

# SY Series

Low Impedance & Long Life

- Features : Low Impedance , high permissible ripple current at high frequency and long life than SC
- Recommended Applications:  
Used switching regulator applications in computers. Especially for high frequency.
- Corresponding product to RoHS

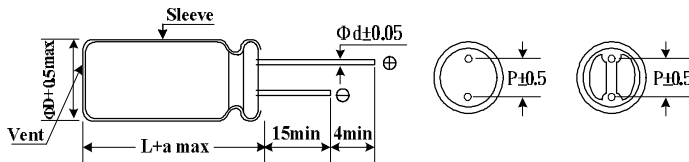
Long Life  
SC



## Specifications

Item	Characteristics																																				
Operating Temperature Range	-40 ~ +105°C																																				
Rated Voltage Range	6.3 ~ 100VDC																																				
Rated Capacitance Range	2.2 ~ 15000 $\mu$ F																																				
Capacitance Tolerance	$\pm$ 20% at 120Hz , 20°C																																				
Leakage Current (MAX) (20°C)	$I = 0.01CV$ or $3 \mu$ A , whichever is greater. (After rated voltage applied for 2 minutes) $I =$ Leakage Current ( $\mu$ A) $C =$ Nominal Capacitance ( $\mu$ F) $V =$ Rated Voltage (V)																																				
Dissipation Factor (MAX) (tan $\delta$ ) (120Hz , 20°C)	<table border="1"> <thead> <tr> <th>WV</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>tan <math>\delta</math></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> <td>0.08</td> </tr> </tbody> </table> <p>When nominal capacitance is over 1000 <math>\mu</math>F, tan <math>\delta</math> shall be added 0.02 to the listed value with increase of every 1000 <math>\mu</math>F.</p>	WV	6.3	10	16	25	35	50	63	100	tan $\delta$	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08																		
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Z-40°C / Z+20°C	8	6	4	3	3	3	3	3																													
Endurance	<p>After applying rated voltage with rated ripple current for 6000 hours at 105°C, the capacitors shall meet the following requirements.</p> <table border="1"> <thead> <tr> <th>Capacitance Change</th> <th>Within <math>\pm</math> 25% of initial value</th> </tr> </thead> <tbody> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>D <math>\phi</math></th> <th>5 <math>\phi</math> ~ 6.3 <math>\phi</math></th> <th>8 <math>\phi</math> ~ 10 <math>\phi</math> x12.5</th> <th>10 <math>\phi</math> x15~12 <math>\phi</math></th> <th>13 <math>\phi</math> ~ 18 <math>\phi</math></th> </tr> </thead> <tbody> <tr> <td>Life</td> <td>3000 hrs</td> <td>4000 hrs</td> <td>5000 hrs</td> <td>6000 hrs</td> </tr> </tbody> </table> <p>*If dimension is down size, Endurance will be less 1000 hours than standard.</p>	Capacitance Change	Within $\pm$ 25% of initial value	Dissipation Factor	Not more than 200% of specified value	Leakage Current	Not more than the specified value	D $\phi$	5 $\phi$ ~ 6.3 $\phi$	8 $\phi$ ~ 10 $\phi$ x12.5	10 $\phi$ x15~12 $\phi$	13 $\phi$ ~ 18 $\phi$	Life	3000 hrs	4000 hrs	5000 hrs	6000 hrs																				
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Life	3000 hrs	4000 hrs	5000 hrs	6000 hrs																																	
Shelf Life	After placed at 105°C without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance.																																				

## Diagram of Dimensions



$\phi$ D	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
$\phi$ 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

Frequency coefficient

Frequency (Hz)	120	1 K	10 K	100 K
22 ~ 180 $\mu$ F	0.40	0.75	0.90	1.00
220 ~ 560 $\mu$ F	0.50	0.85	0.94	1.00
680 ~ 1800 $\mu$ F	0.60	0.87	0.95	1.00
2200 ~ 3900 $\mu$ F	0.75	0.90	0.95	1.00
4700 $\mu$ F Higher	0.85	0.95	0.98	1.00


