

Features

- 105°C, 2,000~3,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHS Compliance

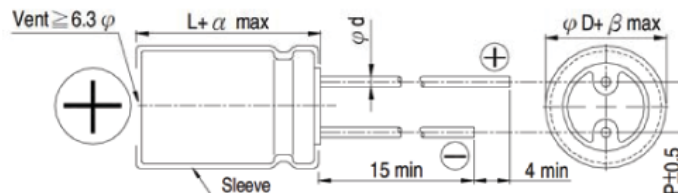


Sleeve & Marking Color: Black & White

SPECIFICATIONS

Items	Performance																														
Category Temperature Range	-40℃ ~ +105℃																														
Capacitance Tolerance	±20% (at 120Hz, 20℃)																														
Leakage Current (at 20℃)	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																														
Dissipation Factor (Tan δ at 120Hz, 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></tr><tr><td>Tan δ (max)</td><td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td></tr></table> When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.	Rated Voltage	6.3	10	16	25	35	50	Tan δ (max)	0.22	0.19	0.16	0.14	0.12	0.10																
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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="2">Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td rowspan="2">Impedance Ratio</td><td>Z(-25℃)/Z(+20℃)</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40℃)/Z(+20℃)</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td></tr></table>	Rated Voltage		6.3	10	16	25	35	50	Impedance Ratio	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2	Z(-40℃)/Z(+20℃)	8	6	4	3	3	3							
Rated Voltage		6.3	10	16	25	35	50																								
Impedance Ratio	Z(-25℃)/Z(+20℃)	4	3	2	2	2	2																								
	Z(-40℃)/Z(+20℃)	8	6	4	3	3	3																								
Endurance	<table><tr><td>Test Time</td><td>2,000 Hrs for ϕ D = 5 ~ 8 mm; 3,000 Hrs for ϕ D ≥ 10 mm</td></tr><tr><td>Capacitance Change</td><td>Within ±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> * 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 105℃.	Test Time	2,000 Hrs for ϕ D = 5 ~ 8 mm; 3,000 Hrs for ϕ D ≥ 10 mm	Capacitance Change	Within ±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>1,000 Hrs</td></tr><tr><td>Capacitance Change</td><td>Within ±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> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied.	Test Time	1,000 Hrs	Capacitance Change	Within ±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.(μF)</th><th>120</th><th>1k</th><th>10k</th><th>100k up</th></tr><tr><td>0.47 ~ 180</td><td>0.40</td><td>0.75</td><td>0.9</td><td>1.0</td></tr><tr><td>220 ~ 560</td><td>0.50</td><td>0.85</td><td>0.94</td><td>1.0</td></tr><tr><td>680 ~ 1,800</td><td>0.60</td><td>0.87</td><td>0.95</td><td>1.0</td></tr><tr><td>2,200 ~ 3,900</td><td>0.75</td><td>0.90</td><td>0.95</td><td>1.0</td></tr><tr><td>4,700 up above</td><td>0.85</td><td>0.95</td><td>0.98</td><td>1.0</td></tr></table>	Freq.(Hz) Cap.(μF)	120	1k	10k	100k up	0.47 ~ 180	0.40	0.75	0.9	1.0	220 ~ 560	0.50	0.85	0.94	1.0	680 ~ 1,800	0.60	0.87	0.95	1.0	2,200 ~ 3,900	0.75	0.90	0.95	1.0	4,700 up above	0.85	0.95	0.98	1.0
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0.47 ~ 180	0.40	0.75	0.9	1.0																											
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680 ~ 1,800	0.60	0.87	0.95	1.0																											
2,200 ~ 3,900	0.75	0.90	0.95	1.0																											
4,700 up above	0.85	0.95	0.98	1.0																											

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		7.5	
φd	0.5		0.6			0.8	
α		1.0			1.5		
β				0.5			

