

## RUZ Series

### Features

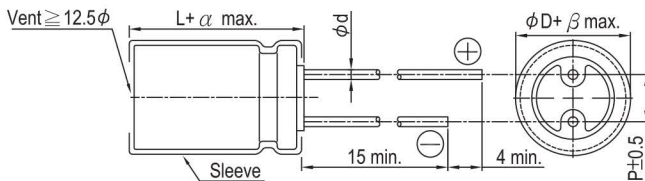
- 125°C, 3,000 ~ 5,000 hours assured
- Low impedance and high-ripple current
- For automobile modules and other high temperature applications
- RoHS Compliance
- AEC-Q200 Parts Available: Replace “S” Suffix with “KS” or “LS” Suffix



### Specifications

Items	Performance																																		
Category Temperature Range	-40°C ~ +125°C																																		
Capacitance Tolerance	± 20% (at 120 Hz, 20°C)																																		
Leakage Current (at 20°C)	$I = 0.03CV$ or $4 (\mu A)$ whichever is greater (after 1 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>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <th>Tan<math>\delta</math> (max)</th> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.08</td> <td>0.08</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	25	35	50	63	80	100	Tan $\delta$ (max)	0.14	0.12	0.10	0.10	0.08	0.08																				
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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 colspan="2">Rated Voltage</th> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <th rowspan="2">Impedance Ratio</th> <th><math>Z(-25^\circ C) / Z(+20^\circ C)</math></th> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <th><math>Z(-40^\circ C) / Z(+20^\circ C)</math></th> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table> <p>When the capacitance exceeds 1000<math>\mu F</math>, 0.02 shall be added every 1000<math>\mu F</math> increase</p>	Rated Voltage		25	35	50	63	80	100	Impedance Ratio	$Z(-25^\circ C) / Z(+20^\circ C)$	2	2	2	2	2	2	$Z(-40^\circ C) / Z(+20^\circ C)$	4	4	4	4	4	4											
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Endurance	<table border="1"> <tr> <th>Test Time</th> <td>3,000 Hrs for <math>L \leq 25mm</math>; 5,000 Hrs for <math>L &gt; 25mm</math></td> </tr> <tr> <th>Capacitance Change</th> <td>Within <math>\pm 30\%</math> of initial value</td> </tr> <tr> <th>Tan<math>\delta</math></th> <td>Less than 300% of specified value</td> </tr> <tr> <th>Leakage Current</th> <td>Within specified value</td> </tr> </table> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 3,000 / 5,000 hours at 125°C.</p>	Test Time	3,000 Hrs for $L \leq 25mm$ ; 5,000 Hrs for $L > 25mm$	Capacitance Change	Within $\pm 30\%$ of initial value	Tan $\delta$	Less than 300% of specified value	Leakage Current	Within specified value																										
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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <th rowspan="2">Cap. (<math>\mu F</math>)</th> <th colspan="4">Freq. (Hz)</th> </tr> <tr> <th>120</th> <th>1k</th> <th>10k</th> <th>100k</th> </tr> <tr> <td>200</td> <td>0.40</td> <td>0.82</td> <td>0.93</td> <td>1.00</td> </tr> <tr> <td>330 ~ 560</td> <td>0.50</td> <td>0.85</td> <td>0.94</td> <td>1.00</td> </tr> <tr> <td>680 ~ 1,800</td> <td>0.60</td> <td>0.87</td> <td>0.95</td> <td>1.00</td> </tr> <tr> <td>2,200 ~ 3,900</td> <td>0.75</td> <td>0.90</td> <td>0.95</td> <td>1.00</td> </tr> <tr> <td>4,700 ~ 6,800</td> <td>0.85</td> <td>0.95</td> <td>0.98</td> <td>1.00</td> </tr> </table>	Cap. ( $\mu F$ )	Freq. (Hz)				120	1k	10k	100k	200	0.40	0.82	0.93	1.00	330 ~ 560	0.50	0.85	0.94	1.00	680 ~ 1,800	0.60	0.87	0.95	1.00	2,200 ~ 3,900	0.75	0.90	0.95	1.00	4,700 ~ 6,800	0.85	0.95	0.98	1.00
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### Diagram of Dimensions

