



RXK Series

Features

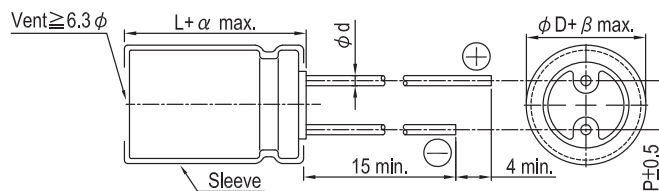
- 105°C, 2,000 ~ 5,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHS compliance



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><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> When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.								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																			
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																																				
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below. <table><tr><td colspan="2">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>4</td><td>4</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)	4	4	3	3	3	3	3																	
Rated Voltage		6.3	10	16	25	35	50	63																																			
Impedance Ratio	Z(-55°C)/Z(+20°C)	4	4	3	3	3	3	3																																			
Endurance	<table><tr><td>Test Time</td><td>2,000 Hrs for ϕ D ≤ 6.3 mm; 3,000 Hrs for ϕ D = 8 mm; 4,000 Hrs for ϕ D = 10 mm; 5,000 Hrs for ϕ D ≥ 12.5 mm</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Tanδ</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 ~ 5,000 hours at 105°C.								Test Time	2,000 Hrs for ϕ D ≤ 6.3 mm; 3,000 Hrs for ϕ D = 8 mm; 4,000 Hrs for ϕ D = 10 mm; 5,000 Hrs for ϕ D ≥ 12.5 mm	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																											
Test Time	2,000 Hrs for ϕ D ≤ 6.3 mm; 3,000 Hrs for ϕ D = 8 mm; 4,000 Hrs for ϕ D = 10 mm; 5,000 Hrs for ϕ D ≥ 12.5 mm																																										
Capacitance Change	Within ±20% of initial value																																										
Tanδ	Less than 200% of specified value																																										
Leakage Current	Within specified value																																										
Shelf Life Test	<table><tr><td>Test Time</td><td>1,000 Hrs</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Tanδ</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.								Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																											
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Capacitance Change	Within ±20% of initial value																																										
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Leakage Current	Within specified value																																										
Ripple Current and Frequency Multipliers	<table><tr><th>Freq.(Hz) Cap.(μF)</th><th>60 (50)</th><th>120</th><th>500</th><th>1k</th><th>10k</th><th>100k</th></tr><tr><td>≤ 33</td><td>0.40</td><td>0.55</td><td>0.65</td><td>0.80</td><td>0.90</td><td>1.00</td></tr><tr><td>39 ~ 330</td><td>0.60</td><td>0.70</td><td>0.80</td><td>0.90</td><td>0.95</td><td>1.00</td></tr><tr><td>390 ~ 1,000</td><td>0.65</td><td>0.80</td><td>0.85</td><td>0.98</td><td>1.00</td><td>1.00</td></tr><tr><td>1,200 ≤</td><td>0.80</td><td>0.90</td><td>0.95</td><td>0.98</td><td>1.00</td><td>1.00</td></tr></table>								Freq.(Hz) Cap.(μF)	60 (50)	120	500	1k	10k	100k	≤ 33	0.40	0.55	0.65	0.80	0.90	1.00	39 ~ 330	0.60	0.70	0.80	0.90	0.95	1.00	390 ~ 1,000	0.65	0.80	0.85	0.98	1.00	1.00	1,200 ≤	0.80	0.90	0.95	0.98	1.00	1.00
Freq.(Hz) Cap.(μF)	60 (50)	120	500	1k	10k	100k																																					
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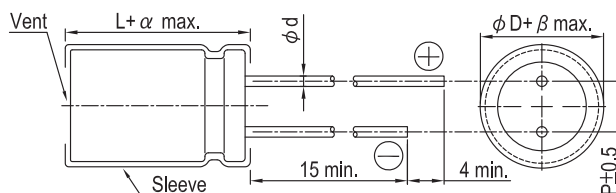
Diagram of Dimensions



