

Features

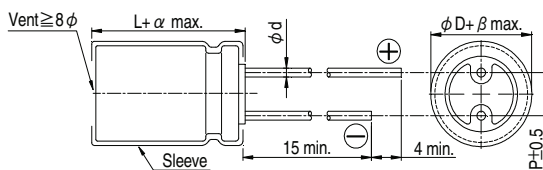
- 125°C, 3,000 ~ 5,000 hours assured
- For automobile modules and other high temperature applications
- RoHS compliance



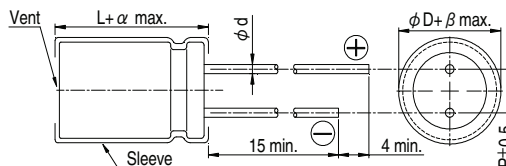
Specifications

Items	Performance																								
Category Temperature Range	-40°C ~ +125°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"> <thead> <tr> <th>Rated Voltage</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> </tr> </thead> <tbody> <tr> <td>Tanδ (max)</td> <td>0.15</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> </tr> </tbody> </table>	Rated Voltage	10	16	25	35	50	63	Tanδ (max)	0.15	0.12	0.10	0.10	0.08	0.08										
Rated Voltage	10	16	25	35	50	63																			
Tanδ (max)	0.15	0.12	0.10	0.10	0.08	0.08																			
Low Temperature Characteristics (at 120 Hz)	<p>Impedance ratio shall not exceed the values given in the table below.</p> <table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C) / Z(+20°C)</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C) / Z(+20°C)</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </tbody> </table>	Rated Voltage		10	16	25	35	50	63	Impedance Ratio	Z(-25°C) / Z(+20°C)	3	2	2	2	2	2	Z(-40°C) / Z(+20°C)	6	4	4	4	4	4	
Rated Voltage		10	16	25	35	50	63																		
Impedance Ratio	Z(-25°C) / Z(+20°C)	3	2	2	2	2	2																		
	Z(-40°C) / Z(+20°C)	6	4	4	4	4	4																		
Endurance	<table border="1"> <thead> <tr> <th>Test Time</th> <td>3,000 Hrs for φ D = 8mm; 5,000 Hrs for φ D ≥ 10mm</td> </tr> </thead> <tbody> <tr> <th>Capacitance Change</th> <td>Within ±20% of initial value</td> </tr> <tr> <th>Tanδ</th> <td>Less than 200% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after applied with rated subjected to DC voltage with the rated ripple current is applied for 3,000 / 5,000 hours at 125°C.</p>	Test Time	3,000 Hrs for φ D = 8mm; 5,000 Hrs for φ D ≥ 10mm	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																
Test Time	3,000 Hrs for φ D = 8mm; 5,000 Hrs for φ D ≥ 10mm																								
Capacitance Change	Within ±20% of initial value																								
Tanδ	Less than 200% of specified value																								
Leakage Current	Within specified value																								
Shelf Life Test	<table border="1"> <thead> <tr> <th>Test Time</th> <td>1,000 Hrs</td> </tr> </thead> <tbody> <tr> <th>Capacitance Change</th> <td>Within ±20% of initial value</td> </tr> <tr> <th>Tanδ</th> <td>Less than 200% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Less than 500% of specified value</td> </tr> </tbody> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 125°C without voltage applied.</p>	Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Less than 500% of specified value																
Test Time	1,000 Hrs																								
Capacitance Change	Within ±20% of initial value																								
Tanδ	Less than 200% of specified value																								
Leakage Current	Less than 500% of specified value																								
Ripple Current and Frequency Multipliers	<table border="1"> <thead> <tr> <th rowspan="2">Cap.(μF)</th> <th colspan="4">Freq.(Hz)</th> </tr> <tr> <th>120</th> <th>1k</th> <th>10k</th> <th>100k up</th> </tr> </thead> <tbody> <tr> <td>0.47 ~ 100</td> <td>1.00</td> <td>1.70</td> <td>1.88</td> <td>2.00</td> </tr> <tr> <td>150 ~ 470</td> <td>1.00</td> <td>1.45</td> <td>1.58</td> <td>1.65</td> </tr> <tr> <td>1,000</td> <td>1.00</td> <td>1.20</td> <td>1.25</td> <td>1.33</td> </tr> </tbody> </table>	Cap.(μF)	Freq.(Hz)				120	1k	10k	100k up	0.47 ~ 100	1.00	1.70	1.88	2.00	150 ~ 470	1.00	1.45	1.58	1.65	1,000	1.00	1.20	1.25	1.33
Cap.(μF)	Freq.(Hz)																								
	120	1k	10k	100k up																					
0.47 ~ 100	1.00	1.70	1.88	2.00																					
150 ~ 470	1.00	1.45	1.58	1.65																					
1,000	1.00	1.20	1.25	1.33																					

Diagram of Dimensions



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



Lead Spacing and Diameter

Unit: mm

φ D	8	10	12.5	16
P	3.5	5.0	5.0	7.5
φ d	0.6			0.8
α	L < 20: 1.5, L ≥ 20: 2.0			
β	0.5			

Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 120 Hz, 125C

°C

Cap.(μ F)	Rated Volt. (Vdc) Contents	10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
10	100									8×11.5	56	8×11.5	56
22	220							8×11.5	75	10×12.5	99	10×12.5	99
33	330					8×11.5	92	10×12.5	108	10×16	133	10×16	133
47	470			8×11.5	100	10×12.5	129	10×16	142	10×16	159	10×20	173
100	101	10×12.5	154	10×16	190	10×16	208	10×20	225				
220	221	10×16	252	10×20	305	12.5×20	371	12.5×25	403	12.5×20	279	12.5×20	279
330	331	10×16	308	12.5×20	414	12.5×25	493	16×20	503				
470	471	10×20	399	12.5×25	537	16×20	601			16×20	459		
1,000	102	16×20	715										

Part Numbering System

RUK Series 470 μ F $\pm 20\%$ 16V Bulk Package Gas Type 12.5 $\phi \times 25L$

RUK **471** **M** **1C** **BK** **-** **1325** **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