

Features

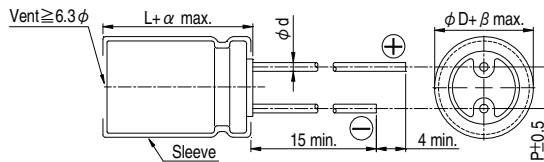
- 105°C, 4,000 ~ 10,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHs compliance



Specifications

Items	Performance																																			
Category Temperature Range	-55°C ~ +105°C																																			
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																																			
Leakage Current (at 20°C)	I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF, V = rated DC working voltage in V																																			
Tanδ (at 120 Hz, 20°C)	<table border="1"> <tr> <td>Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Tanδ (max)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> </tr> </table> <p>When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	Tanδ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09																			
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Low Temperature Characteristics (at 120 Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <tr> <td>Rated Voltage</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Impedance Ratio</td> <td>Z(-55°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated Voltage	6.3	10	16	25	35	50	63	Impedance Ratio	Z(-55°C)/Z(+20°C)	3	3	3	3	3	3																			
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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <td></td> <td colspan="4">Freq.(Hz)</td> </tr> <tr> <td>Cap.(μF)</td> <td>120</td> <td>1k</td> <td>10k</td> <td>100k up</td> </tr> <tr> <td>≤ ~ 33</td> <td>0.42</td> <td>0.70</td> <td>0.90</td> <td>1.0</td> </tr> <tr> <td>39 ~ 270</td> <td>0.50</td> <td>0.73</td> <td>0.92</td> <td>1.0</td> </tr> <tr> <td>330 ~ 680</td> <td>0.55</td> <td>0.77</td> <td>0.94</td> <td>1.0</td> </tr> <tr> <td>820 ~ 1,800</td> <td>0.6</td> <td>0.80</td> <td>0.96</td> <td>1.0</td> </tr> <tr> <td>2,200 ~ 18,000</td> <td>0.7</td> <td>0.85</td> <td>0.98</td> <td>1.0</td> </tr> </table>		Freq.(Hz)				Cap.(μF)	120	1k	10k	100k up	≤ ~ 33	0.42	0.70	0.90	1.0	39 ~ 270	0.50	0.73	0.92	1.0	330 ~ 680	0.55	0.77	0.94	1.0	820 ~ 1,800	0.6	0.80	0.96	1.0	2,200 ~ 18,000	0.7	0.85	0.98	1.0
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Diagram of Dimensions

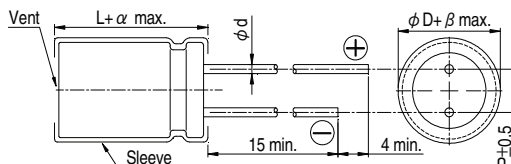


Lead Spacing and Diameter

Unit: mm

φD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.5		0.6			0.8	
α	L<20: 1.5, L≥20: 2.0						
β	0.5						

The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:



Dimension: $\phi D \times L$ (mm)
 Impedance: Ω / at 100k Hz
 Ripple Current: mA/rms at 105°C

Dimension and Permissible Ripple Current

Rated Volt. (V _{DC})	6.3V (0J)				10V (1A)				16V (1C)				25V (1E)			
	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C) 100k Hz	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C) 100k Hz	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C) 100k Hz	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C) 100k Hz
		20°C	-10°C			20°C	-10°C			20°C	-10°C			20°C	-10°C	
47													5×11	0.58	1.16	210
56									5×11	0.58	1.16	210				
100					5×11	0.58	1.16	210					6.3×11	0.22	0.44	340
120									6.3×11	0.22	0.44	340				
150	5×11	0.58	1.16	210												
220					6.3×11	0.22	0.44	340								
330	6.3×11	0.22	0.44	340					8×11.5	0.11	0.22	640	8×11.5	0.11	0.22	640
470					8×11.5	0.11	0.22	640	8×15	0.083	0.166	840	8×15	0.083	0.166	840
680	8×11.5	0.11	0.22	640	8×15	0.083	0.166	840	10×12.5	0.080	0.160	865	10×12.5	0.080	0.160	865
820	10×12.5	0.080	0.16	865	10×12.5	0.080	0.160	865	8×20	0.064	0.128	1,050	8×20	0.064	0.128	1,050
1,000	8×15	0.087	0.174	840	10×16	0.060	0.120	1,210	10×16	0.060	0.120	1,210	10×20	0.046	0.092	1,400
1,200	8×20	0.069	0.128	1,050	10×20	0.046	0.092	1,400	12.5×16	0.049	0.098	1,450	12.5×16	0.049	0.098	1,450
1,500	10×20	0.046	0.092	1,400	10×20	0.046	0.092	1,400	10×25	0.042	0.084	1,650	10×25	0.042	0.084	1,650
1,800	12.5×16	0.045	0.090	1,450					12.5×25	0.031	0.062	1,910	12.5×25	0.031	0.062	1,910
2,200	10×25	0.042	0.084	1,650	12.5×20	0.035	0.070	1,900	16×16	0.042	0.084	1,940	12.5×30	0.024	0.048	2,650
2,700	10×30	0.031	0.062	1,910	16×16	0.042	0.084	1,940	18×16	0.043	0.086	2,210	16×20	0.027	0.054	2,530
3,300	12.5×20	0.035	0.070	1,900	18×16	0.043	0.086	2,210	12.5×30	0.024	0.048	2,650	16×25	0.021	0.042	2,930
3,900	12.5×25	0.027	0.054	2,230	12.5×30	0.024	0.048	2,650	16×20	0.027	0.054	2,530	16×30	0.017	0.034	3,450
4,700	12.5×30	0.024	0.048	2,650	16×20	0.027	0.054	2,530	18×20	0.026	0.052	2,860	18×25	0.019	0.038	3,140
5,600	12.5×35	0.020	0.040	2,880	16×25	0.021	0.042	2,930	16×31.5	0.017	0.034	3,450	16×35.5	0.015	0.030	3,610
6,800	16×25	0.021	0.042	2,930	18×20	0.026	0.052	2,860	18×25	0.019	0.038	3,140	18×31.5	0.015	0.030	3,610
8,200	16×31.5	0.017	0.034	3,450	16×31.5	0.017	0.034	3,450	18×31.5	0.015	0.030	3,610	18×35.5	0.014	0.028	4,220
10,000	16×35.5	0.015	0.030	3,610	18×31.5	0.015	0.030	3,610	18×35.5	0.014	0.028	4,220				
12,000	18×25	0.019	0.038	3,140	18×35.5	0.014	0.028	4,220								
15,000	18×35.5	0.014	0.028	4,220												
18,000	18×40	0.012	0.024	4,280												

