

- Endurance: 105°C 2000hours
- Recommended Applications :For high quality , reliability application, high CV product
- Corresponding product to RoHS

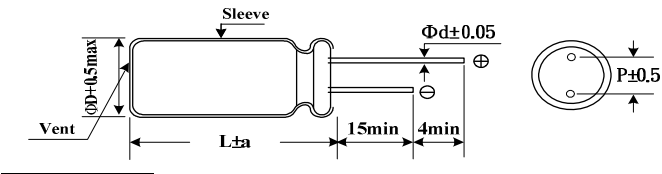
SH
 ↑ High Temperature
 SK



■ SPECIFICATIONS

Item	Characteristics										
	-40~+105°C	-25~+105°C	-25~+105°C								
Category Temperature Range	-40~+105°C	-25~+105°C	-25~+105°C								
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 450VDC	500VDC								
Rated Capacitance Range	1~ 22000 µ F	1 ~ 470 µ F	2.2~82 µ F								
Capacitance Tolerance	± 20 % (120Hz , 20°C)	± 20 % (120Hz , 20°C)	± 20 % (120Hz , 20°C)								
Leakage Current (20°C)	I=0.01CV or 3(µ A)whichever is greater.	I=0.03CV+10(µ A)	I=0.04CV+100(uA)								
Dissipation Factor(MAX) (tan δ) (120Hz ,20°C)	(After rated voltage applied for 2 minutes)I : Max. leakage current (µ A), C : Nominal capacitance (µ F), V : Rated voltage (V)										
	WV	6.3	10	16	25	35	50	63~100	160~250	350~450	500
	tan δ	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.15	0.20	0.25
	When nominal capacitance is over 1000 µ F,tan δ shall be added 0.02 to the listed value with increase of every 1000 µ F.										
Low Temperature Stability Impedance Ratio (MAX)	WV										
	Z(120Hz)	6.3	10	16	25	35~100	160~250	350~450	500		
	Z-25°C / Z+20°C	4	3	2	2	2	4	4	6		
	Z-40°C / Z+20°C	8	6	4	4	3	—	—	—		
Endurance	After applying rated voltage for 2000 hours at 105°C the capacitors shall meet the following requirements.										
	Capacitance change	Within ± 20% of initial value									
	D.F. (tan δ)	Not more than 200% of specified value									
Shelf Life	Leakage current										
	initial specified value or less										
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours.the capacitors shall meet the same requirement as Endurance.										

■ Dimensions [mm]



φ D	5	6.3	8	10	13	16	18	22
p	2.0	2.5	3.5	5.0		7.5		10.0
φ d	0.5	0.5	0.6	0.6		0.8		0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Freq. (Hz)	120	300	1K	10K~100K
6.3 ~ 100V ≤68 µ F	1.00	1.30	1.57	2.00
6.3 ~ 100V 100 ~ 470 µ F	1.00	1.23	1.34	1.50
6.3 ~ 100V 471 ~ 22000 µ F	1.00	1.10	1.13	1.15
160 ~ 450V all volume(µ F)	1.00	1.25	1.40	1.60
500Vall volume(µ F)	1.00	1.05	1.10	1.15

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μF)	Case size ΦDxL(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (SurageVoltage) (V)	Cap (μF)	Case size ΦDxL(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)	
6.3 (8)	100	5x11	0.26	100	25 (32)	470	8x15	0.16	420	
	150	5x11	0.26	120			10x12.5	0.16	440	
	220	6.3x11	0.26	165		680	10x15	0.16	560	
	330	6.3x11	0.26	200		1000	10x20	0.16	740	
	470	6.3x11	0.26	230		1500	13x20	0.16	920	
	680	8x11	0.26	350		2200	13x25	0.18	1230	
	1000	8x15	0.26	445		3300	16x25	0.20	1500	
		10x12.5	0.26	470		4700	16x32	0.22	1800	
	1500	10x15	0.26	600		6800	18x36	0.26	2050	
	2200	10x20	0.28	800		35 (44)	10	5x11	0.14	44
	3300	13x20	0.30	1100			15	5x11	0.14	50
	4700	13x20	0.32	1180			22	5x11	0.14	65
	6800	13x25	0.36	1490			33	5x11	0.14	85
	10000	16x32	0.44	1830			47	5x11	0.14	100
	15000	16x36	0.54	2090			68	6.3x11	0.14	130
22000	18x40	0.68	2350	100	6.3x11		0.14	170		
10 (13)	47	5x11	0.22	75	150		8x11	0.14	220	
	68	5x11	0.22	80	220		10x12.5	0.14	315	
	100	5x11	0.22	110	330		10x12.5	0.14	400	
	150	5x11	0.22	120	470		10x15	0.14	480	
	220	6.3x11	0.22	180	680		10x20	0.14	650	
	330	6.3x11	0.22	235	1000		13x20	0.14	900	
		8x11	0.22	255	1500		13x25	0.14	1050	
	470	6.3x11	0.22	250	2200		16x25	0.16	1370	
		8x11	0.22	305	3300	16x36	0.18	1680		
	680	8x11	0.22	365	4700	18x36	0.20	1920		
		10x12.5	0.22	420	50 (63)	1	5x11	0.12	12	
	1000	8x15	0.22	480		2.2	5x11	0.12	18	
	1500	10x12.5	0.22	540		3.3	5x11	0.12	25	
	2200	10x20	0.22	800		4.7	5x11	0.12	30	
	3300	10x20	0.24	870		6.8	5x11	0.12	30	
4700	13x20	0.26	1100	10		5x11	0.12	50		
6800	13x25	0.28	1380	15		5x11	0.12	50		
10000	16x25	0.22	1700	22		5x11	0.12	75		
15000	16x36	0.40	1950	33		5x11	0.12	95		
16 (20)	33	5x11	0.18	70		47	6.3x11	0.12	115	
	47	5x11	0.18	85		68	8x11	0.12	159	
	68	5x11	0.18	100		100	8x11	0.12	200	
	100	5x11	0.18	130		150	10x12.5	0.12	289	
	150	6.3x11	0.18	175		220	10x12.5	0.12	360	
	220	6.3x11	0.18	220			10x15	0.12	415	
	330	8x11	0.18	280	330	10x20	0.12	535		
	470	8x11	0.18	375	470	10x20	0.12	630		
	680	8x15	0.18	450		13x20	0.12	730		
		10x12.5	0.18	480	680	13x20	0.12	800		
	1000	10x15	0.18	640	1000	13x25	0.12	1060		
	1500	10x20	0.18	830	1500	16x25	0.12	1300		
	2200	13x20	0.20	1050	2200	16x36	0.14	1600		
	3300	13x25	0.22	1250	3300	18x36	0.16	1780		
	4700	16x25	0.24	1650	63 (79)	10	5x11	0.1	55	
6800	16x32	0.28	1900	15		5x11	0.1	65		
10000	18x36	0.36	2070	22		6.3x11	0.1	90		
22	5x11	0.16	60	33		6.3x11	0.1	100		
33	5x11	0.16	75	47		8x11	0.1	155		
47	5x11	0.16	90	68		10x12.5	0.1	198		
68	6.3x11	0.16	125	100		10x12.5	0.10	260		
100	6.3x11	0.16	145	150		10x15	0.10	330		
150	8x11	0.16	200	220		10x20	0.10	465		
220	8x11	0.16	240	330		13x20	0.10	650		
330	8x11	0.16	300	470		13x20	0.10	700		
	10x12.5	0.16	355	680		16x25	0.10	1000		
				1000		16x32	0.10	1200		