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 16×20 is 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. (Vdc) Contents Cap. (F)	6.3V (0J)					10V (1A)					16V (1C)				
	$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)	
		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz
56											5×11	0.72	1.8	116	165
68											5×11	0.72	1.8	126	180
82						5×11	0.72	1.8	116	165					
100						5×11	0.72	1.8	126	180					
120	5×11	0.72	1.8	116	165						6.3×11	0.38	0.95	179	255
180						6.3×11	0.38	0.95	179	255	6.3×15	0.27	0.68	231	330
220	6.3×11	0.38	0.95	179	255	6.3×11	0.38	0.95	196	280					
270	6.3×11	0.38	0.95	196	280	6.3×15	0.27	0.68	231	330	8×11.5 10×12.5	0.20 0.12	0.50 0.30	291 438	415 625
330	6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415	8×11.5 8×15 10×12.5	0.20 0.16 0.12	0.50 0.40 0.30	315 347 540	450 495 675
390	8×11.5	0.20	0.50	332	415	8×11.5 10×12.5	0.20 0.12	0.50 0.30	360 500	450 625					
470	8×11.5 10×12.5	0.20 0.12	0.50 0.30	360 500	450 625	8×15 10×12.5	0.16 0.12	0.40 0.30	396 540	495 675	8×15 8×20 10×16	0.16 0.11 0.084	0.40 0.28 0.21	472 512 660	590 640 825
560	8×15 10×12.5	0.16 0.12	0.40 0.30	396 540	495 675	8×15	0.16	0.40	472	590	8×20 10×16	0.11 0.084	0.28 0.21	560 728	700 910
680	10×16	0.084	0.21	660	825	8×20 10×16	0.11 0.084	0.28 0.21	512 660	640 825	10×20	0.062	0.16	832	1,040
820	8×15 8×20 10×16	0.16 0.11 0.084	0.40 0.28 0.21	472 512 728	590 640 910	8×20 10×16	0.11 0.084	0.28 0.21	560 728	700 910	10×20 10×25	0.062 0.052	0.16 0.13	904 1,008	1,130 1,260
1,000	8×20	0.11	0.28	560	700	10×20	0.062	0.16	832	1,040	10×25	0.052	0.13	1,112	1,390
1,200	10×20	0.062	0.16	936	1,040	10×20 10×25	0.062 0.052	0.16 0.13	1,017 1,134	1,130 1,260	10×30 12.5×20	0.044 0.046	0.11 0.12	1,296 1,206	1,440 1,340
1,500	10×20 10×25	0.062 0.052	0.16 0.13	1,017 1,134	1,130 1,260	10×25 10×30	0.052 0.044	0.13 0.11	1,251 1,296	1,390 1,440	10×30 12.5×20 12.5×25	0.044 0.046 0.034	0.11 0.12 0.085	1,413 1,305 1,521	1,570 1,450 1,690
1,800	10×25	0.052	0.13	1,251	1,390	10×30 12.5×20	0.044 0.046	0.11 0.12	1,413 1,206	1,570 1,340	12.5×25	0.034	0.085	1,629	1,810
2,200	10×30 12.5×20	0.044 0.046	0.11 0.12	1,296 1,206	1,440 1,340	12.5×20 12.5×25	0.046 0.034	0.12 0.085	1,305 1,521	1,450 1,690	12.5×30 16×20	0.030 0.035	0.075 0.087	1,755 1,485	1,950 1,650
2,700	10×30 12.5×20 12.5×25	0.044 0.046 0.034	0.11 0.12 0.085	1,413 1,305 1,521	1,570 1,450 1,690	12.5×25 12.5×30	0.034 0.030	0.085 0.075	1,629 1,755	1,810 1,950	12.5×30 12.5×35 16×25	0.030 0.027 0.028	0.075 0.068 0.070	1,917 1,980 1,863	2,130 2,200 2,070
3,300	12.5×25	0.034	0.085	1,629	1,810	12.5×30 12.5×35	0.030 0.027	0.075 0.068	1,917 1,980	2,130 2,200	12.5×35 12.5×40 16×25	0.027 0.024 0.028	0.068 0.060 0.070	2,151 2,196 2,025	2,390 2,440 2,250
3,900	12.5×30	0.030	0.075	1,755	1,950	12.5×35 12.5×40 16×20 16×25	0.027 0.024 0.035 0.028	0.068 0.060 0.087 0.070	2,196 2,151 1,692 1,863	2,390 2,440 1,880 2,070	16×31.5	0.025	0.063	2,115	2,350
4,700	12.5×30 12.5×35 16×20	0.030 0.027 0.035	0.075 0.068 0.087	1,917 1,980 1,440	2,130 2,200 1,600	12.5×40 16×25	0.024 0.028	0.060 0.070	2,358 2,025	2,620 2,250	16×31.5 16×35.5	0.025 0.022	0.055 0.055	2,295 2,295	2,550 2,550
5,600	12.5×35 12.5×40 16×25	0.027 0.024 0.028	0.068 0.060 0.070	2,151 2,196 1,863	2,390 2,440 2,070	16×31.5	0.025	0.063	2,115	2,350	16×35.5 16×40	0.022 0.018	0.055 0.045	2,394 2,610	2,660 2,900
6,800	12.5×40 16×25 16×31.5	0.024 0.028 0.025	0.060 0.070 0.063	2,358 2,025 2,115	2,620 2,250 2,350	16×31.5 16×35.5	0.025 0.022	0.063 0.055	2,295 2,295	2,550 2,550	16×40 18×35.5	0.018 0.021	0.045 0.053	2,844 2,448	3,160 2,720
8,200	16×31.5	0.025	0.063	2,295	2,550	16×35.5	0.022	0.055	2,448	2,720	18×35.5	0.021	0.053	2,601	2,890
10,000	16×35.5	0.022	0.055	2,691	2,990										