**■ Dimensions, Rated Ripple Current, Max Impedance**

Capacitance (μF)	Rated ( Surge) Voltage								
	6.3V ( 8 )			10V ( 13 )			16V ( 20 )		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
56							5x11	210	0.580
100				5x11	210	0.580	6.3x11	250	0.230
120							6.3x11	340	0.220
150	5x11	210	0.580						
220							6.3x11	469	0.185
				6.3x11	340	0.220	8x11	582	0.150
330	6.3x11	340	0.220				8x11	640	0.130
470	6.3x11	510	0.160	8x11	640	0.130	*8x15	840	0.087
							8x20	950	0.078
							*10x12.5	865	0.080
							10X16	1210	0.060
680	8x11	640	0.130	8x15	840	0.087	8x20	1050	0.069
							10X16	1210	0.060
820	10x12.5	865	0.080	10x12.5	865	0.080			
1000	8x15	840	0.087	8x20	1050	0.069	8x20	1050	0.069
				10X16	1210	0.060	*10X16	1210	0.060
							10x20	1400	0.046
							13x16	1450	0.049
1200	8x20	1050	0.069	10x20	1400	0.046	10x25	1650	0.042
	10X16	1210	0.060						
1500	8x20	1050	0.069	10x25	1650	0.042	10x30	1910	0.031
	*10X16	1210	0.060	13x16	1450	0.049	13x20	1900	0.035
	10x20	1400	0.046				16x16	1940	0.042
1800	13x16	1450	0.049						
2200	*10x20	1400	0.046	10x30	1910	0.031	13x25	2230	0.027
	10x25	1650	0.042	13x20	1900	0.042	18x16	2210	0.043
				16x16	1940	0.042			
2700	10x30	1910	0.031	18x16	2210	0.043	13x30	2650	0.024
	16x16	1940	0.042				16x20	2530	0.027
3300	10x25	1650	0.042	10x30	1910	0.031			
	13x20	1900	0.035	13x25	2230	0.027	13x36	2880	0.020
3900	13x25	2230	0.027	13x30	2650	0.024	13x40	3350	0.017
	18x16	2210	0.043	16x20	2530	0.027	16x25	2930	0.021
							18x20	2860	0.026
4700	13x30	2650	0.024	13x36	2880	0.020	16x32	3450	0.017
							18x25	3140	0.019
							16x36	3610	0.015
5600	13x36	2880	0.020	13x40	3350	0.017	16x36	3610	0.015
	16x20	2530	0.027	16x25	2930	0.021	18x32	4170	0.015
				18x20	2860	0.026			
6800	13x40	3350	0.017	16x32	3450	0.017	16x40	4080	0.013
	16x25	2930	0.021	18x25	3140	0.019			
	18x20	2860	0.026						
8200	16x32	3450	0.017	16x36	3610	0.015	18x36	4220	0.014
				18x32	4170	0.015			
10000	16x36	3610	0.015	16x40	4080	0.013	18x40	4280	0.012
	18x25	3140	0.017	18x36	4220	0.014			
12000	18x32	4170	0.015	18x40	4280	0.012			
15000	18x36	4220	0.014						

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms), 105°C, 100KHz ☆ Impedance (Ω), 20°C, 100KHz

" \* " is down size, Ripple life is less 1000 hrs than standard.


