

Electrolytic Capacitors

Standard 105°C

Features

- ◆ Used in communication equipments, switching power supply, etc.
- ◆ Safety vent construction design.
- ◆ For detail specifications, please refer to Engineering Bulletin No. E102



Specifications

Item	Performance Characteristics																												
Operating Temperature Range	-40 to +105°C	-25 to +105°C																											
Rate Voltage Range	6.3 to 100 VDC	160 to 450 VDC																											
Capacitance Range	0.1 to 22000 µF	0.47 to 470 µF																											
Capacitance Tolerance	±20% (120Hz, +20°C)																												
Leakage Current(+20°C, max)	I ≤ 0.01 CV or 3 (µA) After 1 minute whichever is greater measured with rated working voltage applied.	I ≤ 0.03 CV (µA) After 1 minute with rated working voltage applied.																											
Dissipation Factor(tan δ)	(+20°C, at 120Hz)	<table border="1"> <tr> <td>Working Voltage(VDC)</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> </tr> <tr> <td>D.F. (%)max.</td> <td>22</td> <td>19</td> <td>16</td> <td>14</td> <td>12</td> <td>10</td> <td>9</td> <td>8</td> </tr> </table>	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	D.F. (%)max.	22	19	16	14	12	10	9	8									
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D.F. (%)max.	22	19	16	14	12	10	9	8																					
<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>D.F. (%)max.</td> <td>12</td> <td>12</td> <td>12</td> <td>15</td> <td>15</td> <td>17</td> </tr> </table>	Working Voltage(VDC)	160	200	250	350	400	450	D.F. (%)max.	12	12	12	15	15	17															
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D.F. (%)max.	12	12	12	15	15	17																							
For capacitance > 1000 µF, add 2% per another 1000 µF.																													
Low Temperature Characteristics (120Hz)	Impedance ratio max.	<table border="1"> <tr> <td>Working Voltage(VDC)</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> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Working Voltage(VDC)	6.3	10	16	25	35	50	63	100	Z-25°C / Z+20°C	4	3	2	2	2	2	2	2	Z-40°C / Z+20°C	8	6	4	3	3	3	3	3
		Working Voltage(VDC)	6.3	10	16	25	35	50	63	100																			
Z-25°C / Z+20°C	4	3	2	2	2	2	2	2																					
Z-40°C / Z+20°C	8	6	4	3	3	3	3	3																					
<table border="1"> <tr> <td>Working Voltage(VDC)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>2</td> <td>2</td> <td>3</td> <td>5</td> <td>6</td> <td>15</td> </tr> </table>	Working Voltage(VDC)	160	200	250	350	400	450	Z-25°C / Z+20°C	2	2	3	5	6	15															
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Z-25°C / Z+20°C	2	2	3	5	6	15																							
For Capacitance > 1000 µF, add 0.5 per another 1000 µF for -25°C / +20°C add 1 per another 1000 µF for -40°C / +20°C																													
Load Life	Test conditions Duration time :2000Hrs Ambient temperature :+105°C Applied voltage :Rated DC working voltage After test requirements at +20°C Capacitance change :≦ ±20% of the initial measured value Dissipation factor :≦ 200% of the initial specified value Leakage current :≦ The initial specified value																												
Shelf Life	Test conditions Duration time :1000Hrs Ambient temperature :+105°C Applied voltage :None After test requirements at +20°C:Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.																												

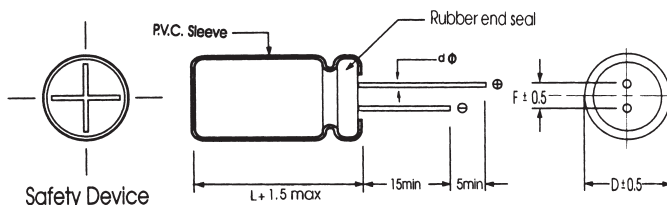
Multiplier for Ripple Current vs. Frequency

