETER

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

L ≤ 16, L<sub>1</sub> = L + 1.5 mm Max. L > 16, L<sub>1</sub> = L + 2.0 mm Max.  
D<sub>1</sub> = D + B Max. S<sub>1</sub> = S ± 0.5 mm Max.  
D = 12.5 and L > 25 d = 0.8 mm

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

## STANDARD PART LISTING

Capacitance (µF)	WVDC	IC <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Maximum RMS Ripple Current (mA) +105°C 100kHz	Impedance Ω 100kHz 20°C/-10°C	Dimensions DxL (mm)
0.47	50	474RZM050M	423.284	20	6.5 / 19.5	5x11
0.68	50	684RZM050M	292.564	30	5.5 / 16.5	5x11
1.0	50	105RZM050M	198.944	40	4.5/13.5	5x11
1.5	50	155RZM050M	132.629	40	4.5/13.5	5x11
2.2	50	225RZM050M	90.529	50	3.9/11.7	5x11
3.3	50	335RZM050M	60.286	65	3.38/10.14	5x11
4.7	50	475RZM050M	42.328	65	3/9	5x11
6.8	50	685RZM050M	29.256	70	2.6/7.8	5x11
10	50	106RZM050M	19.894	80	1.82/5.46	5x11
15	50	156RZM050M	13.263	80	1.75/5.25	5x11
22	10	226RZM010M	16.579	180	.78/2.4	5x11
22	16	226RZM016M	13.564	180	.78/2.4	5x11
22	50	226RZM050M	9.043	150	1.6/4.8	5x11
33	35	336RZM035M	7.033	100	.8/2.4	5x11
33	50	336RZM050M	6.029	200	.56/1.68	6.3x11
47	25	476RZM025M	5.644	150	.78/2.34	5x11
47	50	476RZM050M	4.233	210	.56/1.68	6.3x11
68	16	686RZM016M	4.389	150	.65/1.95	5x11
68	25	686RZM025M	3.901	200	.6/1.8	6.3x11
68	50	686RZM050M	2.926	300	.5/1.5	8x11.5
100	10	107RZM010M	3.647	100	0.8/2.4	5x11
100	25	107RZM025M	2.653	230	.4/1.2	6.3x11
100	50	107RZM050M	1.989	325	.35/1.05	8x11.5
150	10	157RZM010M	2.432	230	.33/99	6.3x11
150	16	157RZM016M	1.989	260	0.45/1.34	6.3x15
150	25	157RZM025M	1.768	395	.2/6	8x11.5
150	35	157RZM035M815	1.547	405	.3/9	8x15
150	35	157RZM035M1013	1.547	435	0.2/0.6	10x12.5
150	50	157RZM050M	1.326	525	0.22/0.66	10x16
220	10	227RZM010M	1.658	250	.33/99	6.3x11
220	25	227RZM025M	1.206	395	.25/75	8x11.5
220	35	227RZM035M1013	1.055	535	.22/66	10x12.5
220	50	227RZM050M	0.904	600	.18/54	10x16
330	6.3	337RZM6R3M	1.306	250	.33/99	6.3x11
330	16	337RZM016M	0.904	395	.18/54	8x11.5
330	25	337RZM025M1013	0.804	535	.12/36	10x12.5
330	35	337RZM035M	0.703	725	.092/276	10x16
330	50	337RZM050M1020	0.603	750	.14/42	10x20
330	50	337RZM050M1615	0.603	850	.19/57	16x15
470	10	477RZM010M	0.776	395	.25/75	8x11.5

