

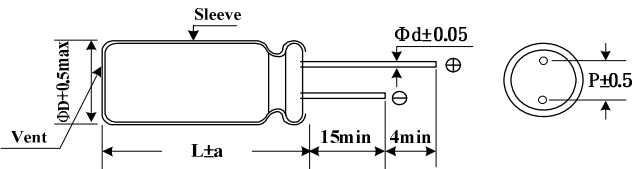


- Endurance: 85°C 2000hours
- Recommended Applications :For general purpose , decoupling , by pass and filtering circuit in entertainment electronics
- Corresponding product to RoHS

**■ SPECIFICATIONS**

Item	Characteristics	
Category Temperature Range	-40~+85°C	-25~+85°C
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 550VDC
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 63 100 160~250 350~550
	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 µF,tan δ shall be added 0.02 to the listed value with increase of every 1000 µF.		
Low Temperature Stability Impedance Ratio (MAX)	WV	6.3 10 16 25 35~100 160~250 315~350 400~550
	Z(120Hz)	
	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.	

**■ 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 µF	1.00	1.20	1.30	1.50
6.3 ~ 100V 100 ~ 680 µF	1.00	1.10	1.15	1.20
6.3 ~ 100V 1000 ~ 22000 µF	1.00	1.05	1.10	1.15
160 ~ 450V ≤ 220 µF	1.00	1.25	1.40	1.40
160 ~ 450V >220 µF	1.00	1.10	1.13	1.13
500~550V all volume(µ F)	1.00	1.05	1.10	1.10

■STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap (μF)	Case size ΦDxL(mm)	tan δ	Ripple current (mA/rms85°C) (120Hz)	Rated Voltage (SurageVoltage) (V)	Cap (μF)	Case size ΦDxL(mm)	tan δ	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		3300	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			18x36	0.24	2550	
	3300	10x20	0.28	1000		10000	22x40	0.32	2800	
	4700	13x20	0.30	1300		15000	22x40	0.42	3200	
	6800	13x25	0.34	1550		35 (44)	10	5x11	0.12	60
	10000	16x25	0.42	1900			22	5x11	0.12	95
15000	16x36	0.52	2500	33	5x11		0.12	120		
	18x40	0.66	3650		47		5x11	0.12	120	
10 (13)	10	5x11	0.20	35	100		6.3x11	0.12	185	
	22	5x11	0.20	55			220	8x11	0.12	290
	33	5x11	0.20	80	330			10x12.5	0.12	420
	47	5x11	0.20	95			470	10x15	0.12	430
	100	5x11	0.20	180	680			10x20	0.12	550
		220	6.3x11	0.20			250	1000	13x20	0.12
	330	6.3x11	0.20	265	2200		16x25		0.14	1600
	470	6.3x11	0.20	320			3300	16x36	0.16	1970
		6.3x11	0.20	410	18x32			0.16	2050	
	680	8x11	0.20	410	4700		18x36	0.18	2400	
		10x12.5	0.20	580			6800	22x40	0.22	2600
	1000	10x20	0.22	880	50 (63)			10	5x11	0.10
	2200	10x20	0.22	880		22	5x11	0.10	100	
	3300	13x20	0.24	1250		33	5x11	0.10	105	
	4700	13x25	0.26	1500			47	6.3x11	0.10	140
		6800	16x25	0.30		1900		100	8x11	0.10
10000	16x36	0.38	2225	220		10x12.5	0.10		380	
	18x32	0.38	2225			330	10x15	0.10	490	
15000	18x36	0.48	2950	470			10x20	0.10	610	
	22000	22x40	0.62			3700	1000	13x25	0.10	1100
16 (20)	10	5x11	0.16	40		2200		16x36	0.12	1850
	22	5x11	0.16	75			3300	18x32	0.12	1850
	33	5x11	0.16	110		4700		18x36	0.14	2170
	47	5x11	0.16	130			6800	22x40	0.16	2500
	68	5x11	0.16	150		63 (79)		10	5x11	0.10
	100	5x11	0.16	165			22	5x11	0.10	95
	150	6.3x11	0.16	205				33	6.3x11	0.10
	220	6.3x11	0.16	260	47		6.3x11		0.10	130
		6.3x11	0.16	290			100	6.3x11	0.10	190
	330	8x11	0.16	360	220			10x12.5	0.10	300
		8x11	0.16	400			330	10x15	0.10	410
	470	8x11	0.16	400	470			10x20	0.10	490
	680	10x12.5	0.16	510			680	10x20	0.10	540
	1000	10x15	0.16	630	1000			13x20	0.10	755
	2200	13x20	0.18	1100			3300	13x25	0.10	965
	3300	13x25	0.20	1400	4700			16x25	0.10	1310
4700	16x25	0.22	1800	6800			18x36	0.12	2200	
6800	16x32	0.26	1980		10000		22x40	0.14	2500	
10000	18x36	0.34	2700	100 (125)			10	5x11	0.10	65
15000	22x40	0.44	3150		22		6.3x11	0.10	75	
22000	22x40	0.58	3800			33	6.3x11	0.10	105	
25 (32)	10	5x11	0.14		50		47	8x11	0.10	130
	22	5x11	0.14		90	68		8x11	0.10	140
33	5x11	0.14	115		100		10x12.5	0.10	190	
47	5x11	0.14	135			100	10x15	0.10	280	
68	5x11	0.14	145							
100	6.3x11	0.14	160							