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms105°C) (120Hz)
63 (79)	1500	16x36	0.10	1450	350 (400)	3.3	8x11	0.20	35
	2200	18x36	0.12	1650		4.7	8x11	0.20	45
100 (125)	10	6.3x11	0.10	65		10	10x15	0.20	80
	15	6.3x11	0.10	75		22	13x20	0.20	150
	22	8x11	0.10	115		33	13x25	0.20	200
	33	8x11	0.10	140		47	16x25	0.20	260
	47	10x12.5	0.10	185	100	18x32	0.20	400	
	68	10x15	0.10	240	400 (450)	1	6.3x11	0.20	17
	100	10x20	0.10	305		2.2	8x11	0.20	31
	150	13x20	0.10	370		3.3	8x11	0.20	35
	220	13x25	0.10	520		4.7	8x11	0.20	45
	330	16x25	0.10	720			10x12.5	0.20	55
470	16x32	0.10	875	6.8		8x15	0.20	60	
680	16x36	0.10	1200			10x12.5	0.20	65	
160 (200)	1	5x11	0.15	17		10	10x15	0.2	80
	2.2	6.3x11	0.15	25		15	10x20	0.2	100
	3.3	6.3x11	0.15	36		22	13x20	0.2	150
	4.7	6.3x11	0.15	43		33	13x25	0.2	200
	6.8	8x11	0.15	54		47	16x25	0.2	265
	10	8x11	0.15	70		68	16x32	0.2	410
	15	10x12.5	0.15	90			18x25	0.2	390
	22	10x15	0.15	115		100	18x32	0.2	500
	33	10x20	0.15	160	120	18x32	0.2	520	
	47	10x20	0.15	195		18x36	0.2	550	
	68	13x20	0.15	255	150	18x40	0.2	620	
	100	13x25	0.15	350	420 (470)	1	6.3x11	0.2	17
	150	16x25	0.15	435		2.2	8x11	0.2	29
	220	16x32	0.15	550		3.3	8x11	0.2	34
330	18x36	0.15	800	4.7		10x12.5	0.2	55	
470	18x40	0.15	900	6.8		10x15	0.2	68	
200 (250)	1	6.3x11	0.15	17		10	10x20	0.20	98
	2.2	6.3x11	0.15	25		15	13x20	0.20	130
	3.3	6.3x11	0.15	36		22	13x25	0.20	155
	4.7	8x11	0.15	50		33	16x25	0.20	205
	6.8	8x11	0.15	60		47	16x25	0.20	235
	10	10x12.5	0.15	80		68	16x32	0.20	400
	15	10x15	0.15	110			18x25	0.20	380
	22	10x20	0.15	140		100	18x36	0.20	490
	33	13x20	0.15	200	120	18x40	0.20	530	
	47	13x20	0.15	220	150	18x45	0.20	570	
	68	13x25	0.15	280	450 (500)	1.0	6.3x11	0.20	18
	100	16x25	0.15	350			8x11	0.20	22
	150	16x32	0.15	480		2.2	8x11	0.20	30
	220	16x36	0.15	675			10x12.5	0.20	37
		18x32	0.15	685		3.3	8x15	0.20	42
330	18x36	0.15	750	10x12.5			0.20	40	
250 (300)	1	6.3x11	0.15	17		4.7	10x12.5	0.20	52
	2.2	6.3x11	0.15	29		6.8	10x15	0.20	62
	3.3	8x11	0.15	42		10	10x20	0.20	85
	4.7	8x11	0.15	52		15	13x20	0.20	120
	6.8	8x11	0.15	62	22	13x25	0.20	150	
	10	10x12.5	0.15	80	33	16x25	0.20	210	
	15	10x15	0.15	110	47	16x25	0.20	260	
	22	10x20	0.15	140	68	18x32	0.20	370	
	33	13x20	0.15	200	100	18x36	0.20	495	
	47	13x25	0.15	240	120	18x40	0.20	565	
	68	13x25	0.15	290	150	18x45	0.20	650	
	100	16x25	0.15	380	500 (550)	2.2	8x11	0.25	25
	150	16x32	0.15	420		3.3	8x16	0.25	30
220	18x36	0.15	680	4.7		8x16	0.25	34	
350 (400)	1	6.3x11	0.20			16	10x12.5	0.25	38
	2.2	8x11	0.20	31	6.8	10x16	0.25	50	

SH

Standard Series

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D \times L(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)
500 (550)	8.2	10x20	0.25	65
	10	10x20	0.25	70
		13x20	0.25	85
	15	13x25	0.25	100
	22	13x25	0.25	115
		16x25	0.25	130

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D \times L(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)
500 (550)	33	18x25	0.25	180
	47	16x32	0.25	180
		18x30	0.25	230
	68	18x32	0.25	250
		18x36	0.25	290
	82	18x40	0.25	335

TB

Low impedance · High Ripple Series

- Endurance: 105°C 5000~6000hours
- Recommended Applications :AV(TV, Video, Audio), Monitor/Computer, OA/HA/Communication, Converter/Inverter, Adapter, SMPS
- Corresponding product to RoHS

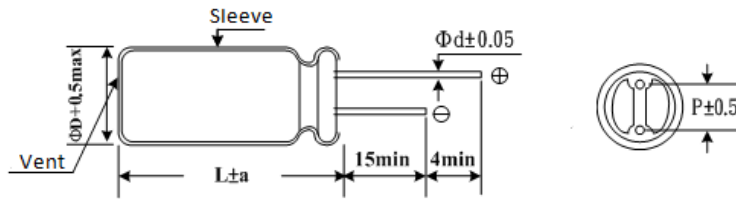
TB
↑
SJ Long Life



■ SPECIFICATIONS

Item	Characteristics																								
Category Temperature Range	-40 ~ +105°C																								
Rated Voltage Range	6.3~35VDC																								
Rated Capacitance Range	47~ 8200 µF																								
Capacitance Tolerance	± 20 % (120Hz , 20°C)																								
Leakage Current (20°C)	I=0.01CV or 3 µ A whichever is greater. (After rated voltage applied for 2 minutes) I : Max. leakage current (µ A), C : Nominal capacitance (µ F), V : Rated voltage (V)																								
Dissipation Factor(MAX) (tan δ) (120Hz, 20°C)	<table border="1"> <tr> <td>WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <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> </tr> </table> <p>When nominal capacitance is over 1000 µF, tan δ shall be added 0.02 to the listed value with increase of every 1000 µF.</p>	WV	6.3	10	16	25	35	tan δ	0.22	0.19	0.16	0.14	0.12												
WV	6.3	10	16	25	35																				
tan δ	0.22	0.19	0.16	0.14	0.12																				
Low Temperature Stability Impedance Ratio (MAX)	<table border="1"> <tr> <td>WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> </tr> <tr> <td>Z(120Hz)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Z-25°C / Z+20°C</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>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	WV	6.3	10	16	25	35	Z(120Hz)						Z-25°C / Z+20°C	2	2	2	2	2	Z-40°C / Z+20°C	3	3	3	3	3
WV	6.3	10	16	25	35																				
Z(120Hz)																									
Z-25°C / Z+20°C	2	2	2	2	2																				
Z-40°C / Z+20°C	3	3	3	3	3																				
Endurance	<p>After applying rated voltage with rated ripple current for 5000~6000hours at 105°C, the capacitors shall meet the following requirements.</p> <table border="1"> <tr> <td>Capacitance change</td> <td colspan="2">Within ± 25% of initial value(6.3 · 10V : ± 30%)</td> </tr> <tr> <td>D.F. (tan δ)</td> <td colspan="2">Not more than 200% of specified value</td> </tr> <tr> <td>Leakage current</td> <td colspan="2">initial specified value or less</td> </tr> </table> <table border="1"> <tr> <td>DΦ</td> <td>5~6.3Φ</td> <td>8~16Φ</td> </tr> <tr> <td>life(hours)</td> <td>5000hrs</td> <td>6000hrs</td> </tr> </table> <p>*If dimension is down size, Endurance will be less 1000 hours than standard.</p>	Capacitance change	Within ± 25% of initial value(6.3 · 10V : ± 30%)		D.F. (tan δ)	Not more than 200% of specified value		Leakage current	initial specified value or less		DΦ	5~6.3Φ	8~16Φ	life(hours)	5000hrs	6000hrs									
Capacitance change	Within ± 25% of initial value(6.3 · 10V : ± 30%)																								
D.F. (tan δ)	Not more than 200% of specified value																								
Leakage current	initial specified value or less																								
DΦ	5~6.3Φ	8~16Φ																							
life(hours)	5000hrs	6000hrs																							
Shelf Life	After placed at 105°C without voltage applied for 500 hours, the capacitors shall meet the same requirement as Endurance.																								

