

Aluminum Electrolytic Capacitors

RN Series

◆ This series is not recommended for new design

Features

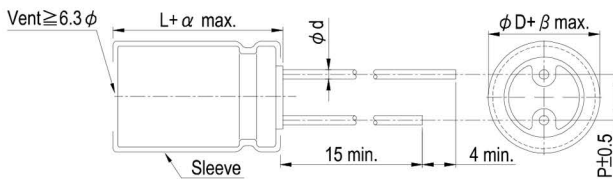
- 85°C, 2,000 hours assured, standard bi-polarized series
- Suitable for use in circuits which has a reversed or unknown polarity
- RoHS compliance
- AEC-Q200 Parts Available: Replace "S" Suffix with "KS" Suffix or "LS" Suffix



Specifications

Items	Performance																																						
Category Temperature Range	-40°C ~ +85°C																																						
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																																						
Leakage Current (at 20°C)	<table border="1"> <tr> <td>Rated voltage</td> <td>≤ 100V</td> <td colspan="2">> 100V</td> </tr> <tr> <td>Time</td> <td>after 2 minutes</td> <td colspan="2">after 5 minutes</td> </tr> <tr> <td rowspan="2">Leakage Current</td> <td>I = 0.03CV or 4 (μA) whichever is greater</td> <td>CV ≤ 1,000</td> <td>CV > 1,000</td> </tr> <tr> <td></td> <td>I = 0.03CV+15(μA)</td> <td>I = 0.02CV+25(μA)</td> </tr> </table> <p>Where, C = rated capacitance in μF, V = rated DC working voltage in V</p>	Rated voltage	≤ 100V	> 100V		Time	after 2 minutes	after 5 minutes		Leakage Current	I = 0.03CV or 4 (μA) whichever is greater	CV ≤ 1,000	CV > 1,000		I = 0.03CV+15(μA)	I = 0.02CV+25(μA)																							
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Tanδ (at 120 Hz, 20°C)	<table border="1"> <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> <td>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td>Tanδ (max)</td> <td>0.23</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.08</td> <td>0.12</td> <td>0.14</td> <td>0.17</td> </tr> </table> <p>When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17														
	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250																											
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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> <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> <td>100</td> <td>160</td> <td>200</td> <td>250</td> </tr> <tr> <td rowspan="2">Impedance Ratio</td> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</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>8</td> <td>6</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	Impedance Ratio	Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2	2	2	2	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3	4	4	4
	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250																										
Impedance Ratio	Z(-25°C)/Z(+20°C)	4	3	3	2	2	2	2	2	2	2	2																											
	Z(-40°C)/Z(+20°C)	8	6	6	4	4	3	3	3	4	4	4																											
Endurance (After application of the rated voltage at 85°C, the polarity inverted every 250 Hrs.)	<table border="1"> <tr> <td>Test Time</td> <td>2,000 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> <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 2,000 hours at 85°C.</p>	Test Time	2,000 Hrs	Capacitance Change	Within ±20% of initial value	Tanδ	Less than 200% of specified value	Leakage Current	Within specified value																														
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Shelf Life Test	<table border="1"> <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> <p>* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 250V (Refer to JIS C 5101-4 4.1).</p>	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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Diagram of Dimensions



Lead Spacing and Diameter

Unit: mm

	5	6.3	8	10	12.5	16	18
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≥20: 2.0						
β	0.5						

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Dimension and Permissible Ripple Current		Dimension: $\phi D \times L$ (mm) Ripple Current: mA/rms at 120 Hz, 85°C															
Rated Volt. (V _{DC})		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
Cap. (μ F)	Contents	$\phi D \times L$	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	$\phi D \times L$	mA	$\phi D \times L$	mA
1	010																
2.2	2R2											5x11	15	5x11	18	5x11	23
3.3	3R3											5x11	28	5x11	31	6.3x11	32
4.7	4R7									5x11	32	5x11	34	6.3x11	37	6.3x11	40
10	100					5x11	40	5x11	42	5x11	46	6.3x11	55	6.3x11	60	8x11.5	66
22	220	5x11	50	5x11	56	5x11	59	6.3x11	63	6.3x11	76	8x11.5	82	8x11.5	90	10x16	120
33	330	5x11	62	5x11	69	5x11	73	6.3x11	78	8x11.5	94	8x11.5	104	10x12.5	135	10x20	175
47	470	5x11	74	5x11	82	6.3x11	88	6.3x11	95	8x11.5	115	10x12.5	135	10x16	175	12.5x20	200
100	101	6.3x11	115	6.3x11	120	8x11.5	149	8x11.5	155	10x16	202	10x20	235	12.5x20	270	16x25	350
220	221	8x11.5	181	8x11.5	200	10x12.5	240	10x16	294	12.5x20	335	12.5x25	378	16x25	443	16x35.5	590
330	331	8x11.5	250	10x16	308	10x16	330	12.5x20	384	12.5x20	429	16x25	496	16x31.5	653		
470	471	10x12.5	329	10x16	365	10x20	435	12.5x25	479	16x25	548	16x25	590	18x35.5	815		
1,000	102	10x20	505	12.5x20	598	12.5x25	659	16x25	700	16x31.5	880	16x31.5	920				
2,200	222	12.5x25	840	16x25	992	16x31.5	1,150	18x35.5	1,347								

Rated Volt. (V _{DC})		160V (2C)		200V (2D)		250V (2E)	
Cap. (μ F)	Contents	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
0.47	R47	5x11	10	5x11	10	6.3x11	12
1	010	6.3x11	14	8x11.5	16	8x11.5	16
2.2	2R2	8x11.5	23	8x11.5	28	10x12.5	32
3.3	3R3	8x11.5	33	10x12.5	33	10x16	46
4.7	4R7	10x12.5	39	10x16	46	10x20	62
10	100	10x16	75	10x20	83	10x20	99
22	220	12.5x20	146	12.5x20	146	12.5x25	172
33	330	12.5x20	179	12.5x25	197	16x25	211
47	470	12.5x25	235				

Part Numbering System

RN Series 470 μ F \pm 20% 6.3V Bulk Package Gas Type 10 ϕ x 12.5L

RN- **471** **M** **0J** **BK** **-** **1012** **S**

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.