**■ Dimensions, Rated Ripple Current, Max Impedance**

Capacitance (μF)	Rated ( Surge) Voltage								
	25V ( 32)			35V ( 44 )			50V ( 63 )		
	SIZE	Ripple	Z	SIZE	Ripple	Z	SIZE	Ripple	Z
2.2							5x11	85	2.280
4.7				5x11	95	2.400	5x11	100	2.000
10				5x11	130	1.600	5x11	135	1.200
22							5x11	180	0.700
33				5x11	210	0.580	6.3x11	245	0.490
47	5x11	210	0.580	6.3x11	275	0.390	6.3x11	300	0.520
56				6.3x11	340	0.220	6.3x11	295	0.300
68				6.3x11	500	0.170			
82				6.3x11	540	0.160			
100	6.3x11	340	0.220	8x11	580	0.150	8x11	555	0.170
120							8x15	730	0.120
150	8x11	640	0.160	8x11	640	0.130	10x12.5	760	0.120
180							8x20	910	0.091
220	8x11	640	0.130	*8x15	840	0.087	10x16	1050	0.084
				10x12.5	865	0.080			
270				8x20	1050	0.069	10x20	1220	0.060
							13x16	1260	0.061
330	8x15	840	0.087	*10x16	1210	0.060	*10x20	1400	0.058
	10x12.5	865	0.080	10x20	1400	0.046	10x25	1440	0.055
470	8x20	1050	0.069	10x20	1400	0.046	10x30	1690	0.043
	*10x12.5	1050	0.070	13x16	1450	0.049	13x20	1660	0.045
	10x16	1210	0.060				16x16	1690	0.055
560				10x25	1650	0.042	13x25	1950	0.034
							18x16	1930	0.054
680	10x20	1400	0.046	10x30	1910	0.031	13x30	2310	0.030
	13x16	1450	0.049	13x20	1900	0.035			
				16x16	1940	0.042			
820	10x25	1650	0.042	13x20	1900	0.035	13x36	2510	0.025
							16x20	2210	0.034
1000				13x25	2230	0.027	13x40	2920	0.021
	10x30	1910	0.031	18x16	2210	0.043	16x25	2555	0.025
	13x20	1900	0.035				18x20	2490	0.036
	16x16	1940	0.042						
1200	18x16	2210	0.043	13x30	2650	0.024	16x32	3010	0.022
				16x20	2530	0.027	18x25	2740	0.026
1500	*13x20	1900	0.035	13x36	2880	0.020	16x36	3150	0.019
	13x25	2230	0.027						
1800	13x30	2650	0.024	13x40	3350	0.017	16x40	3710	0.016
	16x20	2530	0.027	16x25	2930	0.021	18x32	3635	0.021
				18x20	2860	0.026			
2200	13x36	2880	0.020	16x32	3450	0.017	18x36	3680	0.017
	18x20	2860	0.026	18x25	3140	0.019			
2700	13x40	3350	0.017	16x36	3610	0.015	18x40	3800	0.014
	16x25	2930	0.021	18x32	4170	0.015			
3300	16x32	3450	0.017	16x40	4080	0.013			
	18x25	3140	0.019	18x36	4220	0.014			
3900	18x32	4170	0.015	18x40	4280	0.012			
4700	18x36	4220	0.014						
5600	18x40	4280	0.012						

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms), 105°C, 100KHz ☆ Impedance (Ω), 20°C, 100KHz

" \* " is down size, Ripple life is less 1000 hrs than standard.


**■ Dimensions, Rated Ripple Current, Max Impedance**

Capacitance (μF)	Rated ( Surge) Voltage								
	63V ( 79 )			100V ( 125 )					
	SIZE	Ripple	Z	SIZE	Ripple	Z			
6.8				5×11	55	2.3			
15	5×11	55	2.3	6.3×11	115	1.2			
27				8×12	232	0.63			
33	6.3×11	115	1.2						
39				8×15	300	0.45			
47				10×12.5	288	0.43			
56	8×12	232	0.63	8×20	362	0.33			
68				10×16	357	0.31			
82	8×15	300	0.45	10×20	466	0.21			
	10×12.5	288	0.43	13×16	466	0.23			
100				10×25	531	0.2			
120	8×20	362	0.33	10×30	663	0.15			
	10×16	357	0.31	13×20	690	0.16			
150				16×16	795	0.14			
180	10×20	466	0.21	13×25	784	0.12			
	13×16	466	0.23	18×16	920	0.12			
220	10×25	531	0.2	13×30	905	0.1			
				16×20	1040	0.091			
270	10×30	663	0.15						
	13×20	690	0.16	13×36	1050	0.083			
	16×16	795	0.14	16×25	1250	0.073			
330	13×25	784	0.12	13×40	1180	0.071			
				18×20	1240	0.08			
390				16×32	1570	0.054			
	18×16	920	0.12	18×25	1490	0.057			
470	13×30	905	0.1	16×36	1790	0.045			
	16×20	1040	0.091	18×32	1630	0.047			
560	13×36	1050	0.083						
	16×25	1250	0.073	16×40	2020	0.04			
680	13×40	1180	0.071						
	18×20	1240	0.08	18×36	1790	0.04			
820	16×32	1570	0.054						
	18×25	1490	0.057	18×40	2330	0.036			
1000	16×36	1790	0.045						
	18×32	1630	0.047						
1200	16×40	2020	0.04						

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms), 105°C, 100KHz ☆ Impedance (Ω), 20°C, 100KHz