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: $\phi D \times L(mm)$

Ripple Current: mA/rms at 100k Hz, 105°C

V. DC Contents μF	6.3V (0J)					10V (1A)					16V (1C)				
	$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)	
		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz
56															
100						5x11	0.58	2.3	84	210					
120											6.3x11	0.22	0.87	136	340
150	5x11	0.58	2.3	84	210										
220						6.3x11	0.22	0.87	170	340					
330	6.3x11	0.22	0.87	170	340						8x11.5	0.13	0.52	320	640
470						8x11.5	0.13	0.52	320	640	8x15	0.087	0.35	420	840
680	8x11.5 10x12.5	0.13 0.08	0.52 0.32	384 519	640 865	8x15 10x12.5	0.087 0.080	0.35 0.32	504 519	840 865	10x12.5 10x16	0.080 0.069	0.32 0.27	432 630	865 1,050
1,000	8x15	0.087	0.35	504	840	8x20 10x16	0.069 0.060	0.27 0.24	630 726	1,050 1,210	10x20 12.5x16	0.046 0.049	0.18 0.16	840 870	1,400 1,450
1,200	8x20 10x16	0.069 0.060	0.27 0.24	630 726	1,050 1,210	10x20	0.046	0.18	840	1,400	10x25	0.042	0.17	990	1,650
1,500	10x20	0.046	0.18	840	1,400	10x25 12.5x16	0.042 0.049	0.17 0.16	990 870	1,650 1,450	10x30 12.5x20 16x16	0.031 0.035 0.042	0.12 0.12 0.12	1,146 1,140 1,164	1,910 1,900 1,940
1800	12.5x16	0.049	0.16	870	1,450										
2,200	10x25	0.042	0.17	1,238	1,650	10x30 12.5x20 16x16	0.031 0.035 0.042	0.12 0.12 0.12	1,432 1,425 1,455	1,910 1,900 1,940	12.5x25 18x16	0.027 0.043	0.089 0.11	1,673 1,658	2,230 2,210
2,700	10x30 16x16	0.031 0.042	0.12 0.12	1,432 1,455	1,910 1,940	18x16	0.043	0.11	1,657	2,210	12.5x30 16x20	0.024 0.027	0.078 0.078	1,988 1,898	2,650 2,530
3,300	12.5x20	0.035	0.12	1,425	1,900	12.5x25	0.027	0.089	1,672	2,230	12.5x35	0.020	0.065	2,160	2,880
3,900	12.5x25 18x16	0.027 0.043	0.089 0.11	1,672 1,657	2,230 2,210	12.5x30 16x20	0.024 0.027	0.078 0.078	1,987 1,897	2,650 2,530	12.5x40 16x25 18x20	0.017 0.021 0.026	0.056 0.060 0.067	2,513 2,198 2,145	3,350 2,930 2,860
4,700	12.5x30	0.024	0.078	2,252	2,650	12.5x35	0.020	0.065	2,448	2,880	16x31.5 18x25	0.017 0.019	0.050 0.049	2,933 2,669	3,450 3,140
5,600	12.5x35 16x20	0.020 0.027	0.065 0.078	2,448 2,150	2,880 2,530	12.5x40 16x25 18x20	0.017 0.021 0.026	0.056 0.060 0.067	2,847 2,490 2,431	3,350 2,930 2,860	16x35.5 18x31.5	0.015 0.015	0.044 0.040	3,069 3,545	3,610 4,170
6,800	12.5x40 16x25 18x20	0.017 0.021 0.026	0.056 0.060 0.067	2,847 2,490 2,431	3,350 2,930 2,860	16x31.5 18x25	0.017 0.019	0.050 0.049	2,932 2,669	3,450 3,140	16x40	0.013	0.038	3,468	4,080
8,200	16x31.5	0.017	0.050	2,932	3,450	16x35.5 18x31.5	0.015 0.015	0.044 0.040	3,068 3,544	3,610 4,170	18x35.5	0.014	0.038	3,587	4,220
10,000	16x35.5 18x25	0.015 0.019	0.044 0.049	3,068 2,669	3,610 3,140	16x40 18x35.5	0.013 0.014	0.038 0.038	3,468 3,587	4,080 4,220	18x40	0.012	0.032	3,638	4,280
12,000	16x40 18x31.5	0.013 0.015	0.038 0.040	3,468 3,544	4,080 4,170	18x40	0.012	0.032	3,638	4,280					
15,000	18x35.5	0.014	0.038	3,587	4,220										
18,000	18x40	0.012	0.032	3,638	4,280										

Remark : The case size of 12.5x16, 16x16, 16x20, 18x16, 18x20, 18x25 are used flat type rubber bung.