CAP (µF) \ Hz		50(60)	120	400	1K	10K	50K-100K
Multiplier	CAP ≤ 10	0.8	1	1.30	1.45	1.65	1.70
	10 < CAP ≤ 100	0.8	1	1.23	1.36	1.48	1.53
	100 < CAP ≤ 1000	0.8	1	1.16	1.25	1.35	1.38
	1000 < CAP	0.8	1	1.11	1.17	1.25	1.28

Multiplier for Ripple Current vs. Temperature

Temperature°C	45	60	70	85	105
Multiplier	2.10	1.90	1.40	1.25	1.00

Diagram of Dimensions:(unit:mm)



D φ	5	6.3	8	10	13	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10
d φ	0.5			0.6		0.8		

Case Size

φ DxD(mm)

WV (SV) μF	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
4.7							5x11	26	5x11	28
6.8							5x11	35	5x11	38
10					5x11	35	5x11	38	5x11	41
22			5x11	48	5x11	54	5x11	58	5x11	61
33	5x11	54	5x11	60	5x11	64	5x11	69	5x11	75
47	5x11	65	5x11	70	5x11	100	5x11	105	5x11	110
68	5x11	75	5x11	80	5x11	105	6.3x11	120	8x11.5	140
100	5x11	96	5x11	105	5x11	105	6.3x11	145	6.3x11	160
					6.3x11	130			8x11.5	175
120	5x11	110	6.3x11	120	6.3x11	145	6.3x11	175	8x11.5	185
150	6.3x11	120	6.3x11	145	6.3x11	170	8x11.5	200	8x11.5	215
180	6.3x11	140	6.3x11	160	8x11.5	190	8x11.5	210	10x12.5	265
220	6.3x11	160	6.3x11	175	6.3x11	215	8x11.5	235	10x12.5	300
330	6.3x11	195	8x11.5	255	8x11.5	265	8x11.5	310	10x12.5	400
							10x12.5	335		
470	8x11.5	270	8x11.5	290	8x11.5	370	8x11.5	410	10x16	520
							10x12.5	440		
560	8x11.5	310	10x12.5	330	10x12.5	410	10x16	460	16x25	540
680	8x11.5	360	10x12.5	420	10x12.5	480	10x16	520	13x20	650
820	8x11.5	390	10x12.5	480	10x16	550	10x20	640	13x20	760
1000	10x12.5	430	10x12.5	520	10x16	590	10x20	710	13x20	830
1200	10x12.5	550	10x16	630	10x20	700	13x20	810	13x25	900
1500	10x16	620	10x16	770	10x20	820	13x20	900	16x21	960
1800	10x20	710	10x20	820	13x20	920	13x25	1050	16x25	1150
2200	10x20	770	10x20	860	13x20	1000	13x25	1200	16x25	1290
									16x31.5	1350
2700	10x20	850	13x20	920	13x20	1080	16x25	1320	16x31.5	1480
3300	13x20	960	13x20	1100	13x25	1200	16x25	1460	16x35.5	1650
3900	13x20	1000	13x20	1280	16x25	1490	16x31.5	1670	18x31.5	1820
4700	13x20	1150	13x25	1350	16x25	1600	16x35.5	1780	18x35.5	1900
5600	13x25	1300	16x25	1490	16x31.5	1720	16x35.5	1890	18x35.5	2000
6800	13x25	1450	16x25	1670	16x31.5	1870	18x35.5	2050		
8200	16x25	1520	16x31.5	1840	16x35.5	1950	18x35.5	2090		
10000	16x25	1680	16x35.5	1900	18x35.5	2060				
12000	16x31.5	1750	16x35.5	2050	18x35.5	2150				
15000	16x35.5	2075	18x35.5	2180						
18000	18x31.5	2150	18x35.5	2205						
22000	18x41	2300								

Ripple Current (mA, rms) at 105°C 120Hz

φ DxL(mm)

