

## RXK Series

### Features

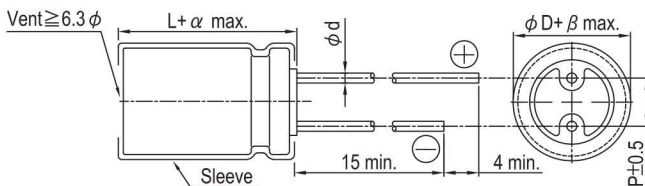
- 105°C, 2,000 ~ 5,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHS compliance
- AEC-Q200 Parts Available: Replace "S" Suffix with "KS" or "LS" Suffix



### 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 $3 (\mu A)$ whichever is greater (after 2 minutes) Where, C = rated capacitance in $\mu F$ , V = rated DC working voltage in V																																										
Tan $\delta$ (at 120 Hz, 20°C)	<table border="1"> <tr> <th>Rated Voltage</th> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <th>Tan<math>\delta</math> (max)</th> <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 1,000<math>\mu F</math>, 0.02 shall be added every 1,000<math>\mu F</math> increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	Tan $\delta$ (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> <th>Rated Voltage</th> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <th>Impedance Ratio</th> <td><math>Z(-55^\circ C)/Z(+20^\circ C)</math></td> <td>4</td> <td>4</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	$Z(-55^\circ C)/Z(+20^\circ C)$	4	4	3	3	3	3																										
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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <th rowspan="2">Cap. (<math>\mu F</math>)</th> <th colspan="7">Freq. (Hz)</th> </tr> <tr> <th>60 (50)</th> <th>120</th> <th>500</th> <th>1k</th> <th>10k</th> <th>100k</th> </tr> <tr> <td><math>\leq 33</math></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 <math>\leq</math></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. ( $\mu F$ )	Freq. (Hz)							60 (50)	120	500	1k	10k	100k	$\leq 33$	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 $\leq$	0.80	0.90	0.95	0.98	1.00	1.00
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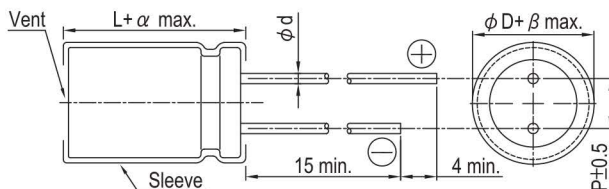
### Diagram of Dimensions



### Lead Spacing and Diameter

	Unit: mm						
$\phi D$	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
$\phi d$	0.5		0.6			0.8	
$\alpha$	L < 20: 1.5, L $\geq$ 20: 2.0						
$\beta$	0.5						

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



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

### Dimension and Permissible Ripple Current

Rated Volt (V <sub>DC</sub> ) Contents Cap. (μF)	6.3V (0J)					10V (1A)					16V (1C)				
	$\phi D \times L$	Impedance ( $\Omega$ , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance ( $\Omega$ , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance ( $\Omega$ , 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										

Radial

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

Impedance:  $\Omega$ / at 100k Hz

Ripple Current: mA/rms at 105°C

### Dimension and Permissible Ripple Current

Rated Volt. (Vdc)	Contents	25V (1E)					35V (1V)					50V (1H)				
		$\phi D \times L$	Impedance ( $\Omega$ , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance ( $\Omega$ , max./100k Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance ( $\Omega$ , max./100k Hz)		Ripple Current (mA/rms, 105°C)	
			20°C		-10°C			20°C		-10°C			20°C		-10°C	
			120 Hz	100k Hz	120 Hz	100k Hz		120 Hz	100k Hz	120 Hz	100k Hz		120 Hz	100k Hz	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	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						10×30	0.059	0.15	882	1,260	
	8×20	0.11	0.28	448	640	10×20	0.062	0.16	728	1,040	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	
1,000	10×30	0.044	0.11	1,256	1,570	12.5×30	0.030	0.075	1,560	1,950	16×25	0.033	0.083	1,504	1,880	
	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											

Radial

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

### Dimension and Permissible Ripple Current

Rated Volt. (V <sub>DC</sub> )	63V(1J)					
	Contents	$\phi D \times L$	Impedance ( $\Omega$ , 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

Radial

### Part Numbering System

RXK Series	470 $\mu$ F	$\pm$ 20%	6.3V	Bulk Package	Gas Type	8 $\phi$ ×11.5L
<b>RXK</b>	<b>471</b>	<b>M</b>	<b>0J</b>	<b>BK</b>	-	<b>0811</b> <b>S</b>
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration and Package	Rubber Type	Case Size   Regional Code

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