■ Dimensions [mm]



ΦD	5	6	8	10	13	16
P	2.0	2.5	3.5	5.0	5.0	7.5
Φd	0.5	0.5	0.6	0.6	0.6	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0

■ Multiplier for Ripple Current

Freq. (Hz)	120	1K	10K	100K
47~150 µF	0.40	0.75	0.90	1.00
220 ~ 560 µF	0.50	0.85	0.94	1.00
680 ~ 1800 µF	0.60	0.87	0.95	1.00
2200 ~ 3900 µF	0.75	0.90	0.95	1.00
4700 ~8200 µF	0.85	0.95	0.98	1.00

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω ,20°C) (100KHz)	Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω ,20°C) (100KHz)
6.3V (8)	220	5x11	330	0.24	16V (20)	1800	10x25	2250	0.023
	470	6.3x11	500	0.11		2200	13x20	2480	0.023
	820	8x12	900	0.062		2700	13x25	2900	0.020
	1200	8x15	1210	0.048		3300	13x30	3450	0.017
		10x12.5	1240	0.053			16x20	3250	0.018
	1500	8x20	1410	0.041		3900	13x35	3570	0.016
	1800	10x16	1650	0.038		4700	16x25	3630	0.017
	2200	10x20	1960	0.026	25V (32)	68	5x11	330	0.24
	2700	10x25	2250	0.023		150	6.3x11	500	0.11
	3900	13x20	2480	0.023		330	8x12	900	0.062
	4700	13x25	2900	0.020		390	8x15	1210	0.048
	5600	13x30	3450	0.017		470	10x12.5	1240	0.053
	6800	13x35	3570	0.016		560	8x20	1410	0.041
16x20		3250	0.018	680		10x16	1650	0.038	
8200	16x25	3630	0.017	820		10x20	1960	0.026	
10V (13)	150	5x11	330	0.24		1000	10x25	2250	0.023
	330	6.3x11	500	0.11		1500	13x20	2480	0.023
	680	8x12	900	0.062		1800	13x25	2900	0.020
	1000	8x15	1210	0.048		2200	13x30	3450	0.017
		10x12.5	1240	0.053			16x20	3250	0.018
	1500	8x20	1410	0.041	2700	13x35	3570	0.016	
		10x16	1650	0.038	3300	16x25	3630	0.017	
	1800	10x20	1960	0.026	35V (44)	47	5x11	330	0.24
	2200	10x25	2250	0.023		100	6.3*11	500	0.11
	3300	13x20	2480	0.023		220	8x12	900	0.062
	3900	13x25	2900	0.020		270	8x15	1210	0.048
	4700	13x30	3450	0.017		330	10x12.5	1240	0.053
		16x20	3250	0.018		390	8x20	1410	0.041
5600	13x35	3570	0.016	470		10x16	1650	0.038	
6800	16x25	3630	0.017	560		10x20	1960	0.026	
16V (20)	100	5x11	330	0.24		680	10x25	2250	0.023
	220	6.3x11	500	0.11		1000	13x20	2480	0.023
	470	8x12	900	0.062		1200	13x25	2900	0.020
	680	8x15	1210	0.048		1500	13x30	3450	0.017
		10x12.5	1240	0.053			16x20	3250	0.018
	1000	8x20	1410	0.041	1800	13x35	3570	0.016	
		10x16	1650	0.038	2200	16x25	3630	0.017	
	1500	10x20	1960	0.026					

TC

Low impedance · Long life Series

- Endurance: 105°C 6000~10000hours
- Recommended Applications :Applicable forAV(TV,Video,Audio),
OA/HA/Communication, SMPS, Adapter,Monitor/Computer,Converter/Inverter
- Corresponding product to RoHS

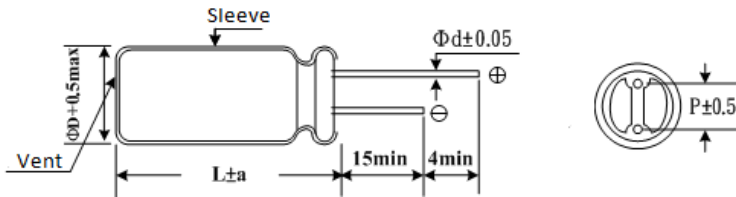
TC
↑
TB Long Life



■ SPECIFICATIONS

Item	Characteristics									
Category Temperature Range	-40 ~ +105°C									
Rated Voltage Range	6.3~100VDC									
Rated Capacitance Range	8.2 ~ 8200 μ F									
Capacitance Tolerance	$\pm 20\%$ (120Hz, 20°C)									
Leakage Current (20°C)	I=0.01CV or 3 μ A whichever is greater. (After rated voltage applied for 2 minutes) I : Max. leakage current (μ A), C : Nominal capacitance (μ F), V : Rated voltage (V)									
Dissipation Factor(MAX) (tan δ) (120Hz, 20°C)	WV	6.3	10	16	25	35	50	63	80	100
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08
When nominal capacitance is over 1000 μ F, tan δ shall be added 0.02 to the listed value with increase of every 1000 μ F.										
Low Temperature Stability Impedance Ratio (MAX)	WV	6.3	10	16	25	35	50	63	80	100
	Z(120Hz)	6.3	10	16	25	35	50	63	80	100
	Z-25°C / Z+20°C	4	3	2	2	2	2	2	2	2
	Z-40°C / Z+20°C	8	6	4	3	3	3	3	3	3
Endurance	After applying rated voltage with rated ripple current for 6000~10000hours at 105°C, the capacitors shall meet the following requirements.									
	Capacitance change	Within $\pm 25\%$ of initial value(6.3 · 10V : $\pm 30\%$)								
	D.F. (tan δ)	Not more than 200% of specified value								
	Leakage current	initial specified value or less								
	D Φ	5-6.3 Φ	8 Φ	10~18 Φ						
Life	6000hrs	8000hrs	10000hrs							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.									