Capacitance (µF)	WVDC	IC <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Maximum RMS Ripple Current (mA) +105°C 100kHz	Impedance Ω 100kHz 20°C/-10°C	Dimensions DxL (mm)
470	16	477RZM016M1013	0.635	535	.15/45	10x12.5
470	25	477RZM025M	0.564	725	.091/273	10x16
470	35	477RZM035M1020	0.494	1000	.07/21	10x20
470	35	477RZM035M1615	0.494	900	0.11/33	16x15
470	50	477RZM050M1320	0.423	1100	.11/33	12.5x20
470	50	477RZM050M1815	0.423	1000	.16/48	18x15
680	6.3	687RZM6R3M1013	0.634	535	.12/36	10x12.5
680	10	687RZM010M1016	0.536	725	.12/36	10x16
680	16	687RZM016M	0.439	725	.091/273	10x16
680	25	687RZM025M1320	0.390	950	.075/225	12.5x20
680	25	687RZM025M1615	0.390	1000	0.11/33	16x15
680	35	687RZM035M1320	0.341	1150	.065/195	12.5x20
680	35	687RZM035M1815	0.341	1100	.08/24	18x15
680	50	687RZM050M1325	0.293	1150	.85/255	12.5x25
680	50	687RZM050M1620	0.293	1200	.08/24	16x20
1,000	6.3	108RZM6R3M	0.431	535	0.13/0.39	10x12.5
1,000	10	108RZM010M	0.365	725	0.13/0.39	10x16
1,000	16	108RZM016M1020	0.298	900	0.07/21	10x20
1,000	16	108RZM016M1615	0.298	1000	0.11/0.33	16x15
1,000	25	108RZM025M1320	0.265	1150	0.07/0.21	12.5x20
1,000	25	108RZM025M1815	0.265	1100	.08/24	18x15
1,000	35	108RZM035M1325	0.232	1300	0.05/0.15	12.5x25
1,000	35	108RZM035M1620	0.232	1350	.075/225	16x20
1,000	50	108RZM050M	0.199	1350	.06/18	16x25
1,500	6.3	158RZM6R3M1020	0.310	900	.07/21	10x20
1,500	6.3	158RZM6R3M1315	0.310	970	0.1/0.3	12.5x15
1,500	10	158RZM010M1320	0.265	1150	0.90/27	12.5x20
1,500	10	158RZM010M1615	0.265	1000	.11/33	16x15
1,500	16	158RZM016M1320	0.221	1150	.065/195	12.5x20
1,500	16	158RZM016M1815	0.199	1100	.08/24	18x15
1,500	25	158RZM025M1325	0.199	1300	.073/219	12.5x25
1,500	25	158RZM025M1620	0.199	1350	.038/114	16x20
1,500	35	158RZM035M1340	0.155	1800	.048/144	12.5x40
1,500	35	158RZM035M1625	0.177	1570	.033/0.99	16x25
1,500	35	158RZM035M1820	0.177	1500	.061/183	18x20
1,500	50	158RZM050M1640	0.133	2050	0.049/0.147	16x40
1,500	50	158RZM050M1832	0.155	2000	.046/138	18x31.5
2,200	6.3	228RZM6R3M1030	0.226	1100	.095/285	10x30
2,200	6.3	228RZM6R3M1320	0.226	1150	.065/195	12.5x20
2,200	6.3	228RZM6R3M1615	0.196	1100	.11/33	16x15

## STANDARD PART LISTING

Capacitance (µF)	WVDC	IC <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Maximum RMS Ripple Current (mA) +105°C 100kHz	Impedance Ω 100kHz 20°C/-10°C	Dimensions DxL (mm)
2,200	10	228RZM010M1320	0.196	1150	.07/.21	12.5x20
2,200	10	228RZM010M1815	0.196	1100	.08/.24	18x15
2,200	16	228RZM016M1325	0.166	1300	.05/.15	12.5x25
2,200	16	228RZM016M1620	0.166	1350	.075/.225	16x20
2,200	25	228RZM025M1625	0.151	1570	.035/.105	16x25
2,200	25	228RZM025M1820	0.151	1500	.061/.183	18x20
2,200	35	228RZM035M	0.136	1850	.028/.084	16x31.5
2,200	50	228RZM050M	0.121	2100	.045/.135	18x35.5
3,300	6.3	338RZM6R3M1320	0.161	1150	.065/.195	12.5x20
3,300	6.3	338RZM6R3M1815	0.161	1100	.08/.24	18x15
3,300	10	338RZM010M1325	0.141	1300	.038/.114	12.5x25
3,300	10	338RZM010M1620	0.141	1350	.075/.225	16x20
3,300	16	338RZM016M1340	0.121	1600	.048/.144	12.5x40
3,300	16	338RZM016M1625	0.121	1570	.033/.099	16x25
3,300	16	338RZM016M1820	0.121	1500	.061/.183	18x20
3,300	25	338RZM025M	0.111	1850	.028/.084	16x31.5

Capacitance (µF)	WVDC	IC <sup>®</sup> PART NUMBER	Maximum ESR Ω 120Hz, +20°C	Maximum RMS Ripple Current (mA) +105°C 100kHz	Impedance Ω 100kHz 20°C/-10°C	Dimensions DxL (mm)
3,300	35	338RZM035M	0.101	2200	.026/.078	18x35.5
4,700	6.3	478RZM6R3M1625	0.120	1500	.033/.099	16x25
4,700	6.3	478RZM6R3M1820	0.120	1550	.061/.183	18x20
4,700	10	478RZM010M	0.106	1570	.033/.099	16x25
4,700	16	478RZM016M	0.092	1850	.028/0.074	16x31.5
4,700	25	478RZM025M	0.085	2200	.028/.078	18x35.5
4,700	35	478RZM035M	0.078	2400	.023/.069	18x40
6,800	6.3	688RZM6R3M	0.093	1570	.033/.099	16x25
6,800	10	688RZM010M	0.083	1850	.028/.084	16x31.5
6,800	16	688RZM016M	0.073	2200	.026/.078	18x35.5
10,000	6.3	109RZM6R3M	0.073	1850	0.029/0.087	16x31.5
10,000	10	109RZM010M	0.066	2200	0.025/0.075	18x35.5
10,000	16	109RZM016M	0.060	2460	0.024/0.072	18x40
15,000	6.3	159RZM6R3M	0.053	2200	0.026/0.078	18x35.5
15,000	10	159RZM010M	0.055	2460	0.023/0.069	18x40