



Aluminum Electrolytic Capacitors

REA

Features

- 85°C, 2,000 ~ 3,000 hours assured
- Standard series for general purpose
- RoHS Compliance

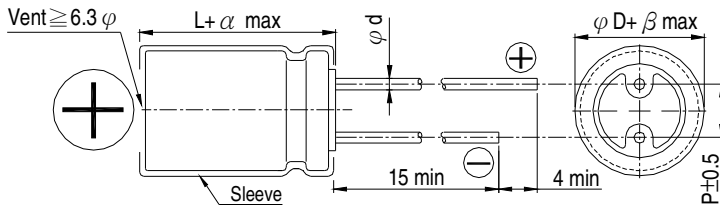


Sleeve & Marking Color: Blue & Black

SPECIFICATIONS

Items	Performance																																																																																	
Category Temperature Range	-40°C ~ +85°C																																																																																	
Capacitance Tolerance	±20% (at 120Hz, 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>Leakage Current</td> <td>I = 0.01CV or 3 (μA) whichever is greater</td> <td>CV ≤ 1,000 I = 0.03CV+15(μA)</td> <td>CV > 1,000 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 = 0.01CV or 3 (μA) whichever is greater	CV ≤ 1,000 I = 0.03CV+15(μA)	CV > 1,000 I = 0.02CV+25(μA)																																																																					
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Dissipation Factor (Tan δ 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> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>Tan δ (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> <td>0.20</td> <td>0.25</td> <td>0.25</td> </tr> </table> <p>When the capacitance exceeds 1,000 μF, 0.02 shall be added every 1,000 μF increase.</p>	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Tan δ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.25	0.25																																																			
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Low Temperature Characteristics (at 120Hz)	<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> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td rowspan="4">Impedance Ratio</td> <td>Z(-25°C)</td> <td>φ D < 16</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> <td>3</td> <td>6</td> <td>8</td> <td>12</td> <td>14</td> <td>16</td> </tr> <tr> <td>/Z(+20°C)</td> <td>φ D ≥ 16</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>8</td> <td>10</td> <td>16</td> <td>18</td> <td>20</td> </tr> <tr> <td>Z(-40°C)</td> <td>φ D < 16</td> <td>10</td> <td>8</td> <td>6</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>8</td> <td>10</td> <td>16</td> <td>18</td> <td>20</td> </tr> <tr> <td>/Z(+20°C)</td> <td>φ D ≥ 16</td> <td>18</td> <td>16</td> <td>12</td> <td>10</td> <td>8</td> <td>8</td> <td>6</td> <td>6</td> <td>4</td> <td>8</td> <td>10</td> <td>16</td> <td>18</td> <td>20</td> </tr> </table>	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Impedance Ratio	Z(-25°C)	φ D < 16	6	4	3	3	2	2	2	2	3	6	8	12	14	16	/Z(+20°C)	φ D ≥ 16	8	6	4	4	3	3	3	3	4	8	10	16	18	20	Z(-40°C)	φ D < 16	10	8	6	6	4	3	3	3	4	8	10	16	18	20	/Z(+20°C)	φ D ≥ 16	18	16	12	10	8	8	6	6	4	8	10	16	18	20
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Endurance	<table border="1"> <tr> <td>Test Time</td> <td>2,000 Hrs (3,000 Hrs for φ D ≥ 10mm)</td> </tr> <tr> <td>Capacitance Change</td> <td>With in ±20% of initial value</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 with rated ripple current for 2,000/3,000 hours at 85°C.</p>	Test Time	2,000 Hrs (3,000 Hrs for φ D ≥ 10mm)	Capacitance Change	With in ±20% of initial value	Dissipation Factor	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>With in ±20% of initial value</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 1,000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).</p>	Test Time	1,000 Hrs	Capacitance Change	With in ±20% of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																																																																									
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Ripple Current & Frequency Multipliers	<table border="1"> <tr> <td></td> <td>Freq. (Hz)</td> <td>60 (50)</td> <td>120</td> <td>500</td> <td>1k</td> <td>10k up</td> </tr> <tr> <td rowspan="3">Cap. (μF)</td> <td>Under 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 up above</td> <td>0.80</td> <td>1.00</td> <td>1.10</td> <td>1.12</td> <td>1.15</td> </tr> </table>		Freq. (Hz)	60 (50)	120	500	1k	10k up	Cap. (μF)	Under 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 up above	0.80	1.00	1.10	1.12	1.15																																																							
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DIAGRAM OF DIMENSIONS



LEAD SPACING AND DIAMETER Unit: mm

φ D	5	6.3	8	10	12.5	16	18	22
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
φ d	0.5		0.6			0.8		1.0
α	1.0			1.5				2.0
β	0.5							

