



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

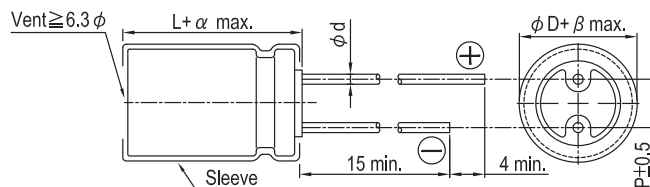


Sleeve & Marking Color: Black & Golden

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																			
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 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																	
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																											
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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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Capacitance Change	Within ±20% of initial 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
Cap.(μF) \ Freq.(Hz)	60 (50)	120	500	1k	10k	100k																																					
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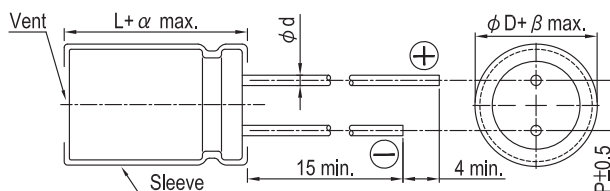
Diagram of Dimensions



Lead Spacing and Diameter Unit: mm

Load 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 $\geq$ 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					
820		10×16	0.084	0.21	660	825	8×15	0.16	0.40	472	590	8×15	0.16	0.40	472	590
1,000		8×15	0.16	0.40	472	590	8×20	0.11	0.28	512	640	8×20	0.11	0.28	512	640
1,200		8×20	0.11	0.28	560	700	10×16	0.084	0.21	728	910	10×16	0.084	0.21	660	825
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		10×25	0.052	0.13	1,251	1,390	10×25	0.052	0.13	1,251	1,390	10×25	0.052	0.13	1,008	1,260
2,200		12.5×25	0.034	0.085	1,629	1,810	12.5×25	0.034	0.085	1,629	1,810	12.5×25	0.034	0.085	1,112	1,390
2,700		16×25	0.028	0.070	2,070	2,350	16×25	0.028	0.070	2,070	2,350	16×25	0.028	0.070	1,296	1,440
3,300		16×35.5	0.022	0.055	2,448	2,720	16×35.5	0.022	0.055	2,448	2,720	16×35.5	0.022	0.055	1,206	1,340
3,900		18×35.5	0.021	0.053	2,601	2,890	18×35.5	0.021	0.053	2,601	2,890	18×35.5	0.021	0.053	1,413	1,570
4,700		20×35.5	0.020	0.050	2,910	3,300	20×35.5	0.020	0.050	2,910	3,300	20×35.5	0.020	0.050	1,305	1,450
5,600		22.5×35.5	0.018	0.045	3,160	3,600	22.5×35.5	0.018	0.045	3,160	3,600	22.5×35.5	0.018	0.045	1,521	1,690
6,800		25.5×35.5	0.016	0.040	3,470	3,960	25.5×35.5	0.016	0.040	3,470	3,960	25.5×35.5	0.016	0.040	1,690	1,950
8,200		28.5×35.5	0.014	0.035	3,880	4,440	28.5×35.5	0.014	0.035	3,880	4,440	28.5×35.5	0.014	0.035	1,755	1,950
10,000		32×35.5	0.012	0.030	4,380	5,000	32×35.5	0.012	0.030	4,380	5,000	32×35.5	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.