



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

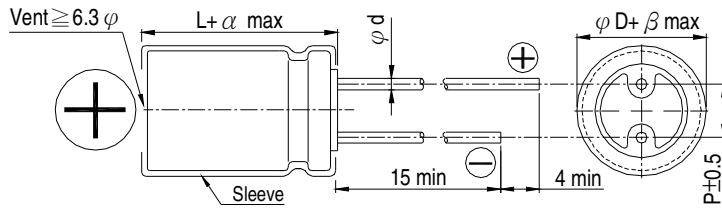
Items	Performance																																																																																				
Category Temperature Range	-40℃ ~ +85℃																																																																																				
Capacitance Tolerance	±20% (at 120Hz, 20℃)																																																																																				
Leakage Current (at 20℃)	<table><tr><td>Rated voltage</td><td colspan="5">≤ 100V</td><td colspan="5">> 100V</td></tr><tr><td>Time</td><td colspan="5">after 2 minutes</td><td colspan="5">after 5 minutes</td></tr><tr><td>Leakage Current</td><td colspan="5">I = 0.01CV or 3 (μ A) whichever is greater</td><td colspan="5">CV ≤ 1,000 I = 0.03CV+15(μ A)</td><td colspan="5">CV > 1,000 I = 0.02CV+25(μ A)</td></tr></table> Where, C = rated capacitance in μ F V = rated DC working voltage in V															Rated voltage	≤ 100V					> 100V					Time	after 2 minutes					after 5 minutes					Leakage Current	I = 0.01CV or 3 (μ A) whichever is greater					CV ≤ 1,000 I = 0.03CV+15(μ A)					CV > 1,000 I = 0.02CV+25(μ A)																																				
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Dissipation Factor (Tan δ at 120 Hz, 20℃)	<table><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> When the capacitance exceeds 1,000 μ F, 0.02 shall be added every 1,000 μ F increase.															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)	Impedance ratio shall not exceed the values given in the table below. <table><tr><td colspan="3">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℃)</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 rowspan="2">3</td><td rowspan="2">6</td><td rowspan="2">8</td><td rowspan="2">12</td><td rowspan="2">14</td><td rowspan="2">16</td></tr><tr><td>/Z(+20℃)</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></tr><tr><td>Z(-40℃)</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 rowspan="2">4</td><td rowspan="2">8</td><td rowspan="2">10</td><td rowspan="2">16</td><td rowspan="2">18</td><td rowspan="2">20</td></tr><tr><td>/Z(+20℃)</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></tr></table>															Rated Voltage			6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	Impedance Ratio	Z(-25℃)	φ D < 16	6	4	3	3	2	2	2	2	3	6	8	12	14	16	/Z(+20℃)	φ D ≥ 16	8	6	4	4	3	3	3	3	Z(-40℃)	φ D < 16	10	8	6	6	4	3	3	3	4	8	10	16	18	20	/Z(+20℃)	φ D ≥ 16	18	16	12	10	8	8	6	6
Rated Voltage			6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																																																					
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	/Z(+20℃)	φ D ≥ 16	8	6	4	4	3	3	3	3																																																																											
	Z(-40℃)	φ D < 16	10	8	6	6	4	3	3	3	4	8	10	16	18	20																																																																					
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Endurance	<table><tr><td>Test Time</td><td colspan="14">2,000 Hrs (3,000 Hrs for φ D ≥ 10mm)</td></tr><tr><td>Capacitance Change</td><td colspan="14">With in ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td colspan="14">Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="14">Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 2,000/3,000 hours at 85℃.															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><tr><td>Test Time</td><td colspan="14">1,000 Hrs</td></tr><tr><td>Capacitance Change</td><td colspan="14">With in ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td colspan="14">Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td colspan="14">Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ 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).															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><tr><th>Freq. (Hz) Cap. (μ F)</th><th>60 (50)</th><th>120</th><th>500</th><th>1k</th><th>10k up</th></tr><tr><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) Cap. (μ F)	60 (50)	120	500	1k	10k up	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