STANDARD RATINGS

Rated Voltage (SurageVoltage) (V)	Cap ( $\mu$ F)	Case size $\Phi$ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)	Rated Voltage (SurageVoltage) (V)	Cap ( $\mu$ F)	Case size $\Phi$ DxL(mm)	$\tan \delta$	Ripple current (mA/rms85°C) (120Hz)
100 (125)	100	10x20	0.10	400	350 (400)	1.0	6.3x11	0.24	19
	150	13x20	0.10	500		2.2	8x11	0.24	33
	220	13x25	0.10	710		3.3	8x11	0.24	33
	330	13x25	0.10	720		4.7	10x12.5	0.24	39
	470	16x25	0.10	1100		10	10x15	0.24	70
	680	16x36	0.10	1260		22	13x20	0.24	130
	1000	18x40	0.10	1350		33	13x25	0.24	170
160 (200)	1	5x11	0.20	17		47	16x25	0.24	220
		6.3x11	0.20	17		100	16x36	0.24	320
	2.2	6.3x11	0.20	26			18x32	0.24	300
	3.3	6.3x11	0.20	30	400 (450)	1.0	6.3x11	0.24	16
	4.7	6.3x11	0.20	32			8x11	0.24	19
	10	8x11	0.20	50		2.2	6.3x11	0.24	20
	22	10x15	0.20	110			8x11	0.24	26
	33	10x15	0.20	135		3.3	8x11	0.24	35
		10x20	0.20	150		4.7	8x11	0.24	38
	47	10x20	0.20	160			10x12.5	0.24	42
	68	13x20	0.20	200		6.8	8x15	0.24	42
	100	13x25	0.20	250			10x12.5	0.24	45
	150	16x25	0.20	330		10	10x15	0.24	50
	220	16x32	0.20	450		22	13x20	0.24	100
	330	18x36	0.20	540		33	13x25	0.24	140
200 (250)	1	5x11	0.20	19		47	16x25	0.24	180
		6.3x11	0.20	22		68	16x32	0.24	250
	3.3	6.3x11	0.20	30			18x25	0.24	220
	4.7	6.3x11	0.20	35	100	18x32	0.24	320	
	6.8	8x11	0.20	40		18x40	0.24	420	
	10	8x11	0.20	45	450 (500)	1.0	8x11	0.24	19
	22	10x15	0.20	120			2.2	10x12.5	0.24
	33	10x20	0.20	160		3.3	10x12.5	0.24	40
	47	10x20	0.20	170		4.7	10x12.5	0.24	45
		13x20	0.20	200		6.8	10x15	0.24	50
	68	13x25	0.20	230			10	10x20	0.24
	100	16x25	0.20	330		13x20		0.24	60
	220	16x32	0.20	505		22	13x25	0.24	98
		18x25	0.20	485		33	16x25	0.24	145
	330	16x40	0.20	710		500(550)	2.2	10x12.5	0.24
0.20			685	3.3			10x15	0.24	43
18x32		0.20	685	6.8			10x20	0.24	70
		0.20	750	10			13x20	0.24	93
470	18x40	0.20	750	22		16x25	0.24	105	
250 (300)	1	5x11	0.20	17		33	16x25	0.24	200
		6.3x11	0.20	19	47	18x32	0.24	185	
	2.2	6.3x11	0.20	24	550 (600)	4.7	10x12	0.24	40
		8x11	0.2	30		6.8	10x15	0.24	55
	3.3	8x11	0.20	30		10	10x20	0.24	75
	4.7	8x11	0.20	36		12	10x20	0.24	85
	6.8	8x11	0.20	40		15	13x16	0.24	100
	10	10x12.5	0.20	65		18	13x20	0.24	120
	22	10x20	0.20	130		22	13x25	0.24	145
	33	13x20	0.20	140		33	16x30	0.24	215
	47	13x25	0.20	210		47	18x30	0.24	250
	100	16x25	0.20	250		68	18x36	0.24	320
	150	16x32	0.20	330		82	18x40	0.24	370
	220	18x36	0.20	540					