■ Dimensions [mm]



Φ D	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Φ d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0

■ Multiplier for Ripple Current

Freq. (Hz)	120	1K	10K	100K
8.2 ~ 33	0.42	0.70	0.90	1.00
47 ~ 270	0.50	0.73	0.92	1.00
330 ~680	0.55	0.77	0.94	1.00
820 ~ 1800	0.60	0.80	0.96	1.00
2200 ~8200	0.70	0.85	0.98	1.00

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω,20°C) (100KHz)	Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω,20°C) (100KHz)	
6.3V (8)	220	5x11	345	0.242	35V (44)	220	8x12	945	0.056	
	470	6.3x11	540	0.103		270	8x16	1250	0.050	
	820	8x12	945	0.062		330	10x12.5	1330	0.041	
	1200	8x16	1250	0.050		390	8x20	1500	0.032	
		10x12.5	1330	0.043		470	10x16	1760	0.030	
	1500	8x20	1500	0.032		560	10x20	1960	0.025	
	1800	10x16	1760	0.031		680	10x25	2250	0.023	
	2200	10x20	1960	0.022		1000	13x20	2480	0.025	
	2700	10x25	2250	0.020		1200	13x25	2900	0.022	
	3900	13x20	2480	0.019		1500	13x30	3450	0.018	
	4700	13x25	2900	0.017			16x20	3250	0.020	
	5600	13x30	3450	0.014		1800	13x35	3570	0.018	
	6800	16x20	3250	0.017		2200	16x25	3630	0.015	
		13x35	3570	0.013						
8200	16x25	3630	0.014							
10V (13)	150	5x11	345	0.242	50V (63)	27	5x11	238	0.3400	
	330	6.3x11	540	0.103		56	6.3x11	385	0.1400	
	680	8x12	945	0.062		100	8x12	724	0.074	
	1000	8x16	1250	0.050		120	8x16	950	0.061	
		10x12.5	1330	0.043		150	10x12.5	979	0.061	
	1500	8x20	1500	0.032		180	8x20	1190	0.046	
		10x16	1760	0.031		220	10x16	1370	0.042	
	1800	10x20	1960	0.022		270	10x20	1580	0.030	
	2200	10x25	2250	0.020		330	10x25	1870	0.028	
	3300	13x20	2480	0.019		470	13x20	2050	0.027	
	3900	13x25	2900	0.017		560	13x25	2410	0.023	
	4700	13x30	3450	0.014		680	13x30	2860	0.021	
		16x20	3250	0.017		820	13x35	2960	0.019	
	5600	13x35	3570	0.013			16x20	2730	0.023	
6800	16x25	3630	0.014	1000	16x25	3010	0.021			
16V (20)	100	5x11	345	0.242	63V (79)	18	5x11	173	1.000	
	220	6.3x11	540	0.103		47	6.3x11	278	0.560	
	470	8x12	945	0.062		82	8x12	525	0.264	
	680	8x16	1250	0.050		100	8x16	688	0.192	
		10x12.5	1330	0.043		120	10x12.5	725	0.180	
	1000	8x20	1500	0.032		150	8x20	861	0.144	
		10x16	1760	0.031		180	10x16	998	0.132	
	1500	10x20	1960	0.022		270	10x20	1200	0.094	
	1800	10x25	2250	0.020			13x16	1200	0.098	
	2200	13x20	2480	0.019		330	10x25	1410	0.083	
	2700	13x25	2900	0.017		390	13x20	1570	0.072	
	3300	13x30	3450	0.014		470	13x25	1990	0.052	
		16x20	3250	0.017		560	13x30	2410	0.042	
	3900	13x35	3570	0.013			16x20	2100	0.052	
4700	16x25	3630	0.014	680	13x35	2620	0.040			
25V (32)	68	5x11	345	0.242	80V (100)	12	5x11	163	1.400	
	150	6.3x11	540	0.103		33	6.3x11	267	0.570	
	330	8x12	945	0.062		56	8x12	462	0.360	
	390	8x16	1250	0.050		68	8x16	585	0.250	
	470	10x12.5	1330	0.043		82	10x12.5	624	0.230	
	560	8x20	1500	0.032		100	8x20	735	0.190	
	680	10x16	1760	0.031			120	10x16	780	0.170
	820	10x20	1960	0.022		180	10x20	1040	0.120	
	1000	10x25	2250	0.020			13x16	975	0.130	
	1500	13x20	2480	0.019						
	1800	13x25	2900	0.017						
	2200	13x30	3450	0.014						
		16x20	3250	0.017						
	2700	13x35	3570	0.013						
3300	16x25	3630	0.014							
35V (44)	47	5x11	345	0.2200						
	100	6.3x11	540	0.094						

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D \times L(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω ,20°C) (100KHz)
80V (100)	220	10x25	1170	0.110
	270	13x20	1430	0.085
	330	13x25	1620	0.060
	390	13x30	1950	0.051
		16x20	1750	0.058
	470	13x35	2140	0.043
	560	13x40	2340	0.036
		16x25	2210	0.044
		18x20	1950	0.054
	680	16x32	2400	0.033
	820	16x36	2600	0.029
		18x25	2270	0.038
	1000	16x40	2860	0.027
		18x32	2470	0.031
1200	18x36	2860	0.027	
1500	18x40	3510	0.026	
100V (125)	8.2	5x11	163	1.400
	18	6.3x11	267	0.570
	33	8x12	462	0.360
	47	8x16	585	0.250
	56	10x12.5	624	0.230

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ D \times L(mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω ,20°C) (100KHz)
100V (125)	68	8x20	735	0.190
	82	10x16	780	0.170
	100	10x20	1040	0.120
		13x16	975	0.130
	120	10x25	1170	0.110
	150	13x20	1430	0.085
	220	13x25	1620	0.060
	270	13x30	1950	0.051
		16x20	1750	0.058
	330	13x35	2140	0.043
	390	13x40	2340	0.036
		16x25	2210	0.044
		18x20	1950	0.054
	470	16x32	2400	0.033
		18x25	2270	0.038
	560	16x36	2600	0.029
		18x32	2470	0.031
	680	16x40	2860	0.027
		18x36	2860	0.027
	820	18x40	3510	0.026

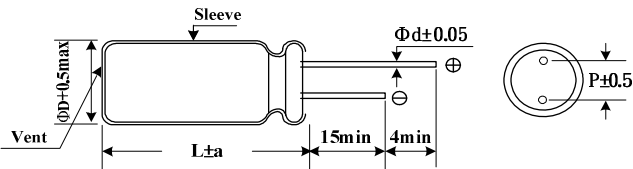


- Endurance: 85°C 2000hours
- Recommended Applications :For general purpose , decoupling , by pass and filtering circuit in entertainment electronics
- Corresponding product to RoHS

