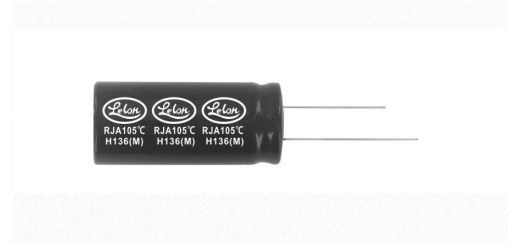


RJA Series

Features

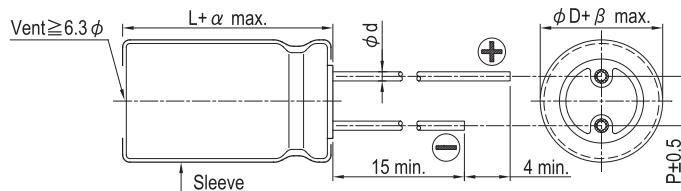
- 105°C, wide temperature range
- Suitable for high reliability products
- RoHS compliant



Specifications

Items	Performance																																															
Category Temperature Range	6.3 ~ 63V	100V																																														
	-55°C ~ +105°C	-40°C ~ +105°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>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <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> </tr> </tbody> </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	Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08																												
Rated Voltage	6.3	10	16	25	35	50	63	100																																								
Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08																																								
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.																																															
	<table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Impedance Ratio</td> <td>Z(-25°C)</td> <td>φD < 16</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>/Z(+20°C)</td> <td>φD ≥ 16</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> </tr> <tr> <td>Z(-40/-55°C)</td> <td>φD < 16</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td>/Z(+20°C)</td> <td>φD ≥ 16</td> <td>12</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>6</td> </tr> </tbody> </table>	Rated Voltage		6.3	10	16	25	35	50	63	100	Impedance Ratio	Z(-25°C)	φD < 16	4	3	3	2	2	2	2	/Z(+20°C)	φD ≥ 16	5	4	3	2	2	2	3	Z(-40/-55°C)	φD < 16	8	6	4	4	4	3	3	/Z(+20°C)	φD ≥ 16	12	8	6	4	3	3	6
Rated Voltage		6.3	10	16	25	35	50	63	100																																							
Impedance Ratio	Z(-25°C)	φD < 16	4	3	3	2	2	2	2																																							
	/Z(+20°C)	φD ≥ 16	5	4	3	2	2	2	3																																							
	Z(-40/-55°C)	φD < 16	8	6	4	4	4	3	3																																							
	/Z(+20°C)	φD ≥ 16	12	8	6	4	3	3	6																																							
Endurance	<table border="1"> <thead> <tr> <th>Test Time</th> <th>2,000 Hrs</th> </tr> </thead> <tbody> <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> </tbody> </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 105°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																																						
	Test Time	2,000 Hrs																																														
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> <th>1,000 Hrs</th> </tr> </thead> <tbody> <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> </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 105°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	Within specified value																																						
	Test Time	1,000 Hrs																																														
Capacitance Change	Within ±20% of initial value																																															
Tanδ	Less than 200% of specified value																																															
Leakage Current	Within specified value																																															
Ripple Current and Frequency Multipliers	<table border="1"> <thead> <tr> <th rowspan="2">Cap.(μF)</th> <th colspan="5">Freq.(Hz)</th> </tr> <tr> <th>60 (50)</th> <th>120</th> <th>500</th> <th>1k</th> <th>10k up</th> </tr> </thead> <tbody> <tr> <td>≤ 100</td> <td>0.70</td> <td>1.00</td> <td>1.30</td> <td>1.40</td> <td>1.50</td> </tr> <tr> <td>100 < C ≤ 1,000</td> <td>0.75</td> <td>1.00</td> <td>1.20</td> <td>1.30</td> <td>1.35</td> </tr> <tr> <td>1,000 <</td> <td>0.80</td> <td>1.00</td> <td>1.10</td> <td>1.12</td> <td>1.15</td> </tr> </tbody> </table>		Cap.(μF)	Freq.(Hz)					60 (50)	120	500	1k	10k up	≤ 100	0.70	1.00	1.30	1.40	1.50	100 < C ≤ 1,000	0.75	1.00	1.20	1.30	1.35	1,000 <	0.80	1.00	1.10	1.12	1.15																	
Cap.(μF)	Freq.(Hz)																																															
	60 (50)	120	500	1k	10k up																																											
≤ 100	0.70	1.00	1.30	1.40	1.50																																											
100 < C ≤ 1,000	0.75	1.00	1.20	1.30	1.35																																											
1,000 <	0.80	1.00	1.10	1.12	1.15																																											

Diagram of Dimensions



Lead 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
φ d		0.5		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, 105°C

Dimension and Permissible Ripple Current

Cap. (μ F)	Rated Volt. (V_{DC}) Contents	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		$\phi D \times L$	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
2.2	2R2											5×11	20			5×11	26
3.3	3R3											5×11	30			5×11	31
4.7	4R7											5×11	33	5×11	36	5×11	36
10	100											5×11	50	5×11	54	6.3×11	54
22	220											5×11	78	5×11	64	6.3×11	93
33	330									5×11	85	5×11	90	6.3×11	86	8×11.5	111
47	470							5×11	97	5×11	90	6.3×11	117	6.3×11	100	10×12.5	144
100	101					5×11	110	5×11	120	6.3×11	150	8×11.5	188	10×12.5	129	10×20	204
220	221			5×11	150	6.3×11	180	8×11.5	236	8×11.5	270	10×16	335	10×20	400	12.5×25	285
330	331			6.3×11	200	8×11.5	260	8×11.5	330	10×12.5	350	10×16	410	10×20	490	16×25	440
470	471	6.3×11	230	6.3×11	250	8×11.5	310	10×12.5	380	10×16	460	12.5×20	590	12.5×20	665	16×31.5	478
1,000	102	8×11.5	380	10×12.5	290	10×16	560	10×20	680	12.5×20	830	16×25	1,080	16×25	520		
2,200	222	10×16	690	10×20	760	12.5×20	920	12.5×25	1,090	16×25	1,260	16×35.5	1,470				
3,300	332	10×20	840	12.5×20	1,100	12.5×25	1,170	16×25	1,400	16×35.5	1,610	18×35.5	1,650				
4,700	472	12.5×20	1,090	12.5×25	1,260	16×25	1,480	16×31.5	1,710	18×35.5	1,900						
6,800	682	12.5×25	1,460	16×25	1,690	16×31.5	1,930	18×35.5	2,160								
10,000	103	16×25	1,990	16×31.5	2,220	18×31.5	2,330										
22,000	223	18×35.5	2,930	18×40	3,230												

Part Numbering System

RJA Series	470 μ F	\pm 20%	6.3V	Bulk Package	Gas Type	6.3 ϕ × 11L	General Purpose
RJA	471	M	0J	BK	-	0611	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Lead Configuration and Package	Rubber Type	Case Size	Application

Note: For more details, please refer to "Part Numbering System - Radial Type" on page 139.