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: φ D × L(mm)

Ripple Current: mA/rms at 120 Hz, 85°C

μF	V. DC Contents	6.3V (0J)				10V (1A)				16V (1C)				25V (1E)			
		φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA
4.7	4R7													5×11	31		
10	100									5×11	49			5×11	54		
22	220					5×11	70			5×11	75			5×11	80		
33	330	5×11	72			5×11	84			5×11	90			5×11	97		
47	470	5×11	90			5×11	100			5×11	110			5×11	115		
100	101	5×11	130			5×11	145			6.3×11	180	5×11	160	6.3×11	190		
220	221	6.3×11	230	5×11	200	6.3×11	250	5×11	220	8×11.5	300	6.3×11	260	8×11.5	320		
330	331	8×11.5	290	6.3×11	270	8×11.5	350	6.3×11	290	8×11.5	370	6.3×11	290	10×12.5	470	8×11.5	440
470	471	8×11.5	380	6.3×11	320	8×11.5	415	6.3×11	350	10×12.5	520	8×11.5	440	10×16	620	10×12.5	545
1,000	102	8×11.5	540			10×12.5	650	8×11.5	550	10×16	785	10×12.5	635	10×20 12.5×20	955 1,090	12.5×16	830
2,200	222	10×20	1,000	10×16	845	10×20 12.5×20	1,070 1,240	12.5×16	970	12.5×20	1,295	12.5×16 16×16	930 1,160	12.5×25 16×25	1,540 1,660	16×16 16×20	1,150 1,360
3,300	332	10×20 12.5×20	1,185 1,380	12.5×16	960	12.5×20	1,420	16×16	1,310	12.5×20 12.5×25	1,450 1,655	16×16 16×20	1,240 1,460	16×25 16×31.5	1,800 2,070	16×20 18×20	1,490 1,720
4,700	472	12.5×20 16×25	1,545 1,880	16×16	1,410	12.5×25 16×25	1,780 1,980	16×16 16×20	1,420 1,560	16×25 16×31.5	2,090 2,260	16×20 18×20	1,600 1,700	16×25 16×31.5	2,100 2,420	18×25	2,170
6,800	682	12.5×25 16×25	1,880 2,120	16×20	1,660	16×25	2,220	16×20 18×20	1,700 1,870	16×25 16×31.5	2,280 2,520	18×20 18×25	1,890 2,170	18×35.5	2,880	18×31.5	2,550
10,000	103	16×25	2,330	16×20 18×20	2,000 2,020	16×31.5 16×35.5	2,370 2,430	16×20 18×25	2,050 2,370	18×31.5	2,590	16×35.5	2,450	22×40	3,440	18×40	3,080
22,000	223	18×40	3,320	18×31.5	2,780	22×40	3,790	18×40	3,370	22×40	3,900						

μF	V. DC Contents	35V (1V)				50V (1H)				63V (1J)				100V (2A)			
		φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA	φ D×L	mA	* φ D×L	mA
0.1	0R1					5×11	1.5			5×11	3			5×11	3		
0.22	R22					5×11	3.5			5×11	4.5			5×11	5.8		
0.33	R33					5×11	5			5×11	7.5			5×11	8.8		
0.47	R47					5×11	7			5×11	9.5			5×11	12		
1	010					5×11	15			5×11	17			5×11	22		
2.2	2R2					5×11	29			5×11	30			5×11	33		
3.3	3R3					5×11	35			5×11	37			5×11	40		
4.7	4R7	5×11	40			5×11	42			5×11	45			5×11	48		
10	100	5×11	58			5×11	65			5×11	70			6.3×11	80	5×11	59
22	220	5×11	87			5×11	95			6.3×11	115			8×11.5	135	6.3×11	115
33	330	6.3×11	115	5×11	108	6.3×11	136	5×11	125	8×11.5	150	6.3×11	140	10×16	195	8×11.5	145
47	470	6.3×11	145	5×11	130	6.3×11	165			8×11.5	190	6.3×11	170	10×16	255	10×12.5	235
100	101	8×11.5	240	6.3×11	210	8×11.5	260			10×12.5	320	8×11.5	245	10×20	370	10×16	325
220	221	10×12.5	420	8×11.5	385	10×16	490	10×12.5	455	10×20	565	10×16	490	12.5×25	675	12.5×20	640
330	331	10×16	570	10×12.5	490	12.5×20	635	10×16	585	12.5×20	765	10×20	710	16×25	825	16×20	695
470	471	10×16	740			10×20 12.5×20	755 860	12.5×16 16×16	610 745	16×25	1,050	12.5×20	900	16×31.5	1,070	16×25	910
1,000	102	12.5×20	1,145	16×16	1,010	12.5×25 16×25	1,340 1,530	16×20	1,160	16×25	1,560	16×20	1,260	22×40	2,600	18×40	2,410
2,200	222	16×25 16×31.5	1,785 1,890	16×20 18×20	1,390 1,560	18×40	2,231	16×35.5	2,075	18×40	2,385	18×31.5	1,955				
3,300	332	16×31.5 16×35.5	2,070 2,275	18×25	1,970	22×40	2,785	18×35.5	2,500	22×40	3,000	18×40	2,660				
4,700	472	18×35.5	2,700														