■ SPECIFICATIONS

Item	Characteristics	
Category Temperature Range	-40~+85°C	-25~+85°C
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 500VDC
Rated Capacitance Range	1 ~ 22000 µF	1 ~ 470 µF
Capacitance Tolerance	± 20 % (120Hz , 20°C)	± 20 % (120Hz , 20°C)
Leakage Current (20°C)	I=0.01CV or 3 µ A whichever is greater. (After rated voltage applied for 2 minutes) I : Max. leakage current (µ A), C : Nominal capacitance (µ F), V : Rated voltage (V)	
Dissipation Factor(MAX) (tan δ) (120Hz ,20°C)	WV	6.3 10 16 25 35 50 63 100 160~250 350~500
	tan δ	0.24 0.20 0.16 0.14 0.12 0.10 0.10 0.10 0.20 0.24
When nominal capacitance is over 1000 µ F,tan δ shall be added 0.02 to the listed value with increase of every 1000 µ F.		
Low Temperature Stability Impedance Ratio (MAX)	Z(120Hz)	6.3 10 16 25 35~100 160~250 315~350 400~500
	Z-25°C / Z+20°C	8 6 5 3 3 7 10 15
	Z-40°C / Z+20°C	10 8 6 4 3 — — —
Endurance	After applying rated voltage for 2000 hours at 85°C,Stay back to 20 °C temperature measurement, the capacitors shall meet the following requirements.	
	Capacitance change	Within ± 20% of initial value
	D.F. (tan δ)	Not more than 200% of specified value
Shelf Life	The following 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.	
	Leakage current	initial specified value or less

■ Dimensions [mm]



ΦD	5	6.3	8	10	13	16	18	22
P	2.0	2.5	3.5	5.0	7.5	10.0	10.0	10.0
Φd	0.5	0.5	0.6	0.6	0.8	0.8	0.8	0.8
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0

■ Multiplier for Ripple Current

Freq. (Hz)	120	300	1K	10~100K
6.3 ~ 100V ≤ 68 µ F	1.00	1.20	1.30	1.50
6.3 ~ 100V 100 ~ 680 µ F	1.00	1.10	1.15	1.20
6.3 ~ 100V 1000 ~ 22000 µ F	1.00	1.05	1.10	1.15
160 ~ 450V ≤ 220 µ F	1.00	1.25	1.40	1.40
160 ~ 450V >220 µ F	1.00	1.10	1.13	1.13
500V all volume(µ F)	1.00	1.05	1.10	1.10

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)	
6.3 (8)	22	5x11	0.24	35	25 (32)	220	8x11	0.14	290	
	33	5x11	0.24	55		330	8x11	0.14	315	
	47	5x11	0.24	75		470	8x15	0.14	420	
	100	5x11	0.24	130			10x12.5	0.14	460	
	220	5x11	0.24	200		680	10x15	0.14	550	
		6.3x11	0.24	240			10x20	0.14	760	
	330	6.3x11	0.24	260		1000	13x16	0.14	760	
	470	6.3x11	0.24	330			13x25	0.16	1300	
	680	8x11	0.24	410		2200	16x25	0.18	1660	
		8x11	0.24	460			16x32	0.20	1950	
	1000	10x12.5	0.24	580		4700	18x36	0.24	2550	
		10x20	0.26	840			22x40	0.32	2800	
	3300	10x20	0.28	1000		15000	22x40	0.42	3200	
	4700	13x20	0.30	1300			35 (44)	10	5x11	0.12
	6800	13x25	0.34	1550		22		5x11	0.12	95
	10000	16x25	0.42	1900		33		5x11	0.12	120
16x36		0.52	2500	47	5x11			0.12	120	
22000	18x40	0.66	3650	100	6.3x11	0.12		185		
	10	5x11	0.20		35	220		8x11	0.12	290
10 (13)	22	5x11	0.20	55	330	10x12.5		0.12	420	
	33	5x11	0.20	80		470		10x15	0.12	430
	47	5x11	0.20	95	680			10x20	0.12	550
	100	5x11	0.20	180		1000		13x20	0.12	950
	220	6.3x11	0.20	250	2200			16x25	0.14	1600
		330	6.3x11	0.20		265		3300	16x36	0.16
	470	6.3x11	0.20	320	4700	18x32			0.16	2050
		680	8x11	0.20		410		6800	18x36	0.18
	1000	10x12.5	0.20	580	22000	22x40			0.22	2600
		2200	10x20	0.22		880		50 (63)	10	5x11
	3300	13x20	0.24	1250	22	5x11	0.10		100	
		4700	13x25	0.26		1500	33		5x11	0.10
	6800	16x25	0.30	1900	47	6.3x11	0.10		140	
		10000	16x36	0.38		2225	100		8x11	0.10
	15000		18x32	0.38	2225	220			10x12.5	0.10
		22000	18x36	0.48	2950		330		10x15	0.10
10	22x40		0.62	3700	470	10x20			0.10	610
	16 (20)	22	5x11	0.16		75	1000		13x25	0.10
33		5x11	0.16	110	2200	16x36			0.12	1850
47		5x11	0.16	130		3300	18x32		0.12	1850
68		5x11	0.16	150	4700		18x36		0.14	2170
100		5x11	0.16	165		22000	22x40		0.16	2500
		150	6.3x11	0.16	205		63 (79)		10	5x11
220		6.3x11	0.16	260	22	5x11			0.10	95
		330	6.3x11	0.16		290			33	6.3x11
470			8x11	0.16	360	47		6.3x11		0.10
		680	10x12.5	0.16	510			100	10x12.5	0.10
1000			10x15	0.16	630	220			10x15	0.10
		2200	13x20	0.18	1100			330	10x20	0.10
3300			13x25	0.20	1400	470			10x20	0.10
		4700	16x25	0.22	1800			680	13x20	0.10
6800			16x32	0.26	1980	1000			13x25	0.10
		10000	18x36	0.34	2700			2200	16x25	0.10
15000	22x40		0.44	3150	3300	18x36			0.12	2200
	22000	22x40	0.58	3800		100 (125)		22x40	0.14	2500
25 (32)		10	5x11	0.14	50			10	5x11	0.10
	22	5x11	0.14	90	22	6.3x11			0.10	75
	33	5x11	0.14	115		33			8x11	0.10
	47	5x11	0.14	135	47		8x11		0.10	140
	68	5x11	0.14	145		68	10x12.5		0.10	190
	100	6.3x11	0.14	160	10x15		0.10		280	

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)	Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)
100 (125)	100	10x20	0.10	400	250 (300)	33	13x20	0.20	140
	150	13x20	0.10	500		47	13x25	0.20	210
	220	13x25	0.10	710		100	16x25	0.20	250
	330	13x25	0.10	720		150	16x32	0.20	330
	470	16x25	0.10	1100		220	18x36	0.20	540
	680	16x36	0.10	1260		350 (400)	1.0	6.3x11	0.24
	1000	18x40	0.10	1350	2.2		8x11	0.24	33
160 (200)	1	5x11	0.20	17	3.3		8x11	0.24	33
		6.3x11	0.20	17	4.7		10x12.5	0.24	39
	2.2	6.3x11	0.20	26	10		10x15	0.24	70
	3.3	6.3x11	0.20	30	22		13x20	0.24	130
	4.7	6.3x11	0.20	32	33		13x25	0.24	170
	10	8x11	0.20	50	47	16x25	0.24	220	
	22	10x15	0.20	110	100	16x36	0.24	320	
	33	10x15	0.20	135		18x32	0.24	300	
		10x20	0.20	150	400 (450)	1.0	6.3x11	0.24	16
	47	10x20	0.20	160			8x11	0.24	19
	68	13x20	0.20	200		2.2	6.3x11	0.24	20
	100	13x25	0.20	250			8x11	0.24	26
	150	16x25	0.20	330		3.3	8x11	0.24	35
	220	16x32	0.20	450		4.7	8x11	0.24	38
	330	18x36	0.20	540			10x12.5	0.24	42
470	18x40	0.20	750	6.8		8x15	0.24	42	
200 (250)	1	5x11	0.20			19	10x12.5	0.24	45
	2.2	6.3x11	0.20	22		10	10x15	0.24	50
	3.3	6.3x11	0.20	30		22	13x20	0.24	100
	4.7	6.3x11	0.20	35		33	13x25	0.24	140
	6.8	8x11	0.20	40		47	16x25	0.24	180
	10	8x11	0.20	45		68	16x32	0.24	250
	22	10x15	0.20	120			18x25	0.24	220
	33	10x20	0.20	160	100	18x32	0.24	320	
	47	10x20	0.20	170	150	18x40	0.24	420	
		13x20	0.20	200	450 (500)	1.0	8x11	0.24	19
	68	13x25	0.20	230		2.2	10x12.5	0.24	33
	100	16x25	0.20	330		3.3	10x12.5	0.24	40
	220	16x32	0.20	505		4.7	10x12.5	0.24	45
		18x25	0.20	485		6.8	10x15	0.24	50
	330	16x40	0.20	710		10	10x20	0.24	58
18x32		0.20	685	13x20			0.24	60	
470	18x40	0.20	750	22		13x25	0.24	98	
250 (300)	1	5x11	0.20	17		33	16x25	0.24	145
		6.3x11	0.20	19		500(550)	2.2	10x12.5	1.24
	2.2	6.3x11	0.20	24	3.3		10x15	2.24	43
	8x11	0.2	30	6.8	10x20		3.24	70	
		0.20	30	10	13x20		4.24	93	
	4.7	8x11	0.20	36	22		16x25	5.24	105
	6.8	8x11	0.20	40	33		16x25	6.24	200
	10	10x12.5	0.20	65	47		18x32	7.24	185
	22	10x20	0.20	130					