Dimension: $\phi D \times L(\text{mm})$

Impedance: $\Omega/$ at 100k Hz

Ripple Current: mA/rms at 105°C

Dimension and Permissible Ripple Current

Cap. (F)	Contents	25V (1E)					35V (1V)					50V (1H)				
		$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)	
			20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz
18												5×11	1.1	3.3	72	130
22												5×11	1.1	3.3	83	150
27							5×11	0.72	1.8	91	165					
33							5×11	0.72	1.8	99	180					
39		5×11	0.72	1.8	116	165						6.3×11	0.56	1.6	154	220
47		5×11	0.72	1.8	126	180						6.3×11	0.56	1.6	161	230
56							6.3×11	0.38	0.95	179	255	6.3×15	0.41	1.2	217	310
68							6.3×11	0.38	0.95	196	280	8×11.5	0.29	0.84	238	340
82		6.3×11	0.38	0.95	179	255	6.3×15	0.27	0.68	231	330	8×11.5	0.29	0.84	249	355
												8×15	0.25	0.75	329	470
												10×12.5	0.16	0.40	336	480
100		6.3×11	0.38	0.95	196	280						10×12.5	0.16	0.40	371	530
120		6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415	8×15	0.25	0.75	392	560
							10×12.5	0.12	0.30	438	625	8×20	0.18	0.52	427	610
												10×16	0.12	0.30	529	755
150		8×11.5	0.20	0.50	291	415	8×11.5	0.20	0.50	315	450	10×16	0.12	0.30	588	840
							10×12.5	0.12	0.30	473	675					
180		8×11.5	0.20	0.50	315	450	8×15	0.16	0.40	347	495	8×20	0.18	0.52	525	750
		10×12.5	0.12	0.30	438	625						10×20	0.088	0.22	662	945
220		8×15	0.16	0.40	347	495	8×15	0.16	0.40	413	590	10×20	0.088	0.22	728	1,040
		10×12.5	0.12	0.30	473	675	8×20	0.11	0.28	448	640	10×25	0.068	0.17	805	1,150
							10×16	0.084	0.21	578	825					
270							8×20	0.11	0.28	490	700	10×25	0.068	0.17	896	1,280
							10×16	0.084	0.21	637	910					
330		8×15	0.16	0.40	413	590	10×20	0.062	0.16	728	1,040	10×30	0.059	0.15	882	1,260
		8×20	0.11	0.28	448	640						12.5×20	0.059	0.15	833	1,190
		10×16	0.084	0.21	578	825										
390		8×20	0.11	0.28	560	700	10×20	0.062	0.16	904	1,130	12.5×20	0.059	0.15	952	1,190
		10×16	0.084	0.21	728	910	10×25	0.052	0.13	1,008	1,260					
470		10×20	0.062	0.16	832	1,040	10×25	0.052	0.13	1,112	1,390	10×30	0.059	0.15	1,176	1,470
												12.5×25	0.045	0.11	1,192	1,490
560		10×20	0.062	0.16	904	1,130	10×30	0.044	0.11	1,152	1,440	12.5×25	0.045	0.11	1,304	1,630
		10×25	0.052	0.13	1,008	1,260	12.5×20	0.046	0.12	1,072	1,340	12.5×30	0.039	0.098	1,376	1,720
