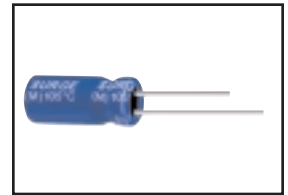




**WIDE TEMPERATURE RANGE (-40~+105°C). ULTRA MINIATURE SERIES (7MM LENGTH)**

**FEATURES**

- ULTRA MINIATURE, LOW PROFILE CASE SIZE.
- HIGH PERFORMANCE QUALITY.
- EXCELLENT TEMPERATURE CHARACTERISTICS.

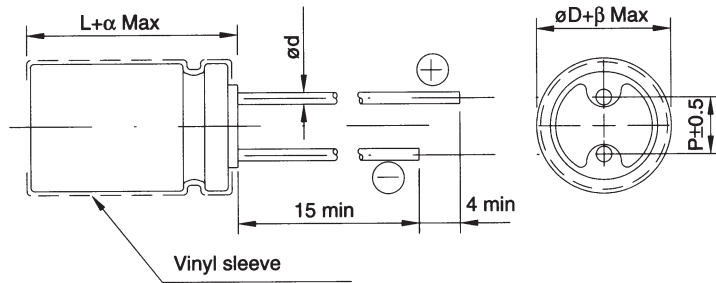


**SPECIFICATIONS**

Items	Performance																											
<b>Operating Temperature Range</b>	-40°C~+105°C																											
<b>Capacitance Tolerance</b>	±20% (at 120Hz, 20°C)																											
<b>Leakage Current (at 20 °C)</b>	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.																											
<b>Dissipation Factor (Tan δ at 120 Hz, 20 °C)</b>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Rated Voltage</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Tan δ (max)</td> <td>0.35</td> <td>0.23</td> <td>0.20</td> <td>0.17</td> <td>0.15</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> </tr> </table>	Rated Voltage	4	6.3	10	16	25	35	50	63	Tan δ (max)	0.35	0.23	0.20	0.17	0.15	0.12	0.10	0.10									
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Tan δ (max)	0.35	0.23	0.20	0.17	0.15	0.12	0.10	0.10																				
<b>Low Temperature Characteristics (at 120 Hz)</b>	Impedance ratio shall not exceed the values given in the table below. <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Rated Voltage</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Impedance Ratio Z(-25°C)/Z(+20°C)</td> <td>6</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>Ratio Z(-40°C)/Z(+20°C)</td> <td>12</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>3</td> </tr> </table>	Rated Voltage	4	6.3	10	16	25	35	50	63	Impedance Ratio Z(-25°C)/Z(+20°C)	6	4	3	3	2	2	2	2	Ratio Z(-40°C)/Z(+20°C)	12	10	8	6	4	4	4	3
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Impedance Ratio Z(-25°C)/Z(+20°C)	6	4	3	3	2	2	2	2																				
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<b>Load Life Test</b>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Test Time</td> <td>1000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>≤ ± 20%</td> </tr> <tr> <td>Dissipation Factor</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 for 1000 hrs at 105°C.</p>	Test Time	1000 Hrs	Capacitance Change	≤ ± 20%	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																			
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<b>Shelf Life Test</b>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Test Time</td> <td>1000 hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>≤ ± 20%</td> </tr> <tr> <td>Dissipation Factor</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 1000 hrs at 105 °C without voltage applied.</p>	Test Time	1000 hrs	Capacitance Change	≤ ± 20%	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																			
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<b>Ripple Current &amp; Frequency Multipliers</b>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="text-align: left;">Freq. (Hz)</td> <td>60 (50)</td> <td>120</td> <td>500</td> <td>1K</td> <td>10K up</td> </tr> <tr> <td style="text-align: left;">Cap. (μF)</td> <td>Under 47</td> <td>0.75</td> <td>1.00</td> <td>1.20</td> <td>1.30</td> <td>1.45</td> </tr> <tr> <td></td> <td>47 to 220</td> <td>0.88</td> <td>1.00</td> <td>1.10</td> <td>1.15</td> <td>1.20</td> </tr> </table>	Freq. (Hz)	60 (50)	120	500	1K	10K up	Cap. (μF)	Under 47	0.75	1.00	1.20	1.30	1.45		47 to 220	0.88	1.00	1.10	1.15	1.20							
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<b>Ripple Current &amp; Temperature Multipliers</b>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Temperature(°C)</td> <td>Under 50</td> <td>70</td> <td>85</td> <td>105</td> </tr> <tr> <td>Multiplier</td> <td>1.95</td> <td>1.65</td> <td>1.27</td> <td>1.0</td> </tr> </table>	Temperature(°C)	Under 50	70	85	105	Multiplier	1.95	1.65	1.27	1.0																	
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<b>Standards</b>	Satisfies Characteristic W of JIS C 5141																											



**DIAGRAM OF DIMENSIONS**



Unit: mm

LEAD SPACING AND DIAMETER

øD	4	5	6.3	8
P	1.5	2.0	2.5	3.5
ø d	0.45			
α	1.0			
β	0.5			

**DIMENSION & PERMISSIBLE RIPPLE CURRENT**

Dimension: ø D x L(mm)  
Ripple Current: mA/rms at 120 Hz, 105 °C

μF	code	4V (0G)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)	
		ø D x L	mA	ø D x L	mA	ø D x L	mA	ø D x L	mA	ø D x L	mA	ø D x L	mA	ø D x L	mA	ø D x L	mA
0.1	0R1													4 x 7	2	4 x 7	2
0.22	R22													4 x 7	3	4 x 7	3
0.33	R33													4 x 7	4	4 x 7	4.4
0.47	R47													4 x 7	5	4 x 7	7.9
1	010													4 x 7	10	4 x 7	11
2.2	2R2													4 x 7	15	4 x 7	17
3.3	3R3													4 x 7	18	4 x 7	21
4.7	4R7											4 x 7	22	5 x 7 (4 x 7)	23 (22)	5 x 7	26
10	100							4 x 7	25	4 x 7	26	5 x 7 (4 x 7)	30 (26)	6.3 x 7 (5 x 7)	34 (31)	6.3 x 7	40
22	220			4 x 7	31	4 x 7	32	5 x 7 (4 x 7)	39 (33)	5 x 7 (4 x 7)	41 (34)	6.3 x 7	47	6.3 x 7	53	8 x 7	70
33	330	4 x 7	32	4 x 7	32	4 x 7	35	5 x 7	43	6.3 x 7	53	8 x 7 (6.3 x 7)	71 (60)	8 x 7	76		
47	470	4 x 7	38	4 x 7	38	5 x 7 (4 x 7)	47 (39)	6.3 x 7 (5 x 7)	59 (49)	6.3 x 7	65	8 x 7	83	8 x 7	85		
100	101	5 x 7	61	6.3 x 7 (5 x 7)	75 (63)	6.3 x 7	80	6.3 x 7	90	8 x 7	125						
220	221	6.3 x 7	90	6.3 x 7	99	8 x 7	140	8 x 7	146								
330	331	8 x 7	156	8 x 7	156												