

# SM

**Feature: 85°C Standard Downsized.**
**85°C 2,000 hours assured.**

## SPECIFICATIONS

Item	Performance Characteristics	
Category Temperature Range	-40 to +85°C	-25 to +85°C
Working Voltage Range	6.3 to 100Vdc	160 to 450Vdc
Capacitance Range	0.1 to 22,000 $\mu$ F	0.47 to 470 $\mu$ F
Capacitance Tolerance	$\pm 20\%$ (at 25°C 120Hz)	
Dissipation Factor ( $\tan \delta$ ) (at 25°C 120Hz)	Rated Voltage (V)	6.3   10   16   25   35   50   63   100
	$\tan \delta$ (Max)	0.26   0.22   0.16   0.14   0.12   0.10   0.09   0.08
	Rated Voltage (V)	160 to 250                      350 to 450
	$\tan \delta$ (Max)	0.15                                      0.20
The above values should be increased by 0.02 for every additional 1000 $\mu$ F		
Leakage Current	$I=0.01CV$ or $3 \mu$ A whichever is greater	$I=0.03CV + 10 \mu$ A
	I: Leakage current. ( $\mu$ A)    C: Rated capacitance. ( $\mu$ F)    V: Rated voltage. (V) The rated voltage is impressed for two minutes.	
Endurance	After applying rated voltage to the capacitor for 2,000 hours at 85°C, the following characteristics shall be satisfied when the capacitor has been restored to 25°C. Capacitance change $\leq \pm 20\%$ of the initial value Dissipation factor ( $\tan \delta$ ) $\leq 200\%$ of the specified value Leakage current $\leq$ specified value	
Shelf Life	After exposing the capacitor for 1,000 hours at 85°C, without applying voltage, the following characteristics shall be satisfied when the capacitor has been restored to 25°C. Capacitance change $\leq \pm 20\%$ of the initial value Dissipation factor ( $\tan \delta$ ) $\leq 200\%$ of the specified value Leakage current $\leq 200\%$ of the specified value	
Others	Conforms to JIS C-5141 (1991), characteristic W	

## RIPPLE CURRENT MULTIPLIERS

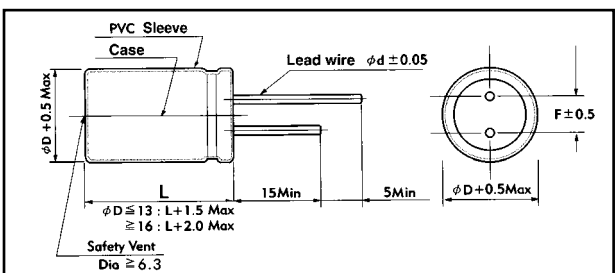
### Temperature Multipliers

Temp (°C)	40	60	70	85
Factor	1.30	1.28	1.15	1.00

### Frequency Multipliers

Vdc	Freq.(Hz)					
	Cap.( $\mu$ F)	50(60)	120	1K	10K	100K
6.3 to 100	0.1 to 68	0.75	1.00	1.57	2.00	2.00
	100 to 680	0.80	1.00	1.34	1.50	1.50
	1000 to 22000	0.85	1.00	1.13	1.15	1.15
160 to 450	0.47 to 220	0.80	1.00	1.40	1.60	1.60
	330 to 470	0.90	1.00	1.13	1.15	1.15

### DIMENSIONS(mm)



$\phi$ D	5	6.3	8	10	13	16	18	20	22
$\phi$ d	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	10

