

## 特点 Features

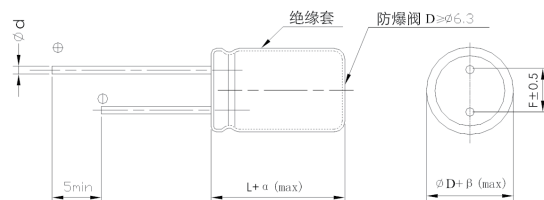
- 宽温度, 105°C, 2000小时长寿命, 体积小。  
Wide temperature range, 105°C, long life: 2000 hours. Miniature.
- 适用于彩电、空调、电子电表等线路中。  
Used in color-TV, air conditioning electron meter circuits etc.
- RoHS指令已对应完毕。  
Adapted to the RoHS directive.



## 主要技术性能 Specifications

项目 Items	特性 Characteristics																																																					
使用温度范围 Operating Temperature Range	-40~+105°C	-25~+105°C																																																				
额定电压范围 Rated Voltage Range	6.3~100V	160~500V																																																				
标称电容量范围 Nominal Capacitance Range	0.1~33000μF																																																					
标称电容量允许偏差 Capacitance Tolerance	± 20% (120Hz, +20°C)																																																					
漏电流 Leakage Current	I ≤ 0.01CV (μA) 或 3μA 2分钟 取较大者 (at 20°C, after 2 minutes) (Whichever is greater)	I ≤ 0.03CV (μA) + 40μA 2分钟(2 minutes)																																																				
损耗角正切值 (tgδ) Dissipation Factor (+20°C, 120Hz)	<table border="1"> <tr> <td>U<sub>R</sub> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tgδ</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> </table>	U <sub>R</sub> (V)	6.3	10	16	25	35	50	63	100	tgδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08																																			
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	<table border="1"> <tr> <td>U<sub>R</sub> (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> <td>500</td> </tr> <tr> <td>tgδ</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> <td>0.24</td> </tr> </table>	U <sub>R</sub> (V)	160	200	250	400	450	500	tgδ	0.15	0.15	0.15	0.20	0.20	0.24	容量大于1000μF者, 每增加1000μF, 其损耗角正切值增加0.02 When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.																																						
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温度特性 Temperature characteristics (Impedance ratio at 120Hz)	<table border="1"> <tr> <td>U<sub>R</sub> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160~250</td> <td>400</td> <td>450</td> <td>500</td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>4</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </table>													U <sub>R</sub> (V)	6.3	10	16	25	35	50	63	100	160~250	400	450	500	Z-25°C / Z+20°C	4	3	2	2	2	2	2	2	2	4	6	7	8	Z-40°C / Z+20°C	8	6	4	3	3	3	3	3	3	-	-	-	-
U <sub>R</sub> (V)	6.3	10	16	25	35	50	63	100	160~250	400	450	500																																										
Z-25°C / Z+20°C	4	3	2	2	2	2	2	2	2	4	6	7	8																																									
Z-40°C / Z+20°C	8	6	4	3	3	3	3	3	3	-	-	-	-																																									
耐久性 Load Life	+105°C加额定电压2000小时, 恢复16小时后: After applying rated voltage for 2000 hours at +105°C and then resumed for 16 hours: 电容量变化率 Capacitance change: ±20%初始测量值以内 ±20% of the initial measured value 漏电流 Leakage current: ≤初始规定值 ≤The initial specified value 损耗角正切值 Dissipation factor: ≤2倍初始规定值 ≤2times of the initial specified value																																																					
高温贮存 Shelf Life	+105°C, 1000小时贮存后, 恢复16小时后: After storage for 1000 hours at +105°C and then resumed 16 hours 电容量变化率 Capacitance change: ±20%初始测量值以内 ±20% of the initial measured value 漏电流 Leakage current: ≤2倍初始规定值 ≤2times of the initial specified value 损耗角正切值 Dissipation factor: ≤2倍初始规定值 ≤2times of the initial specified value																																																					

## 外形图及尺寸表 Case Size Table



单位 Unit: mm

D	5	6.3	8	10	12.5	16~18	22
F	2	2.5	3.5	5.0	5.0	7.5	10
d	0.5	0.5	0.5、0.6	0.6	0.6	0.8	0.8
αMAX	◁ L < 20 ▷ 1.5						
	◁ L ≥ 20 ▷ 2.0						
βMAX	◁ D < 20 ▷ 0.5						
	◁ D ≥ 20 ▷ 1.0						

## 频率修正系数 Frequency Coefficient

Rated Voltage(V)	CAP(μF)	Freq.(Hz)					
		50	120	300	1K	10K	100K
6.3~100	~47	0.75	1.00	1.35	1.57	2.00	2.30
	100~470	0.80	1.00	1.23	1.34	1.50	1.65
	≥560	0.85	1.00	1.10	1.13	1.15	1.40
160~500	0.47~4.7	0.65	1.00	1.35	1.75	2.30	2.50
	6.8~82	0.75	1.00	1.25	1.50	1.75	1.80
	≥100	0.80	1.00	1.15	1.30	1.40	1.50