Remark: The Case size 12.5×16, 16×16, 16×20, 18×20 and 18×25 are used flat type rubber bung. Case size in mark of "*" is downsize.



Aluminum Electrolytic Capacitors

REA

Dimension: $\phi D \times L(\text{mm})$

Ripple Current: mA/rms at 120 Hz, 85°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

μF	V. DC Contents	160V (2C)				200V (2D)				250V (2E)				350V (2V)			
		$\phi D \times L$	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
0.47	R47	6.3x11	15	5x11	13	6.3x11	16	5x11	14	8x11.5	21	5x11	14	8x11.5	21	6.3x11	18
1	010	6.3x11	24	5x11	20	6.3x11	25	5x11	21	8x11.5	32	5x11	21	8x11.5	32	6.3x11	27
2.2	2R2	6.3x11	34	5x11	29	6.3x11	37	5x11	29	8x11.5	49	6.3x11	42	8x11.5	49	6.3x11	42
3.3	3R3	8x11.5	50	6.3x11	43	8x11.5	54	6.3x11	46	8x11.5	60	6.3x11	46	10x12.5	70	8x11.5	60
4.7	4R7	8x11.5	60	6.3x11	51	8x11.5	64	6.3x11	50	10x16	93	8x11.5	72	10x16	93	10x12.5	80
10	100	10x12.5	104	8x11.5	75	10x12.5	112	8x11.5	81	10x16	138	10x12.5	112	10x20	150	10x16	138
22	220	10x20	189	10x16	150	10x20	204	10x16	155	10x20 12.5x20	220 255	12.5x16	280	12.5x25	282	12.5x20	255
33	330	10x20 12.5x20	228 270	12.5x16	305	10x20 12.5x20	230 288	12.5x16 16x16	280 350	12.5x20 12.5x25	310 348	16x16	350	16x25	390	12.5x25	348
47	470	12.5x20 12.5x25	318 354	12.5x16 16x16	360 420	12.5x20 12.5x25	330 378	16x16 16x20	390 420	12.5x25 16x25	420 468	16x20	420	16x31.5	474	16x20	385
68	680	16x20	490	16x16	440	18x20	490	16x16	470			18x20	490				
100	101	12.5x25 16x25	510 582	16x20 18x20	560 590	16x25 16x35.5	582 678	16x20 18x25	520 590	16x35.5	732	16x31.5	645	18x40	685	16x31.5	645
150	151	18x25	710	18x20	640												
220	221	18x35.5	900	16x31.5	792	18x35.5	1,000	18x31.5	885	22x40	1,150	18x40	985				
330	331	18x40	1,010	18x35.5	984	18x40	1,200										

μF	V. DC Contents	400V (2G)				450V (2W)			
		$\phi D \times L$	mA	* $\phi D \times L$	mA	$\phi D \times L$	mA	* $\phi D \times L$	mA
0.47	R47	8x11.5	21	5x11	15	8x11.5	21	6.3x11	18
1	010	8x11.5	32	5x11	22	8x11.5	32	6.3x11	25
2.2	2R2	10x12.5	57	6.3x11	33	10x12.5	57	8x11.5	45
3.3	3R3	10x16	78	8x11.5	40	10x16	78	10x12.5	65
4.7	4R7	10x20	103	10x12.5 8x11.5	80 55	10x20	103	10x12.5 8x11.5	80 55
10	100	10x20 12.5x20	140 174	12.5x16	150	12.5x20	174	10x20	140
22	220	12.5x20 12.5x25	240 280	16x16	280	16x25	354	12.5x25	300
33	330	16x25	390	16x20	355	16x31.5	435	16x20	355
47	470	16x25 16x31.5	445 475	18x20	435	16x35.5	510	16x31.5	475
82	820	18x31.5	560			18x31.5	560		
100	101	22x40	710	18x35.5	600	22x45	750	18x40 18x35.5	630 600

Remark: The case size of 12.5x16, 16x16, 16x20, 18x20 and 18x25 are used flat type rubber bung
Case size in mark of "*" is downsize. 500 WV specifications are available upon request.