RN Non-polar Series

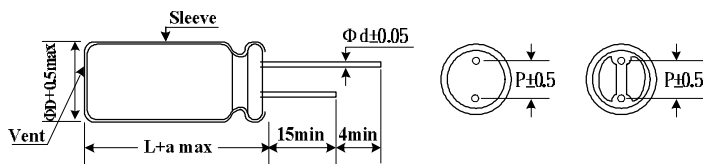
- Features: 85°C, 1000hrs, Non-polarized/Polarity reversing
- Recommended Applications:
 - Small crossover network, Reversed polarity circuit, Coupling
- Corresponding product to RoHS



■ Specifications

Item	Characteristics	
Operating Temperature Range	-40 ~ +85°C	-25~+85°C
Rated Voltage Range	4 ~ 100VDC	160~250VDC
Rated Capacitance Range	0.1 ~ 6800 μF	0.47~100 μF
Capacitance Tolerance	± 20 % at 120Hz, 20°C	
Leakage Current (MAX) (20°C)	$I \leq 0.03CV + 4 \mu A$; $L=7mm, I \leq 0.05CV$ or $10 \mu A$ whichever is greater (After rated voltage applied for 2 minutes) I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V)	
Dissipation Factor (MAX) (tan δ) (120Hz, 20°C)	WV	4 6.3 10 16 25 35 50 63 80 100 160 200 250
	tan δ	0.35 0.24 0.2 0.17 0.15 0.15 0.15 0.10 0.10 0.10 0.20 0.20 0.20
When nominal capacitance is over 1000μF tanδ shall be added 0.02 to the listed value with increase of every 1000μF.		
Low Temperature Stability Impedance Ratio (MAX)	Z(120Hz)	4 6.3 10 16 25 35 50 63 80 100 160 200 250
	Z(-25°C) / Z(+20°C)	6 4 3 2 2 2 2 2 2 2 6 6 6
	Z(-40°C) / Z(+20°C)	12 8 6 4 4 3 3 3 3 3 - - -
Endurance	After applying rated voltage for 1000 hours at 85°C, the capacitors shall meet the following requirements. (The polarity shall be reversed every 250 hours)	
	Capacitance Change	Within ± 20 % of initial value
	Dissipation Factor	Not more than 200% of the specified value
	Leakage Current	Not more than the specified value
Shelf Life	After placed at 85°C without voltage applied for 500 hours, the capacitors shall meet the same requirements as load life.	

■ Diagram of Dimensions



φD	4	5	6.3	8	10	13	16	18
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φd	0.45	(0.45) 0.5	(0.45) 0.5	0.6	0.6	0.6	0.8	0.8
a	1.0	(1.0) 1.5	(1.0) 1.5	1.5	1.5	2.0	2.0	2.0

() : L = 7

■ Multiplier for Ripple Current

Frequency coefficient

WV(VDC) \ Freq.(Hz)	50	120	1K	10K
4 ~ 16	0.8	1.0	1.1	1.2
25 ~ 35	0.8	1.0	1.5	1.7
50 ~ 100	0.8	1.0	1.6	1.9
160 ~ 250	0.8	1.0	1.5	1.6

RN Non-polar
Series

Dimensions, Rated Ripple Current

Capacitance (μ F)	Rated (Surge) Voltage																	
	4 (5)		6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)			
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple		
0.10														4x7	1	4x7	1	
0.22														4x7	2	4x7	2	
0.33														4x7	3	4x7	3	
0.47														4x7	5	4x7	5	
														5x11	5			
1.0														4x7	10	4x7	15	
														5x11	10	5x11	10	
2.2												4x7	15	4x7	20	5x7	25	
														5x11	20	5x11	20	
3.3											4x7	15	5x7	20	5x7	25	6.3x7	30
														5x11	30	5x11	30	
4.7													5x7	25	6.3x7	30	6.3x7	35
							4x7	20	5x7	20	5x11	30	5x11	30	6.3x11	35		
10							5x7	30	5x11	40	5x11	40						
					4x7	25	5x11	40	6.3x7	35	6.3x7	40	6.3x11	45	6.3x11	55		
22					5x7	40	5x11	55	6.3x7	50								
			5x7	35	5x11	50	6.3x7	45	6.3x11	65	6.3x11	70	8x11	80	8x11	90		
33	5x7	35	5x7	40	5x11	65	5x11	70	6.3x7	65								
			5x11	60	6.3x7	50	6.3x7	60	6.3x11	80	8x11	100	8x11	105	10x12.5	135		
47			5x11	70	5x11	75	6.3x7	70										
	5x7	40	6.3x7	50	6.3x7	60	6.3x11	95	6.3x11	95	8x11	120	8x15	140	10x16	180		
100	6.3x7	60	6.3x11	115	6.3x11	125	8x11	160	8x11	160	10x16	230	10x20	265	13x20	320		
220			8x11	205	8x11	215	10x12.5	275	10x16	305	13x20	410	13x25	480	16x25	575		
330			8x11	265	10x16	345	10x16	375	13x20	450	13x20	505	16x25	650	16x32	750		
470			10x12.5	370	10x16	410	10x20	485	13x20	540	13x25	655	16x32	835	18x36	965		
1000			10x20	650	13x20	720	13x25	855	16x25	950	16x32	1140						
2200			13x25	1160	16x25	1280	16x32	1510	18x36	1620								
3300			16x25	1570	16x32	1690	18x36	1980										
4700			16x32	2020	18x36	2160												
6800			18x36	2600														

