

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

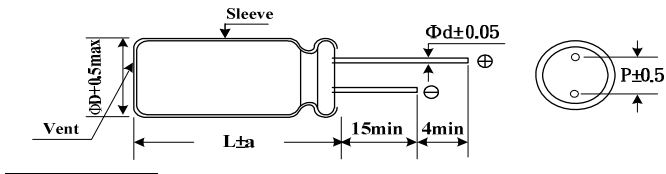
**SH**  
 ↑ High Temperature  
 SK



**■ 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)								
	(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	350~450	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	6.3	10	16	25	35~100	160~250	350~450	500		
	Z(120Hz)		4	3	2	2	2	4	4	6	
	Z-25°C / Z+20°C		8	6	4	4	3	—	—	—	
	Z-40°C / Z+20°C										
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									
	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 (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size Φ DxL(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 (μF)	Case size ΦDxL(mm)	tan δ	Ripple current (mA/rms105°C) (120Hz)	Rated Voltage (Surge Voltage) (V)	Cap (μF)	Case size ΦDxL(mm)	tan δ	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		4.7	10x12.5	0.20	55
470	16x32	0.10	875	6.8		8x15	0.20	60	
680	16x36	0.10	1200	6.8		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		68	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	120	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		68	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		1.0	8x11	0.20	22
	150	16x32	0.15	480		2.2	8x11	0.20	30
	220	16x36	0.15	675		2.2	10x12.5	0.20	37
330	18x36	0.15	750	3.3		8x15	0.20	42	
250 (300)	1	6.3x11	0.15	17		3.3	10x12.5	0.20	40
	2.2	6.3x11	0.15	29		4.7	10x12.5	0.20	52
	3.3	8x11	0.15	42		6.8	10x15	0.20	62
	4.7	8x11	0.15	52		10	10x20	0.20	85
	6.8	8x11	0.15	62		15	13x20	0.20	120
	10	10x12.5	0.15	80	22	13x25	0.20	150	
	15	10x15	0.15	110	33	16x25	0.20	210	
	22	10x20	0.15	140	47	16x25	0.20	260	
	33	13x20	0.15	200	68	18x32	0.20	370	
	47	13x25	0.15	240	100	18x36	0.20	495	
	68	13x25	0.15	290	120	18x40	0.20	565	
	100	16x25	0.15	380	150	18x45	0.20	650	
	150	16x32	0.15	420	500 (550)	2.2	8x11	0.25	25
	220	18x36	0.15	680		3.3	8x16	0.25	30
350 (400)	1	6.3x11	0.20	16		4.7	8x16	0.25	34
	2.2	8x11	0.20	31		4.7	10x12.5	0.25	38
					6.8	10x16	0.25	50	

**SH**

Standard Series

■ STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap ( $\mu$ F)	Case size $\Phi$ D $\times$ L(mm)	$\tan \delta$	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 ( $\mu$ F)	Case size $\Phi$ D $\times$ L(mm)	$\tan \delta$	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

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