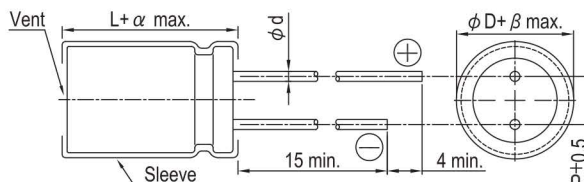


### Lead Spacing and Diameter

Unit: mm

$\phi D$	12.5	16	18
P	5.0	7.5	7.5
$\phi d$	0.6	0.8	
$\alpha$	2.0		
$\beta$	0.5		

The case size of 16×20 and 18×25 are suitable for below diagram:



Dimension:  $\phi D \times L$ (mm)  
 Impedance:  $\Omega$ / at 100k Hz, 20°C  
 Ripple Current: mA/rms at 100 kHz, 125°C

### Dimension and Permissible Ripple Current

Rated Volt. (V <sub>DC</sub> )		25V (1E)			35V (1V)			50V (1H)			63V (1J)			80V (1K)		
Cap. (μF)	Contents	φ D×L	Imp.	mA	φ D×L	Imp.	mA	φ D×L	Imp.	mA	φ D×L	Imp.	mA	φ D×L	Imp.	mA
330	331													16×20	0.085	1,790
470	471							12.5×20	0.065	1,500	16×20	0.085	1,790	16×25	0.061	2,030
560	561													18×25	0.049	2,280
680	681				12.5×20	0.044	1820	12.5×25 16×20	0.048 0.043	1,900 2,040	16×25	0.061	2,030	16×35.5	0.044	2,580
820	821							12.5×30	0.041	2,150				16×40 18×35.5	0.036 0.035	2,900 2,890
1,000	102				12.5×25	0.033	2,400	12.5×35 16×25	0.034 0.031	2,510 2,620	16×35.5 18×25	0.044 0.049	2,580 2,280			
1,200	122	12.5×20	0.044	1,820	12.5×30 16×20	0.029 0.034	2,560 2,280	12.5×40 18×25	0.028 0.029	2,870 2,750	16×40	0.036	2,900	18×40	0.030	3,210
1,500	152				12.5×35	0.024	2,970	16×35.5	0.023	3,300	18×35.5	0.035	2,890			
1,800	182	12.5×25 16×20	0.033 0.034	2,400 2,280	12.5×40 16×25	0.021 0.026	3,600 3,100				18×40	0.030	3,210			
2,200	222	12.5×30	0.029	2,560	18×25	0.024	3,200	16×40 18×35.5	0.020 0.022	3,720 3,510						
2,700	272	12.5×35 16×25	0.024 0.026	2,970 3,100	16×35.5	0.020	3,590	18×40	0.018	3,940						
3,300	332	12.5×40	0.021	3,600	16×40 18×35.5	0.017 0.019	4,300 4,200									
3,900	392	16×35.5 18×25	0.020 0.024	3,590 3,200												
4,700	472				18×40	0.016	4,600									
5,600	562	16×40 18×35.5	0.017 0.019	4,300 4,200												
6,800	682	18×40	0.016	4,600												

Rated Volt. (V <sub>DC</sub> )		100V (2A)		
Cap. (μF)	Contents	φ D×L	Imp.	mA
200	201	16×20	0.11	1,580
330	331	16×25 18×25	0.079 0.064	1,990 2,110
470	471	16×35.5	0.056	2,500
560	561	16×40 18×35.5	0.046 0.044	2,700 2,690
680	681	18×40	0.039	2,880

### Part Numbering System

RUZ series	1200μF	±20%	25V	Bulk Package	Gas Type	12.5φ×20L	
<b>RUZ</b>	<b>122</b>	<b>M</b>	<b>1E</b>	<b>BK</b>	-	<b>1320</b>	<b>S</b>
Series	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.

Radial