## 尺寸 Dimensions

CAP(μF)		WV		6.3V(0J)		10V(1A)		16V(1C)		25V(1E)		35V(1V)		50V(1H)	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple		
0.1	0R1													5×11	1
0.22	R22													5×11	3
0.33	R33													5×11	4
0.47	R47													5×11	7
1	010													5×11	13
2.2	2R2											5×11	25	5×11	20
3.3	3R3													5×11	35
4.7	4R7							5×11	40	5×11	40	5×11	30	5×11	40
10	100							5×11	50	5×11	50	5×11	45	5×11	55
22	220					5×11	50	5×11	55	5×11	65	5×11	65	5×11	80
33	330	5×11	55	5×11	65	5×11	65	5×11	85	5×11	85	5×11	85	5×11	100
														6.3×11	130
47	470	5×11	70	5×11	75	5×11	80	5×11	100	6.3×11	105	6.3×11	105	6.3×11	135
100	101	5×11	100	5×11	105	5×11	125	6.3×11	160	6.3×11	170	8×11.5	205	8×11.5	230
								6.3×11	180			8×11.5	205		
220	221	5×11	155	6.3×11	170	6.3×11	215	8×11.5	285	8×11.5	295	10×16	510		
								8×11.5	280			10×12.5	360		
330	331	6.3×11	215	6.3×11	240	8×11.5	315	8×11.5	340	10×12.5	420	10×16	590	10×16	590
										10×12.5	420	10×16	500		
470	471	6.3×11	260	6.3×11	285	8×11.5	365	10×12.5	470	10×16	545	10×20	705		
						8×11.5	340	10×12.5	440	10×16	520	10×20	590		
680	681	8×11.5	365	8×11.5	410	10×12.5	480	10×16	620	10×20	680	12.5×20	925		
1000	102	8×11.5	445	10×12.5	570	10×16	680	10×20	820	12.5×20	1025	12.5×25	1285		
						10×16	620	10×20	720	12.5×20	920	12.5×25	1150		
2200	222	10×16	740	10×20	900	12.5×20	1110	12.5×25	1175	16×25	1500	16×35	1885		
						12.5×20	950	12.5×25	1250			16×30	1730		
3300	332	10×20	1030	12.5×20	1205	12.5×25	1390	16×25	1645	18×25	1820	18×35	2165		
								16×25	1530	16×30	1800	16×30	1810		
4700	472	12.5×20	1280	12.5×25	1490	16×25	1740	16×30	2010	18×35	2335				
6800	682	12.5×25	1555	16×25	1825	16×30	2080	16×35	2308	18×40	2400				
10000	103	16×25	1900	16×30	1980	16×35	2380	18×35	2500						
22000	223	18×35	2400	18×40	2410										
33000	333	18×40	2555												

Size φD×L(mm)  
Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

## 尺寸 Dimensions

CAP(μF) \ WV		63V(1J)		100V(2A)		160V(2C)		200V(2D)		220V(2P)	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1	0R1	5×11	2								
1	010	5×11	15	5×11	15						
2.2	2R2			5×11	25						
3.3	3R3			5×11	35			6.3×11	35	6.3×11	35
4.7	4R7	5×11	40	5×11	40	6.3×11	51	6.3×11	53	6.3×11	53
10	100	5×11	60	6.3×11	85	8×11.5	91	8×11.5	91	8×11.5	91
22	220	5×11	80	6.3×11	95	10×12.5	150	10×16	165	10×16	165
		6.3×11	90	8×11.5	150						
33	330	6.3×11	120	8×11.5	145	10×16	205	10×20	225	10×20	225
				10×12.5	260						
47	470	6.3×11	145	10×12.5	280	10×20	270	10×25	300	12.5×20	300
		8×11.5	155	10×16	280						
68	680	8×11.5	155	10×16	300	12.5×20	350	12.5×20	350	12.5×25	380
82	820					12.5×20	390	12.5×25	420	16×20	440
100	101	10×12.5	260	10×20	350	12.5×25	470	16×20	490	16×25	530
				12.5×20	470						
150	151					16×20	600	16×25	660	16×30	690
180	181					16×25	720	16×30	780	16×35	820
220	221	10×20	505	12.5×25	660	16×30	860	16×35	920	16×40	950
				16×25	960						
270	271					16×35	1020	16×40	1080	18×35	1100
330	331	12.5×20	690	12.5×25	800	16×40	1200	18×35	1200	18×40	1250
				16×25	1030						
390	391					18×35	1280	18×40	1350	18×45	1400
470	471	12.5×20	810	16×25	1050	18×40	1490	18×45	1570		
				16×30	1250						
560	561					18×45	1700				
680	681	12.5×25	1160	16×30	1290						
				16×35	1470						
1000	102	16×25	1450	18×40	2020						
2200	222	18×35	1785								

