



series

LOW IMPEDANCE, HIGH RIPPLE CURRENT

■ FEATURES

- Enabled high ripple current by a reduction of impedance at high frequency range
- Load life: 105°C 2000hours

■ SPECIFICATIONS

Item	Characteristics																								
Operating Temperature Range	-55°C~105°C																								
Rated Voltage Range	6.3~63V																								
Capacitance Range	1.0~6800uF																								
Capacitance Tolerance	±20%, 120Hz, 20°C																								
Leakage Current (MAX)	$I \leq 0.01CV$ or $3\mu A$ whichever is greater. (after 2minutes) I =Leakage Current(μA), C =Nominal Capacitance(μF), V =Rated Voltage(V)																								
Dissipation Factor ($\tan \delta$)	When nominal capacitance is over 1000uF, $\tan \delta$ shall be added 0.02 to the listed value with increase of every 1000uF. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Rated voltage(V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> </tr> </thead> <tbody> <tr> <td>Tan δ</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> <td>0.09</td> </tr> </tbody> </table> MAX (20°C 120Hz)	Rated voltage(V)	6.3	10	16	25	35	50	63	Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09								
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Low Temperature Stability Impedance Ratio	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Rated voltage(V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> </tr> </thead> <tbody> <tr> <td>Z(-25°C) / Z (+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C) / Z (+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> MAX (20°C 120Hz)	Rated voltage(V)	6.3	10	16	25	35	50	63	Z(-25°C) / Z (+20°C)	2	2	2	2	2	2	2	Z(-55°C) / Z (+20°C)	3	3	3	3	3	3	3
Rated voltage(V)	6.3	10	16	25	35	50	63																		
Z(-25°C) / Z (+20°C)	2	2	2	2	2	2	2																		
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Load Life	After life test at conditions stated in the table below, the capacitors shall meet the following requirement. <table border="1" style="margin-left: 20px;"> <tbody> <tr> <td>Leakage Current</td> <td>Not more than the specified</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified</td> </tr> </tbody> </table>	Leakage Current	Not more than the specified	Capacitance Change	Within ±20% of initial value	Dissipation Factor	Not more than 200% of the specified																		
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Shelf Life	After leaving capacitors under no load at 105°C for 1000hours and applying voltage according to JIS C-5102 4-3, they meet the specified value for load life characteristics listed above.																								
Standard	According to JIS C 5141																								

■ MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

Frequency(Hz)	60(50)	120	1k	10k	≤100k
1.0-33	0.45	0.55	0.75	0.90	1.00
47-330	0.60	0.70	0.85	0.95	1.00
470-1000	0.65	0.75	0.90	0.98	1.00
1200-6800	0.75	0.80	0.95	1.00	1.00

Temperature coefficient

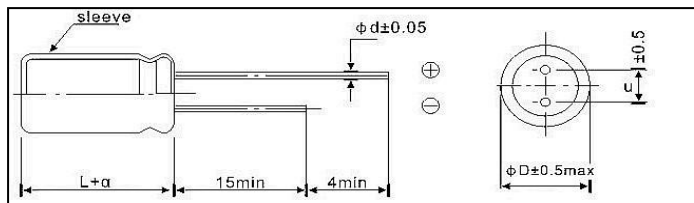
Temperature	45°C	60°C	70°C	85°C	95°C	105°C
Coefficient	1.80	1.50	1.45	1.30	1.20	1.00

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■ DIMENSIONS (mm)



ΦD	5	6.3	8	10	13	16	18
Φd	0.5			0.6		0.8	
F	2.0	2.5	3.5	5.0		7.5	
α	L≤16 : α=1.5 L≥16 : α=2.0						