680		10×25	0.052	0.13	1,112	1,390	10×30	0.044	0.11	1,256	1,570	12.5×30	0.039	0.098	1,520	1,800
							12.5×20	0.046	0.12	1,160	1,450	12.5×35	0.033	0.083	1,512	1,900
							12.5×25	0.034	0.085	1,352	1,690	16×20	0.048	0.120	1,248	1,560
820		10×30	0.044	0.11	1,152	1,440	12.5×25	0.034	0.085	1,448	1,810	12.5×35	0.033	0.083	1,624	2,030
		12.5×20	0.046	0.12	1,072	1,340						12.5×40	0.029	0.073	1,656	2,070
												16×25	0.033	0.083	1,504	1,880
1,000		10×30	0.044	0.11	1,256	1,570	12.5×30	0.030	0.075	1,560	1,950	12.5×40	0.029	0.073	1,800	2,250
		12.5×20	0.046	0.12	1,160	1,450	16×20	0.035	0.087	1,376	1,720	16×25	0.033	0.083	1,664	2,080
		12.5×25	0.034	0.085	1,352	1,690						16×31.5	0.029	0.073	1,720	2,150
1,200		12.5×25	0.034	0.085	1,629	1,810	12.5×30	0.030	0.075	1,917	2,130	16×31.5	0.029	0.073	2,088	2,320
							12.5×35	0.027	0.068	1,980	2,200	16×35.5	0.025	0.063	2,115	2,350
							16×25	0.028	0.070	1,863	2,070					
1,500		12.5×30	0.030	0.075	1,755	1,950	12.5×35	0.027	0.068	2,151	2,390	16×35.5	0.025	0.063	2,160	2,400
		16×20	0.035	0.087	1,539	1,710	12.5×40	0.024	0.060	2,196	2,440	16×40	0.021	0.058	2,336	2,595
							16×25	0.028	0.070	2,025	2,250					
1,800		12.5×30	0.030	0.075	1,917	2,130	12.5×40	0.024	0.060	2,358	2,620	16×40	0.021	0.058	2,466	2,740
		12.5×35	0.027	0.068	1,980	2,200	16×31.5	0.025	0.063	2,115	2,350	18×35.5	0.023	0.058	2,286	2,540
		16×25	0.028	0.070	1,863	2,070										
2,200		12.5×35	0.027	0.068	2,151	2,390	16×31.5	0.025	0.063	2,295	2,550	18×35.5	0.023	0.058	2,349	2,610
		12.5×40	0.024	0.060	2,196	2,440	16×35.5	0.022	0.055	2,295	2,550	18×40	0.020	0.050	2,385	2,650
		16×25	0.028	0.070	2,025	2,250										
2,700		16×31.5	0.025	0.063	2,115	2,350	16×35.5	0.022	0.055	2,394	2,660					
							16×40	0.018	0.045	2,610	2,900					
							18×35.5	0.021	0.053	2,448	2,720					
3,300		16×31.5	0.025	0.063	2,295	2,550	18×35.5	0.021	0.053	2,601	2,890					
		16×35.5	0.022	0.055	2,295	2,550	18×40	0.017	0.043	2,709	3,010					
3,900		16×35.5	0.022	0.055	2,394	2,660										
		16×40	0.018	0.045	2,610	2,900	18×40	0.017	0.043	2,934	3,260					
		18×35.5	0.021	0.053	2,448	2,720										
4,700		18×35.5	0.021	0.053	2,601	2,890										
		18×40	0.017	0.043	2,709	3,010										
5,600		18×40	0.017	0.043	2,934	3,260										