ϕD	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
ϕd	0.5		0.6			0.8		1.0
α	1.0			1.5				2.0
β	0.5							

Dimension: φ D × L(mm)

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

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V. DC		6.3V (0J)				10V (1A)				16V (1C)				25V (1E)			
μF	Contents	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						

V. DC		35V (1V)				50V (1H)				63V (1J)				100V (2A)			
μF	Contents	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

V. DC		160V (2C)				200V (2D)				250V (2E)				350V (2V)			
μF	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
0.47	R47	6.3×11	15	5×11	13	6.3×11	16	5×11	14	8×11.5	21	5×11	14	8×11.5	21	6.3×11	18
1	010	6.3×11	24	5×11	20	6.3×11	25	5×11	21	8×11.5	32	5×11	21	8×11.5	32	6.3×11	27
2.2	2R2	6.3×11	34	5×11	29	6.3×11	37	5×11	29	8×11.5	49	6.3×11	42	8×11.5	49	6.3×11	42
3.3	3R3	8×11.5	50	6.3×11	43	8×11.5	54	6.3×11	46	8×11.5	60	6.3×11	46	10×12.5	70	8×11.5	60
4.7	4R7	8×11.5	60	6.3×11	51	8×11.5	64	6.3×11	50	10×16	93	8×11.5	72	10×16	93	10×12.5	80
10	100	10×12.5	104	8×11.5	75	10×12.5	112	8×11.5	81	10×16	138	10×12.5	112	10×20	150	10×16	138
22	220	10×20	189	10×16	150	10×20	204	10×16	155	10×20 12.5×20	220 255	12.5×16	280	12.5×25	282	12.5×20	255
33	330	10×20 12.5×20	228 270	12.5×16	305	10×20 12.5×20	230 288	12.5×16 16×16	280 350	12.5×20 12.5×25	310 348	16×16	350	16×25	390	12.5×25	348
47	470	12.5×20 12.5×25	318 354	12.5×16 16×16	360 420	12.5×20 12.5×25	330 378	16×16 16×20	390 420	12.5×25 16×25	420 468	16×20	420	16×31.5	474	16×20	385
68	680	16×20	490	16×16	440	18×20	490	16×16	470			18×20	490				
100	101	12.5×25 16×25	510 582	16×20 18×20	560 590	16×25 16×35.5	582 678	16×20 18×25	520 590	16×35.5	732	16×31.5	645	18×40	685	16×31.5	645
150	151	18×25	710	18×20	640												
220	221	18×35.5	900	16×31.5	792	18×35.5	1,000	18×31.5	885	22×40	1,150	18×40	985				
330	331	18×40	1,010	18×35.5	984	18×40	1,200										

V. DC		400V (2G)				450V (2W)			
μF	Contents	$\phi D \times L$	mA	* $\phi D \times L$	mA	$\phi D \times L$	mA	* $\phi D \times L$	mA
0.47	R47	8×11.5	21	5×11	15	8×11.5	21	6.3×11	18
1	010	8×11.5	32	5×11	22	8×11.5	32	6.3×11	25
2.2	2R2	10×12.5	57	6.3×11	33	10×12.5	57	8×11.5	45
3.3	3R3	10×16	78	8×11.5	40	10×16	78	10×12.5	65
4.7	4R7	10×20	103	10×12.5 8×11.5	80 55	10×20	103	10×12.5 8×11.5	80 55
10	100	10×20 12.5×20	140 174	12.5×16	150	12.5×20	174	10×20	140
22	220	12.5×20 12.5×25	240 280	16×16	280	16×25	354	12.5×25	300
33	330	16×25	390	16×20	355	16×31.5	435	16×20	355
47	470	16×25 16×31.5	445 475	18×20	435	16×35.5	510	16×31.5	475
82	820	18×31.5	560			18×31.5	560		
100	101	22×40	710	18×35.5	600	22×45	750	18×40 18×35.5	630 600

Remark: The case size of 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. 500 WV specifications are available upon request.