**SM**

**Case size & Permissible Ripple Current**

$\mu F$ \ Vdc	6.3		10		16		25		35		50		63		100	
0.1											5x11	2			5x11	3
0.22											5x11	3			5x11	5
0.33											5x11	5			5x11	7
0.47											5x11	6.2			5x11	10
1											5x11	17			5x11	21
2.2											5x11	28			5x11	30
3.3											5x11	35			5x11	40
4.7							5x11	30	5x11	35	5x11	40	5x11	45	5x11	45
10					5x11	40	5x11	55	5x11	60	5x11	60	5x11	65	6.3x11	75
22	5x11	65	5x11	65	5x11	75	5x11	80	5x11	90	5x11	95	5x11	95	6.3x11	120
33	5x11	80	5x11	85	5x11	90	5x11	95	5x11	105	6.3x11	120	6.3x11	130	8x12	170
47	5x11	95	5x11	100	5x11	110	5x11	115	5x11	130	6.3x11	155	6.3x11	160	10x12	220
68	5x11	100	5x11	110	5x11	120	6.3x11	145	6.3x11	160	6.3x11	170	8x12	180	10x12	235
100	5x11	130	5x11	150	5x11	160	6.3x11	190	6.3x11	210	8x12	260	10x12	290	10x16	340
150	5x11	150	5x11	160	6.3x11	210	6.3x11	210	8x12	290	10x12	345	10x12	345	13x20	490
220	5x11	200	5x11	220	6.3x11	270	8x12	320	8x12	360	10x12	430	10x16	470	13x25	620
330	6.3x11	270	6.3x11	300	8x12	370	8x12	400	10x12	490	10x20	600	13x20	660	13x25	870
470	6.3x11	330	6.3x11	360	8x12	440	10x12	520	10x16	580	13x20	760	13x20	850	16x25	1000
680	8x12	445	8x12	445	10x12	500	10x16	605	10x20	720	13x20	875	13x25	1000	16x36	1100
1000	8x12	540	10x12	650	10x16	770	10x20	930	13x20	1150	13x25	1360	16x25	1310	18x36	1350
2200	10x16	930	10x20	1100	13x20	1300	13x25	1550	16x25	1880	16x36	2060	18x36	2220		
3300	10x20	1190	13x20	1450	13x25	1700	16x25	1730	16x36	2190	18x36	2500				
4700	13x20	1520	13x25	1790	16x25	1840	16x32	2140	18x36	2560						
6800	13x25	1890	16x25	1940	16x32	2280	18x36	2630								
10000	16x25	2030	16x32	2470	18x36	2750										
15000	16x36	2590	18x36	2870												
22000	18x36	3220	18x40	3300												

↑ Ripple current (mA rms) at 85°C, 120Hz  
 ↙ Case size  $\phi$  DXL(mm)

$\mu F$ \ Vdc	160		200		250		350		400		450	
0.47	5x11	14	5x11	14	5x11	14	5x11	14	6.3x11	14	6.3x11	14
1	5x11	21	5x11	21	6.3x11	21	6.3x11	21	6.3x11	24	8x12	22
2.2	6.3x11	32	6.3x11	32	6.3x11	32	8x12	37	8x12	38	8x12	34
3.3	6.3x11	39	6.3x11	39	8x12	45	8x12	53	8x12	48	10x12	46
4.7	6.3x11	49	8x12	53	8x12	53	10x12	63	10x16	68	10x16	53
10	8x12	78	8x12	80	10x12	85	10x16	85	10x20	95	13x20	75
22	10x16	150	10x20	165	10x20	165	13x20	165	13x25	175	13x25	145
33	10x20	200	10x20	210	13x20	225	13x25	205	16x25	225	16x25	205
47	13x20	260	13x20	260	13x20	270	16x25	265	16x25	280	16x32	265
68	13x25	290	13x25	290	16x25	300	16x32	295	16x36	315	18x32	285
82	13x25	380	13x25	390	16x25	395	18x32	385	18x32	405	18x36	375
100	13x25	420	16x25	420	16x32	435	18x32	430	18x32	445	18x40	420
120	13x25	480	16x25	490	16x32	485	18x32	495	18x36	505	18x45	475
150	16x25	560	16x32	570	16x36	575	18x36	565	18x40	570		
180	16x32	610	16x36	620	18x36	615	18x40	620	18x45	640		
220	16x32	680	16x36	690	18x36	705						
330	18x36	740	18x36	750	18x40	760						
470	18x40	790	18x40	800								

↑ Ripple current (mA rms) at 85°C, 120Hz  
 ↙ Case size  $\phi$  DXL(mm)

**LOAD LIFE TEST**