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

Dimension and Permissible Ripple Current

Cap. (F) Contents	$\phi D \times L$	63V(1J)			
		Impedance (Ω , max./100k Hz)		Ripple Current (mA/rms, 105°C)	
		20°C	-10°C	120 Hz	100k Hz
12	5×11	1.90	4.78	55	100
27	6.3×11	1.10	2.78	88	160
33	6.3×11	1.10	2.75	96	175
39	6.3×15	0.62	1.55	161	230
47	8×11.5	0.49	1.23	193	275
56	8×11.5	0.49	1.23	203	290
	10×12.5	0.27	0.675	294	420
68	8×15	0.34	0.850	252	360
	10×12.5	0.27	0.675	354	505
	10×16	0.21	0.525	366	523
82	8×20	0.21	0.525	350	500
100	8×15	0.34	0.850	308	440
120	10×16	0.210	0.525	455	650
	10×20	0.160	0.400	490	700
150	8×20	0.210	0.525	476	680
	10×25	0.130	0.325	546	780
180	10×20	0.160	0.400	553	790
	10×30	0.100	0.250	672	960
220	10×25	0.130	0.325	648	925
	12.5×20	0.110	0.275	609	870
270	10×30	0.100	0.250	812	1,160
	12.5×25	0.074	0.185	805	1,150
330	12.5×20	0.110	0.275	746	1,065
390	12.5×25	0.074	0.185	1,088	1,280
	12.5×30	0.068	0.170	1,024	1,360
470	12.5×30	0.068	0.170	1,120	1,360
	12.5×35	0.063	0.158	1,112	1,400
	16×20	0.059	0.148	1,080	1,350
	16×25	0.055	0.138	1,184	1,480
560	12.5×40	0.051	0.128	1,224	1,530
	16×25	0.055	0.138	1,296	1,620
680	12.5×40	0.051	0.128	1,336	1,670
	16×31.5	0.046	0.115	1,376	1,720
820	12.5×40	0.051	0.128	1,480	1,850
	16×31.5	0.046	0.115	1,512	1,890
	16×35.5	0.040	0.100	1,528	1,910
1,000	16×35.5	0.040	0.100	1,576	1,970
	18×35.5	0.040	0.100	1,688	2,110
1,500	18×35.5	0.040	0.100	2,169	2,410

Part Numbering System

RXK Series	470 μ F	±20%	6.3V	Bulk Package	Gas Type	8 ϕ × 11.5L	Pb-free and PET sleeve
RXK	471	M	0J	BK	-	0811	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration and Package	Rubber Type	Case Size	Lead Wire and Sleeve type

Note: For more details, please refer to "Part Numbering System (Radial Type)" on page 13.