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: $\phi D \times L(mm)$

Ripple Current: mA/rms at 100k Hz, 105°C

V. DC Contents μF	25V (1E)					35V (1V)					50V (1H)				
	$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)	
		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz		20°C	-10°C	120 Hz	100k Hz
0.47											5x11	5.50	22.0	6.8	17
1.0											5x11	4.00	16.0	12	30
2.2											5x11	2.50	10.0	17	42
3.3											5x11	2.20	8.8	21	52
4.7											5x11	1.90	7.6	35	87
10											5x11	1.50	6.0	40	100
22											5x11	0.70	2.8	72	180
33						5x11	0.58	2.30	84	210					
47	5x11	0.58	2.30	84	210										
56						6.3x11	0.22	0.87	136	340	6.3x11	0.30	1.2	86	217
100	6.3x11	0.22	0.87	136	340						8x11.5	0.17	0.68	148	371
120											8x15	0.12	0.48	156	392
150						8x11.5	0.13	0.52	256	640	10x12.5	0.12	0.48	235	588
180											8x20	0.091	0.36	210	525
220	8x11.5	0.13	0.52	320	640	8x15	0.087	0.35	420	840	10x16	0.084	0.34	364	728
270						10x12.5	0.080	0.32	432	865	10x20	0.060	0.24	305	610
330	8x15	0.087	0.35	420	840	10x16	0.060	0.24	605	1,210	12.5x16	0.061	0.20	318	637
470	10x12.5	0.080	0.32	432.5	865	10x16	0.060	0.24	605	1,210	10x25	0.055	0.22	441	882
560	8x20	0.069	0.27	525	1,050	10x20	0.046	0.18	700	1,400	10x30	0.043	0.17	588	1,176
	10x16	0.060	0.24	605	1,210	12.5x16	0.049	0.16	725	1,450	12.5x20	0.045	0.15	596	1,192
											16x16	0.055	0.17	596	1,192
						10x25	0.042	0.17	825	1,650	12.5x25	0.034	0.11	652	1,304
											18x16	0.054	0.15	688	1,376
680	10x20	0.045	0.18	840	1,400	10x30	0.031	0.12	1,146	1,910	12.5x30	0.030	0.10	912	1,520
	12.5x16	0.049	0.16	870	1,450	12.5x20	0.035	0.12	1,140	1,900					
						16x16	0.042	0.12	1,164	1,940					
820	10x25	0.042	0.17	990	1,650						12.5x35	0.025	0.083	993	1,656
											16x20	0.034	0.10	974	1,624
1,000	10x30	0.031	0.12	1,146	1,910	12.5x25	0.027	0.089	1,338	2,230	12.5x40	0.021	0.069	1,080	1,800
	12.5x20	0.035	0.12	1,140	1,900	18x16	0.043	0.11	1,326	2,210	16x25	0.025	0.075	998	1,664
	16x16	0.042	0.12	1,164	1,940						18x20	0.036	0.097	1,032	1,720
1,200	18x16	0.043	0.11	1,326	2,210	12.5x30	0.024	0.078	1,590	2,650	16x31.5	0.022	0.066	1,252	2,088
						16x20	0.027	0.078	1,518	2,530	18x25	0.026	0.070	1,269	2,115
1,500	12.5x25	0.027	0.089	1,338	2,230	12.5x35	0.020	0.065	1,728	2,880	16x35.5	0.019	0.057	1,371	2,286
1,800	12.5x30	0.024	0.078	1,590	2,650	12.5x40	0.017	0.056	2,010	3,350	16x40	0.016	0.048	1,479	2,466
	16x20	0.027	0.078	1,518	2,530	16x25	0.021	0.060	1,758	2,930	18x31.5	0.021	0.057	1,479	2,466
						18x20	0.026	0.067	1,716	2,860					
2,200	12.5x35	0.020	0.065	2,160	2,880	16x31.5	0.017	0.050	2,587	3,450	18x35.5	0.017	0.046	2,070	2,760
	18x20	0.026	0.067	2,145	2,860	18x25	0.019	0.049	2,355	3,140					
2,700	12.5x40	0.017	0.056	2,513	3,350	16x35.5	0.015	0.044	2,707	3,610					
	16x25	0.021	0.060	2,198	2,930	18x31.5	0.015	0.040	3,127	4,170	18x40	0.014	0.038	2,137	2,850
3,300	16x31.5	0.017	0.050	2,588	3,450	16x40	0.013	0.038	3,060	4,080					
	18x25	0.019	0.049	2,355	3,140	18x35.5	0.014	0.038	3,165	4,220					
3,900	16x35.5	0.015	0.044	2,708	3,610										
	18x31.5	0.015	0.040	3,128	4,170	18x40	0.012	0.032	3,210	4,280					
4,700	16x40	0.013	0.038	3,468	4,080										
	18x35.5	0.014	0.038	3,587	4,220										
5,600	18x40	0.012	0.032	3,638	4,280										

Remark : The case size of 12.5x16, 16x16, 16x20, 18x16, 18x20, 18x25 are used flat type rubber bung.