■ STANDARD SIZE, MAXIMUM PERMISSIBLE RIPPLE CURRENT, IMPEDANCE

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 6.3V				
Nominal capacitance (uF)	Size ΦD×L (mm)	Ripple Current	Impedance (QMAX)	
			20°C, 100kHz	-10°C, 100kHz
150	5×11	260	0.29	0.95
220	6.3×11	327	0.25	0.81
330	6.3×11	395	0.15	0.47
470	8×12	420	0.095	0.30
560	8×12	550	0.072	0.22
820	8×16	685	0.056	0.17
	10×13	850	0.056	0.17
1000	8×12	800	0.060	0.20
	8×14	860	0.052	0.19
	10×13	885	0.055	0.17
	8×16	1000	0.049	0.156
1200	8×20	1250	0.041	0.13
	10×13	925	0.048	0.15
	10×16	1200	0.041	0.13
1500	10×13	1500	0.048	0.15
	10×16	1610	0.042	0.134
	10×20	1820	0.040	0.11
2200	10×25	2150	0.025	0.066
2700	10×25	2180	0.023	0.060
3300	10×25	2180	0.021	0.058
	13×21	2290	0.026	0.074
3900	13×25	2780	0.022	0.044
4700	13×30	3200	0.020	0.043
	16×20	3070	0.021	0.042
5600	13×35	3350	0.015	0.039
	16×20	3315	0.018	0.045
6800	16×25	3400	0.015	0.041

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Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 10V				
Nominal capacitance (uF)	Size	Ripple Current	Impedance(QMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
47	5×11	200	0.35	1.18
100	5×11	242	0.29	0.85
220	6.3×12	390	0.14	0.45
330	8×12	540	0.086	0.267
	6.3×12	490	0.13	0.41
470	8×12	750	0.080	0.246
	8×14	780	0.078	0.22
	10×13	800	0.075	0.23
560	8×12	877	0.074	0.195
680	8×12	900	0.072	0.183
	8×14	940	0.070	0.179
1000	8×14	950	0.065	0.201
	8×16	1120	0.055	0.15
	8×20	1140	0.052	0.14
	8×25	1200	0.05	0.13
	10×13	1150	0.052	0.14
	10×16	1300	0.045	0.128
1500	10×16	1350	0.042	0.12
	10×20	1985	0.030	0.068
2200	10×20	2130	0.030	0.064
	10×25	2225	0.025	0.057
	13×17	2050	0.035	0.072
3300	10×30	2290	0.022	0.055
3900	13×30	3290	0.016	0.041
4700	13×35	3400	0.015	0.039
5600	16×25	3470	0.015	0.041



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LOW IMPEDANCE, HIGH RIPPLE CURRENT

Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 16V

Nominal capacitance (uF)	Size	Ripple Current	Impedance(ΩMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
22	5×11	185	0.50	1.45
47	5×11	200	0.40	1.20
100	5×11	340	0.27	0.78
	6.3×12	360	0.25	0.73
220	6.3×12	490	0.18	0.53
330	8×12	740	0.08	0.23
470	8×12	860	0.075	0.20
	8×14	880	0.073	0.189
	8×16	990	0.062	0.18
680	8×14	910	0.060	0.178
	8×16	980	0.058	0.17
	8×20	1120	0.055	0.16
820	8×20	1320	0.045	0.13
820	10×16	1320	0.045	0.13
1000	8×20	1400	0.045	0.13
	8×25	1450	0.044	0.12
	10×16	1450	0.044	0.12
	10×20	1820	0.035	0.09
1500	10×20	2050	0.030	0.08
	13×17	1700	0.040	0.098
1800	10×25	2255	0.025	0.071
2200	10×30	2510	0.022	0.06
	13×25	2750	0.022	0.06
2700	13×30	3290	0.018	0.05
	16×21	3140	0.021	0.052
3300	13×25	3000	0.021	0.052
	13×35	3400	0.018	0.05
3900	16×25	3460	0.018	0.043



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LOW IMPEDANCE, HIGH RIPPLE CURRENT

Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 25V

Nominal capacitance (uF)	Size	Ripple Current	Impedance(QMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
10	5×11	100	0.74	1.49
47	5×11	120	0.68	1.30
100	6.3×12	250	0.30	0.72
150	6.3×12	350	0.20	0.48
220	8×12	580	0.095	0.218
330	8×14	650	0.090	0.18
	8×16	750	0.080	0.162
	8×20	1050	0.055	0.12
	10×13	1010	0.060	0.128
470	8×14	950	0.068	0.18
	8×16	1100	0.065	0.175
	10×13	1150	0.047	0.152
	10×16	1415	0.042	0.121
560	8×20	960	0.058	0.125
680	10×16	1450	0.040	0.194
	8×20	980	0.055	0.161
	10×20	1570	0.035	0.101
820	10×20	1680	0.033	0.094
1000	10×20	1740	0.032	0.093
	13×21	1800	0.029	0.086
1200	10×20	1800	0.033	0.094
1500	13×21	1915	0.031	0.09
	13×25	1980	0.027	0.08
1800	16×21	1950	0.029	0.086
2200	13×25	2550	0.025	0.064
2700	16×25	3010	0.018	0.041



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LOW IMPEDANCE, HIGH RIPPLE CURRENT

Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 35V

Nominal capacitance (uF)	Size	Ripple Current	Impedance(QMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
10	5×11	145	0.4	1.40
33	5×11	230	0.32	0.934
47	6.3×12	280	0.30	0.89
56	6.3×12	310	0.25	0.78
100	6.3×12	366	0.20	0.584
150	8×12	680	0.15	0.438
220	8×12	880	0.095	0.23
	8×14	920	0.08	0.225
	8×16	955	0.056	0.164
270	8×20	960	0.055	0.153
330	8×20	980	0.055	0.153
	10×13	820	0.080	0.225
	10×15	885	0.070	0.22
	10×16	1212	0.047	0.145
470	10×16	1000	0.060	0.213
	10×20	1770	0.041	0.114
680	10×20	1790	0.039	0.098
	13×21	1820	0.037	0.092
1000	13×21	1730	0.033	0.084
	13×25	1980	0.031	0.085
1200	13×30	1950	0.019	0.048
1500	13×35	3350	0.018	0.045
1800	16×31	3670	0.016	0.043
2200	16×35	3750	0.015	0.038



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LOW IMPEDANCE, HIGH RIPPLE CURRENT

Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 50V				
Nominal capacitance (uF)	Size	Ripple Current	Impedance(QMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
1	5×11	25	3.0	10.5
2.2	5×11	68	2.0	6.45
1.7	5×11	95	1.68	4.5
10	5×11	145	0.80	3.6
22	5×11	220	0.35	1.015
	6.3×12	240	0.32	0.85
47	6.3×12	280	0.32	0.85
56	6.3×12	300	0.20	0.580
100	8×12	500	0.15	0.430
120	8×16	770	0.073	0.212
150	10×13	870	0.068	0.197
220	10×16	1200	0.065	0.190
270	10×20	1500	0.043	0.125
330	10×20	1680	0.042	0.11
	10×25	1850	0.032	0.093
470	10×20	1850	0.032	0.093
	10×25	1900	0.031	0.09
	13×21	2000	0.030	0.087
560	13×21	2150	0.028	0.081
680	13×25	2490	0.026	0.075
820	13×30	2770	0.025	0.072
820	16×25	2960	0.024	0.069
1000	16×25	3000	0.020	0.058
2200	16×36	4000	0.018	0.045

Ripple Current(mA 105°C,100kHz)r.m.s

Rated voltage 63V				
Nominal capacitance (uF)	Size	Ripple Current	Impedance(QMAX)	
	ΦD×L(mm)		20°C,100kHz	-10°C , 100kHz
100	8×16	250	0.42	1.26
120	8×16	290	0.25	1.05
	10×16	327	0.20	0.70
220	10×20	400	0.14	0.64
330	13×21	480	0.09	0.59
470	13×25	550	0.07	0.57
680	16×25	2900	0.035	0.18
1000	16×31	2980	0.026	0.14