Capacitance (μ F)	Rated (Surge) Voltage									
	80 (100)		100 (125)		160 (200)		200 (250)		250 (300)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.47			5x11	5	6.3x11	5				
1			5x11	10	6.3x11	15	6.3x11	15	8x11	15
2.2	5x11	30	6.3x11	25	8x11	20	8x11	20	10x12.5	25
3.3	6.3x11	35	6.3x11	35	10x12.5	30	10x12.5	30	10x12.5	30
4.7	6.3x11	40	6.3x11	40	10x12.5	35	10x16	40	10x16	40
10	8x11	65	8x11	70	10x16	55	13x20	70	13x20	70
22	10x16	105	10x16	135	13x25	105	13x25	120	16x25	135
33	10x16	160	13x20	220	16x25	165	16x25	165	16x32	180
47	10x20	215	13x20	240	16x26	200	16x32	220	16x36	230
100	13x25	385	16x25	425	18x36	360				
220	16x32	690	18x36	720						
330	18x36	860								

 ☆ Size: D ϕ x L (mm) ☆ Ripple Current : mArms/85°C,120Hz

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(mm)	tan δ	R.C (A/rms,85°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(mm)	tan δ	R.C (A/rms,85°C) (120Hz)
80 (100)	56000	64x144	0.25	15.64	250 (300)	820	35x60	0.15	2.37
	68000	77x144	0.30	16.27		1000	35x80	0.15	2.87
100 (125)	2200	35x50	0.15	2.15		1200	35x80	0.15	3.15
	2700	35x50	0.15	2.38		1500	35x100	0.15	3.49
	3300	35x50	0.15	2.64		1800	35x100	0.15	3.83
	3900	35x60	0.15	3.10		2200	51x70	0.15	4.28
	4700	35x80	0.15	3.87		2700	51x70	0.15	4.74
	5600	35x80	0.15	4.22		3300	51x90	0.15	5.38
	6800	35x100	0.15	5.15		3900	51x115	0.15	6.23
	8200	35x121	0.15	5.83		4700	64x96	0.20	7.06
	10000	51x80	0.20	6.03		5600	64x96	0.20	7.71
	12000	51x80	0.20	6.60		6800	64x115	0.20	9.19
	15000	51x121	0.20	8.86		8200	64x115	0.20	10.09
	18000	51x121	0.20	9.71		10000	64x130	0.20	11.76
	22000	64x100	0.25	9.79		12000	77x115	0.20	13.01
	27000	64x100	0.25	10.85		15000	77x130	0.20	14.70
	33000	64x144	0.25	12.80		18000	77x155	0.20	17.40
39000	77x115	0.25	13.11	22000		90x157	0.20	20.19	
47000	77x144	0.25	14.81	350 (400)		390	35x50	0.20	1.74
160 (200)	1200	35x50	0.15		2.64	470	35x80	0.20	2.35
	1500	35x60	0.15		3.20	560	35x80	0.20	2.57
	1800	35x70	0.15		3.63	680	35x80	0.20	2.83
	2200	35x80	0.15		4.26	820	35x100	0.20	3.18
	2700	35x100	0.15		4.68	1000	35x100	0.20	3.51
	3300	35x121	0.15		5.22	1200	51x70	0.20	3.94
	3900	51x70	0.15		5.70	1500	51x70	0.20	4.41
	4700	51x70	0.15		6.26	1800	51x90	0.20	5.38
	5600	51x90	0.15		7.00	2200	51x90	0.20	5.95
	6800	51x90	0.15		7.72	2700	51x130	0.20	6.91
	8200	51x115	0.15		9.04	3300	51x130	0.20	7.63
	10000	64x96	0.20		10.30	3900	64x115	0.25	8.71
	12000	64x96	0.20		11.29	4700	64x130	0.25	9.81
	15000	64x130	0.20		13.83	5600	77x115	0.25	11.26
	18000	64x130	0.20		15.15	6800	77x130	0.25	13.08
	22000	77x130	0.20		18.57	8200	77x155	0.25	15.53
	27000	77x130	0.20		20.58	10000	90x157	0.25	17.71
	33000	90x131	0.20		23.90	12000	90x157	0.25	19.40
	39000	90x157	0.20	28.10	15000	90x196	0.25	23.93	
200 (250)	680	35x50	0.15	1.99	18000	90x236	0.25	28.51	
	820	35x50	0.15	2.19	400 (450)	330	35x80	0.20	1.97
	1000	35x60	0.15	2.62		390	35x80	0.20	2.14
	1200	35x60	0.15	2.87		470	35x80	0.20	2.35
	1500	35x80	0.15	3.52		560	35x80	0.20	2.57
	1800	35x80	0.15	3.85		680	35x100	0.20	2.90
	2200	35x100	0.15	4.23		820	35x100	0.20	3.18
	2700	35x121	0.15	4.72		1000	51x70	0.20	3.60
	3300	51x70	0.15	5.24		1200	51x70	0.20	3.94
	3900	51x70	0.15	5.70		1500	51x90	0.20	4.91
	4700	51x90	0.15	6.42		1800	51x90	0.20	5.38
	5600	51x115	0.15	7.47		2200	51x130	0.20	6.23
	6800	51x130	0.15	8.70		2700	64x96	0.25	7.09
	8200	64x96	0.20	9.33		3300	64x115	0.25	8.01
	10000	64x96	0.20	10.30		3900	64x130	0.25	8.94
	12000	77x96	0.20	12.56		4700	77x115	0.25	10.32
	15000	77x96	0.20	14.04		5600	77x130	0.25	11.87
	18000	77x130	0.20	16.80		6800	77x155	0.25	14.14
	22000	77x155	0.20	20.07		8200	90x157	0.25	16.03
27000	90x131	0.20	21.62	10000		90x157	0.25	17.71	
33000	90x157	0.20	25.85	12000	90x196	0.25	21.40		
250 (300)	470	35x50	0.15	1.66	15000	90x236	0.25	26.02	
	560	35x50	0.15	1.81	450 (500)	270	35x50	0.20	1.45
	680	35x50	0.15	1.99		330	35x80	0.20	1.97

