



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

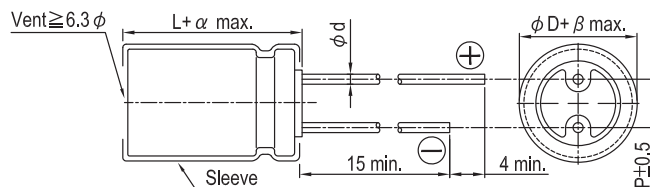


Sleeve & Marking Color: Black & Golden

Specifications

Items	Performance																																										
Category Temperature Range	-55°C ~ +105°C																																										
Capacitance Tolerance	±20% (at 120Hz, 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 120Hz, 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																			
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Tanδ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09																																				
Low Temperature Characteristics (at 120Hz)	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																	
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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																											
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Capacitance Change	Within ±20% of initial value																																										
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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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Ripple Current and Frequency Multipliers	<table><tr><th>Cap.(μF) \ Freq.(Hz)</th><th>60 (50)</th><th>120</th><th>500</th><th>1k</th><th>10k</th><th>100k</th></tr><tr><td>Under 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 up above</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>								Cap.(μF) \ Freq.(Hz)	60 (50)	120	500	1k	10k	100k	Under 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 up above	0.80	0.90	0.95	0.98	1.00	1.00
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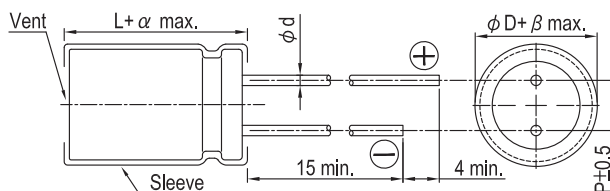
Diagram of Dimensions



Lead Spacing and Diameter

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 $\geq$ 20: 2.0						
β	0.5						

The case size of 16×20 is suitable for below diagram:





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

Ripple Current: mA/rms at 100k Hz, 105°C

Dimension and Permissible Ripple Current

Cap. (μF)	Contents	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	0.20	0.50	291	415
330		6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415	10×12.5	0.12	0.30	438	625
390		8×11.5	0.20	0.50	332	415	8×11.5	0.20	0.50	360	450	8×11.5	0.20	0.50	315	450
470		8×11.5	0.20	0.50	360	450	8×15	0.16	0.40	396	495	8×15	0.16	0.40	347	495
560		8×15	0.16	0.40	396	495	10×12.5	0.12	0.30	540	675	10×12.5	0.12	0.30	540	675
680		10×12.5	0.12	0.30	540	675	8×15	0.16	0.40	472	590	8×15	0.16	0.40	512	640
820		10×16	0.084	0.21	660	825	8×15	0.16	0.40	472	590	8×20	0.11	0.28	560	700
1,000		8×15	0.16	0.40	472	590	8×20	0.11	0.28	560	700	10×16	0.084	0.21	728	910
1,200		8×20	0.11	0.28	560	700	10×16	0.084	0.21	728	910	10×16	0.084	0.21	728	910
1,500		10×20	0.062	0.16	936	1,040	10×20	0.062	0.16	832	1,040	10×20	0.062	0.16	904	1,130
1,800		10×20	0.062	0.16	1,017	1,130	10×25	0.052	0.13	1,251	1,390	10×25	0.052	0.13	1,008	1,260
2,200		10×25	0.052	0.13	1,251	1,390	10×30	0.044	0.11	1,413	1,570	10×30	0.044	0.11	1,112	1,390
2,700		12.5×20	0.046	0.12	1,206	1,340	12.5×20	0.046	0.12	1,305	1,450	12.5×20	0.046	0.12	1,296	1,440
3,300		12.5×25	0.034	0.085	1,521	1,690	12.5×25	0.034	0.085	1,521	1,690	12.5×25	0.034	0.085	1,206	1,340
3,900		16×20	0.028	0.070	2,025	2,250	16×20	0.028	0.070	2,025	2,250	16×20	0.028	0.070	1,413	1,570
4,700		16×25	0.022	0.055	2,295	2,550	16×25	0.022	0.055	2,295	2,550	16×25	0.022	0.055	1,305	1,450
5,600		18×35.5	0.021	0.053	2,448	2,720	18×35.5	0.021	0.053	2,448	2,720	18×35.5	0.021	0.053	1,521	1,690
6,800		20×25	0.018	0.045	2,610	2,900	20×25	0.018	0.045	2,610	2,900	20×25	0.018	0.045	1,629	1,810
8,200		22×35	0.015	0.037	2,835	3,200	22×35	0.015	0.037	2,835	3,200	22×35	0.015	0.037	1,755	1,950
10,000		25×35	0.012	0.030	3,240	3,600	25×35	0.012	0.030	3,240	3,600	25×35	0.012	0.030	1,863	2,070



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

Ripple Current: mA/rms at 100k Hz, 105°C

Dimension and Permissible Ripple Current

Cap. (μF)	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	0.063	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	0.063	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 and Permissible Ripple Current

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

Cap. (μF)	Contents	63V(1J)				
		$\phi D \times L$	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	470μF	±20%	6.3V	Bulk Package	Gas Type	8φ×11.5L	Pb-free and PET sleeve
<u>RXK</u>	<u>471</u>	<u>M</u>	<u>0J</u>	<u>BK</u>	<u>-</u>	<u>0811</u>	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration & 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.