Dimension: $\phi D \times L$ (mm)
 Impedance: Ω / at 100k Hz
 Ripple Current: mA/rms at 105°C

Dimension and Permissible Ripple Current

Rated Volt. (Vdc) Contents Cap. (μ F)	35V (1V)				50V (1H)				63V (1J)			
	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C)	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C)	$\phi D \times L$	Impedance (Ω , max./100kHz)		Ripple Current (mA/rms, 105°C)
		20°C	-10°C	100k Hz		20°C	-10°C	100k Hz		20°C	-10°C	100k Hz
3.3					5x11	2.9	5.8	53				
4.7					5x11	2.5	5.0	95				
10					5x11	2.0	4.0	130				
15									5x11	1.2	2.4	165
22					5x11	0.91	1.82	180				
33	5x11	0.58	1.16	210					6.3x11	0.49	0.98	265
56	6.3x11	0.22	0.44	340	6.3x11	0.39	0.78	295	8x11.5	0.31	0.62	500
82									8x15 10x12.5	0.22 0.15	0.44 0.30	665 690
100					8x11.5	0.22	0.44	555				
120					8x15	0.190	0.38	730	8x20 10x16	0.17 0.11	0.34 0.22	820 950
150	8x11.5	0.11	0.22	640	10x12.5	0.160	0.32	760				
180					8x20	0.17	0.34	880	10x20 12.5x16	0.078 0.101	0.156 0.202	1,150 1,150
220	8x15 10x12.5	0.083 0.080	0.166 0.160	840 865	10x16	0.110	0.22	1,050	10x25	0.064	0.128	1,350
270	8x20	0.064	0.128	1,050	10x20 12.5x16	0.078 0.079	0.156 0.158	1,220 1,260	12.5x20	0.057	0.114	1,500
330	10x16	0.060	0.120	1,210	10x25	0.072	0.144	1,440				
390									12.5x25	0.043	0.086	1,900
470	10x20 12.5x16	0.046 0.049	0.092 0.098	1,400 1,450	10x30 12.5x20 16x16	0.056 0.059 0.072	0.112 0.118 0.114	1,690 1,660 1,690	12.5x30 16x20	0.039 0.045	0.078 0.090	2,300 2,000
560	10x25	0.042	0.084	1,650	12.5x25 18x16	0.044 0.070	0.088 0.140	1,950 1,930	12.5x35	0.034	0.068	2,500
680	10x30 12.5x20 16x16	0.031 0.035 0.042	0.062 0.070 0.084	1,910 1,900 1,940	12.5x30	0.039	0.078	2,310	12.5x40 16x25 18x20	0.029 0.035 0.042	0.058 0.070 0.084	2,800 2,600 2,500
820					12.5x35 16x20	0.033 0.044	0.066 0.088	2,510 2,210	16x31.5 18x25	0.029 0.034	0.058 0.068	2,850 2,800
1,000	12.5x25 18x16	0.027 0.043	0.054 0.086	2,230 2,210	12.5x40 16x25 18x20	0.027 0.033 0.047	0.054 0.066 0.094	2,920 2,555 2,490	16x35.5	0.027	0.054	2,900
1,200	12.5x30 16x20	0.024 0.027	0.048 0.054	2,650 2,530	16x31.5 18x25	0.027 0.028	0.054 0.056	3,010 2,740	16x40 18x31.5	0.025 0.028	0.050 0.056	3,400 3,300
1,500	12.5x35	0.020	0.040	2,880	16x35.5	0.024	0.048	3,150	18x35.5	0.025	0.050	3,400
1,800	12.5x40 16x25 18x20	0.017 0.021 0.026	0.034 0.042 0.052	3,350 2,930 2,860	16x40 18x31.5	0.021 0.024	0.042 0.048	3,710 3,635	18x40	0.024	0.048	3,500
2,200	16x31.5 18x25	0.017 0.019	0.034 0.038	3,450 3,140	18x35.5	0.022	0.044	3,680				
2,700	16x35.5 18x31.5	0.015 0.015	0.030 0.030	3,610 4,170	18x40	0.018	0.036	3,800				
3,300	16x40 18x35.5	0.013 0.014	0.026 0.028	4,080 4,220								
3,900	18x40	0.012	0.024	4,280								

Part Numbering System

RZW Series 470 μ F \pm 20% 16V Bulk Package Gas Type 8 ϕ x15L

RZW **471** **M** **1C** **BK** **-** **0815** **XX**
 Series Name Capacitance Capacitance Tolerance Rated Voltage Lead Configuration and Package Rubber Type Case Size

S = Standard
KS = AEC-Q200 Qualified, Safety Critical Application
LS = AEC-Q200 Qualified, Non-Safety Critical Application