WV (SV) μF	50 (63)		63 (79)		100 (125)		160 (200)		200 (250)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1	5x11	1.3	5x11	1.3	5x11	1.9				
0.22	5x11	2.9	5x11	2.9	5x11	3.4				
0.33	5x11	4	5x11	4.5	5x11	5				
0.47	5x11	7	5x11	7	5x11	7.5	5x11	11	5x11	12
1	5x11	13	5x11	13	5x11	15	6.3x11	17	6.3x11	17
2.2	5x11	20	5x11	20	5x11	21	6.3x11	25	6.3x11	25
3.3	5x11	26	5x11	28	5x11	30	6.3x11	32	8x11.5	35
4.7	5x11	32	5x11	32	5x11	35	6.3x11	35	8x11.5	50
							8x11.5	42		
6.8	5x11	40	5x11	40	6.3x11	47	8x11.5	56	10x12.5	63
10	5x11	48	6.3x11	48	6.3x11	56	10x12.5	75	10x12.5	78
					6.3x11	60				
22	6.3x11	72	6.3x11	82	8x11.5	96	10x16	105	10x16	125
							10x20	120	10x20	130
33	6.3x11	90	6.3x11.5	100	8x11.5	140	10x20	170	13x20	190
					10x12.5	155				
47	6.3x11	115	6.3x11.5	125	10x12.5	170	13x20	210	13x20	220
			8x11.5	140						
68	8x11.5	155	10x12.5	185	10x16	240	13x25	280	16x25	300
100	8x11.5	200	10x12.5	230	10x20	280	13x25	310	16x25	345
							16x25	330		
120	10x12.5	210	10x20	255	13x20	295	16x25	350	16x31.5	360
150	10x12.5	245	10x16	270	13x25	360	16x25	470	16x31.5	480
180	10x16	280	10x16	310	13x25	480	16x25	550	16x35.5	550
220	10x12.5	345	10x16	375	13x25	520	16x35.5	580	16x35.5	520
	10x16	360	10x20	400					18x31.5	550
330	10x16	450	13x20	540	16x25	690	18x35.5	705	18x 35.5	650
	10x20	470							18x41	670
470	10x20	600	13x20	690	16x25	820	18x41	860	22x41	790
					16x31.5	860				
560	13x20	660	13x25	770	16x35.5	880				
680	13x25	770	16x25	880	16x35.5	920				
					18x31.5	950				
820	13x25	850	16x25	920	18x35.5	970				
1000	16x25	1000	16x31.5	1185	18x41	985				
1200	16x25	1150	16x35.5	1200						
1500	16x31.5	1300	18x31.5	1350						
1800	16x35.5	1480								
2200	16x35.5	1530								
2700	18x35.5	1590								
3300	18x35.5	1750								

Ripple Current (mA, rms) at 105°C 120Hz

φ D×L(mm)

WV (SV) μF	250 (300)		350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.47	5x11	12	6.3x11	13	6.3x11	14	6.3x11	14
1	6.3x11	16	6.3x11	16	8x11.5	20	8x11.5	20
2.2	8x11.5	25	8x11.5	31	8x11.5	36	10x12.5	35
3.3	8x11.5	38	10x12.5	38	10x12.5	47	10x12.5	31
							10x16	35
4.7	8x11.5	46	10x12.5	52	10x12.5	65	10x16	62
	10x12.5	50						
6.8	10x12.5	70	10x16	79	10x16	85	10x20	72
10	10x12.5	82	10x20	92	10x20	110	10x20	92
	10x16	88					13x20	98
22	10x20	140	13x20	160	13x20	165	13x25	160
	13x20	152	13x25	170	13x25	190		
33	13x20	190	13x25	200	13x25	250	16x25	210
			16x20	225				
47	13x25	240	16x31.5	260	16x25	300	16x35.5	275
					16x31.5	320	18x31.5	292
68	16x25	355	16x31.5	320	16x35.5	320	18x35.5	300
					18x31.5	350		
82	16x25	370	16x35.5	350	18x35.5	365	18x41	320
100	16x31.5	395	18x35.5	390	18x35.5	380	18x41	332
120	16x35.5	370	18x35.5	400	18x35.5	420	22x41	396
					18x41	450		
150	16x35.5	460	18x41	420	22x41	460		
180	18x35.5	470	18x41	430				
220	18x35.5	500	22x41	500				
	18x41	520						
330	22x41	630						

Ripple Current (mA, rms) at 105°C 120Hz