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	tan δ	Ripple current (A/rms85°C) (120KHz)	Rated Voltage (SurageVoltage) (V)	Cap (μ F)	Case size Φ DxL(mm)	tan δ	Ripple current (A/rms85°C) (120KHz)	
35(44)	12000	25x45	0.35	3.95	63(79)	8200	35x35	0.25	4.80	
		30x35	0.35	4.00		10000	30x50	0.25	5.50	
		35x30	0.35	4.05			35x40	0.25	5.45	
	15000	25x50	0.35	4.95			12000	35x45	0.25	6.20
		30x40	0.35	4.95		80 (100)	1200	22x25	0.25	1.65
		35x35	0.35	5.00			1500	22x30	0.25	1.90
	18000	30x45	0.35	5.50				25x25	0.25	1.90
		35x40	0.35	5.55				1800	22x35	0.25
		22000	30x50	0.35			6.00		25x30	0.25
	35x45		0.35	6.05			30x25		0.25	2.20
27000	35x50	0.35	6.90	2200	22x40		0.25	2.45		
	50 (63)	2200	22x25		0.30		1.90	25x30	0.25	2.45
2700		22x30	0.30		2.10		30x25	0.25	2.50	
		25x25	0.30	2.20	2700		22x45	0.25	2.80	
		3300	22x30	0.30		2.35	25x35	0.25	2.80	
25x25			0.30	2.35		30x30	0.25	2.85		
3900		22x35	0.30	2.65	35x25	0.25	2.85			
		25x30	0.30	2.65	3300	22x50	0.25	3.15		
		30x25	0.30	2.65		25x40	0.25	3.20		
4700		22x40	0.30	3.00		30x30	0.25	3.20		
		25x35	0.30	3.00	35x25	0.25	3.20			
	30x25	0.30	2.95	3900	25x45	0.25	3.60			
5600	22x45	0.30	3.35		30x35	0.25	3.60			
	25x40	0.30	3.35		35x30	0.25	3.60			
	6800	30x30	0.30	3.35	4700	25x50	0.25	4.05		
35x25		0.30	3.40	30x40		0.25	4.05			
8200		22x50	0.30	3.80		35x35	0.25	4.10		
	25x40	0.30	3.80	5600	30x45	0.25	4.55			
	30x30	0.30	3.80		35x35	0.25	4.50			
10000	30x35	0.30	3.85		6800	30x50	0.25	5.15		
	35x30	0.30	3.85	35x40		0.25	5.15			
	12000	25x50	0.30	4.35		8200	35x45	0.25	5.85	
30x40		0.30	4.35	10000	35x50		0.25	6.60		
35x30		0.30	4.40	100 (125)	820		22x25	0.25	1.85	
15000	30x45	0.30	5.00		1000	22x30	0.25	2.10		
	35x35	0.30	4.95		1200	25x25	0.25	2.10		
	18000	30x50	0.30			5.60	22x35	0.25	2.40	
35x40		0.30	5.55			25x30	0.25	2.45		
18000		35x45	0.30		6.45	1500	22x40	0.25	2.70	
	35x50	0.30	6.70		25x30		0.25	2.75		
	63 (79)	1800	22x25		0.25		1.85	30x25	0.25	2.75
2200		22x30	0.25		2.30	1800	22x45	0.25	3.10	
		25x25	0.25		2.30		25x35	0.25	3.15	
		22x35	0.25	2.45	30x30		0.25	3.15		
2700		25x30	0.25	2.45	2200	35x25	0.25	3.15		
		30x25	0.25	2.50		22x50	0.25	3.50		
		3300	22x40	0.25		2.60	25x40	0.25	3.55	
25x30			0.25	2.65	30x30	0.25	3.55			
30x25			0.25	2.70	35x25	0.25	3.60			
3900		22x45	0.25	2.95	2700	25x45	0.25	4.10		
	25x35	0.25	2.95	30x35		0.25	4.05			
	30x30	0.25	3.00	35x30		0.25	4.05			
4700	22x50	0.25	3.40	3300	25x50	0.25	4.50			
	25x40	0.25	3.35		30x40	0.25	4.55			
	30x30	0.25	3.35		35x30	0.25	4.50			
5600	35x25	0.25	3.40	3900	30x45	0.25	5.15			
	25x45	0.25	3.70		35x35	0.25	5.10			
	30x35	0.25	3.75		4700	35x40	0.25	5.75		
6800	35x30	0.25	3.75	5600		35x50	0.25	6.20		
	30x40	0.25	4.25	160 (200)		270	22x25	0.15	1.15	
	35x30	0.25	4.20		330	22x25	0.15	1.40		
8200	30x45	0.25	4.80			25x20	0.15	1.35		

■ STANDARD RATINGS

Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ D x L (mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω, 20°C) (100KHz)	Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ D x L (mm)	Ripple current (mA/rms105°C) (100KHz)	Impedance (Ω, 20°C) (100KHz)
6.3V (8)	150	5x11	200	0.420	16V (20)	220	8x11	550	0.140
	220	6.3x11	250	0.320		330	8x11	550	0.120
	270	6.3x11	250	0.220			8x15	750	0.100
	330	6.3x11	250	0.230		10x12.5	688	0.080	
		8x11	400	0.180		470	8x15	730	0.093
	470	*6.3x11	440	0.180			10x12.5	800	0.085
		8x11	550	0.140		680	10x16	1050	0.064
	680	*8x11	580	0.120		820	10x20	1100	0.044
		8x15	700	0.100		1000	*10x16	1140	0.043
	820	8x20	750	0.085			10x20	1250	0.039
	1000	*8x11	580	0.150		1200	*10x25	1310	0.042
		8x15	700	0.085			13x20	1450	0.038
		8x20	800	0.069		1500	*10x20	1200	0.045
		10x12.5	690	0.080			13x20	1600	0.034
	1200	10x16	1000	0.064		2200	*10x30	1780	0.032
	1500	*8x15	980	0.085			*13x20	1720	0.033
		8x20	800	0.051			13x25	2000	0.028
		*10x16	1070	0.055		*13x40	2200	0.026	
		10x20	1250	0.044		16x25	2200	0.024	
	2200	*10x20	1220	0.051		4700	16x36	2550	0.019
*10x25		1310	0.048	6800	18x36	2800	0.019		
13x20		1450	0.043	25V (32)	10	5x11	50	0.550	
3300		*10x25	1400		0.043	47	5x11	150	0.450
3900	13x25	1700	0.035		56	5x11	150	0.420	
	13x25	1750	0.032		68	6.3x11	200	0.370	
4700	*13x30	1570	0.033		100	6.3x11	250	0.220	
	*13x25	1520	0.032		120	8x11	300	0.200	
6800	16x25	1800	0.028		150	8x11	550	0.140	
	16x32	2000	0.024		220	8x11	550	0.120	
8200	16x32	2350	0.019			8x15	750	0.100	
10000	16x36	2550	0.019		330	*8x15	660	0.100	
15000	18x36	3000	0.019			8x20	800	0.069	
10V (13)	100	5x11	150		0.420	10x16	900	0.086	
	120	5x11	200		0.370	470	8x20	800	0.067
	150	6.3x11	250		0.320		10x12.5	760	0.086
	220	6.3x11	300		0.220	10x16	1050	0.064	
	330	8x11	550		0.140	680	10x20	1100	0.039
	470	8x11	550		0.120	820	10x20	1250	0.039
		8x15	750		0.100	1000	*10x20	1160	0.047
	680	*8x11	640		0.110		*10x25	1310	0.042
		10x12.5	800		0.085	13x20	1450	0.038	
	820	10x16	1050	0.064	1200	13x25	1600	0.035	
	1000	8x20	1080	0.065	1500	*13x30	1750	0.032	
		*10x12.5	930	0.075		16x25	2000	0.028	
		10x16	990	0.085	2200	*13x30	1810	0.029	
		10x20	1100	0.050		*16x25	1660	0.032	
	1200	10x20	1250	0.044	16x32	2200	0.024		
	1500	10x20	1450	0.039	3300	*16x36	2540	0.019	
	2200	*10x20	1330	0.047		18x36	2550	0.019	
		*10x25	1450	0.039	4700	18x36	2800	0.019	
	13x20	1600	0.038	6800	18x36	2800	0.019		
	3300	*10x30	1740	0.032	35V (44)	4.7	5x11	115	1.200
13x25		2000	0.028	6.8		5x11	120	1.000	
4700	*13x25	1860	0.028	10		5x11	140	0.900	
	16x25	2200	0.024	15		5x11	170	0.690	
6800	16x36	2550	0.019	22		5x11	190	0.600	
8200	18x36	2800	0.019	33		5x11	200	0.580	
16V (20)	56	5x11	100	0.630		47	6.3x11	250	0.390
	68	5x11	150	0.420		68	6.3x11	300	0.220
	100	5x11	200	0.370		100	6.3x11	350	0.180
	120	6.3x11	250	0.320			8x11	450	0.140
150	6.3x11	300	0.220	120		8x11	550	0.130	

" * " is down size , Ripple Life is less 1000 hrs than standard