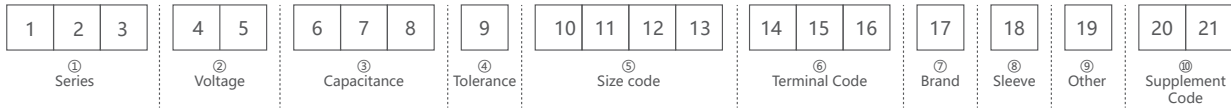
Size φD×L(mm)  
Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

## 尺寸 Dimensions

CAP(μF)	WV	250V(2E)		350V(2V)		400V(2G)		420V(2M)		450V(2W)		500V(2H)	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1	010	6.3×11	16	6.3×11	18	6.3×11	19	6.3×11	19	6.3×11	18		
2.2	2R2	6.3×11	29	6.3×11	30	6.3×11	32	8×11.5	32	8×11.5	30	8×11.5	31
3.3	3R3	6.3×11	37	6.3×11	40	8×11.5	42	8×11.5	42	8×11.5	40	8×11.5	37
4.7	4R7	8×11.5	53	8×11.5	55	8×11.5	56	8×16	60	8×16	58	10×9	51
5.6	5R6									8×16	63	10×9	66
6.8	6R8	8×11.5	73	8×12	75	8×12	75	8×16	80	10×16	90	10×12.5	68
						10×8.5	70						
8.2	8R2	8×11.5	80	8×16	82	8×16	82	10×16	98	10×16	98	10×12.5	103
10	100	8×16	102	10×12.5	105	10×12.5	105	10×16	115	10×20	120	10×20	105
15	150	10×16	135	10×20	150	10×20	150	10×25	165	10×25	165	10×20	115
22	220	10×20	180	10×25	200	10×25	200	12.5×20	205	12.5×25	215	12.5×25	200
33	330	10×25	245	12.5×25	270	12.5×25	270	16×20	270	16×20	270	16×25	280
39	390	12.5×20	260	16×20	300	16×20	300	16×20	300	16×25	330	16×25	304
47	470	12.5×25	320	16×20	330	16×20	320	16×25	360	16×25	360	16×30	380
56	560	12.5×25	350	16×25	400	16×25	400	16×30	430	16×30	430	16×35	415
68	680	16×20	400	16×30	475	16×25	434	16×30	475	16×35	510	18×30	540
82	820	16×25	480	16×30	520	16×30	510	16×35	580	16×35	550	18×35	590
100	101	16×25	530	16×35	620	16×35	650	16×40	650	18×35	650	18×40	687
120	121	16×30	620	16×40	720	18×30	672	18×40	750	18×35	700	22×35	790
150	151	16×35	750	18×40	840	18×40	780	18×45	880	18×45	880		
180	181	16×40	880	18×45	960	18×50	1000	22×40	1000	22×40	1000		
220	221	18×40	1010	22×40	1100	22×45	1120						

Size φD×L(mm)  
Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

## Product symbol system for Aluminum Electrolytic Capacitors



### ① Series

Series is represented by a two-letter code. For example "SGR".

### ② Voltage

Voltage in volts(V) is represented by a one-digit and one-letter code.  
Example:

Voltage(V)	2.5	4	6.3	10	16	25	35	50	63	80	100
Code	0E	0G	0J	1A	1C	1E	1V	1H	1J	1K	2A

Voltage(V)	160	200	250	315	350	400	420	450	500	550
Code	2C	2D	2E	2F	2V	2G	2M	2W	2H	2L

### ③ Capacitance

Capacitance in  $\mu\text{F}$  is represented by a three-digit code. The first two digits are significant and the third digit indicates the number of zeros following the significant figure. "R" represents the decimal point for capacitance under  $10\mu\text{F}$ .

Example:

Capacitance( $\mu\text{F}$ )	0.1	0.47	1	4.7	10	47	100	470	1000	4700	10000
Code	0R1	R47	010	4R7	100	470	101	471	102	472	103

### ④ Tolerance

Tolerance is represented by a one-letter code.

Example:

Tolerance(%)	-5~+5	-10~+10	-15~+15	-20~+20	-0~+20	-5~+20	-10~+20	-0~+30	+10~+30	-10~+30	-15~+20
Code	J	K	Y	M	R	H	V	F	G	Q	E

### ⑤ Size code

Size code is represented by a one-letter and three-digit code. The first one-letter indicates case diameter in mm. The last three digits indicate case length in mm. When the height of a product exceeds 100mm, if the last digit is 0, it is represented by A, otherwise, it is represented by B.

Example:

$\Phi\text{D}$	4	5	6.3	8	10	12	12.5	13	16	18	20	22	25	30	35	40	50	63.5	89
Code	B	C	E	F	G	H	I	J	L	M	O	P	Q	R	S	T	U	W	Y

L	5	5.4	9	10	11	11.5	12	14	16	20	25	50	100	105	110	115	120	200	205
Code	050	054	090	100	110	115	120	140	160	200	250	500	10A	10B	11A	11B	12A	20A	20B

Note: When a case size is required and not shown in the table, please contact with us for further discussion.

### ⑥ Terminal Code

Terminal Code is represented by a combination of letters or numbers

SMD Type terminal code (please refer to page 11)

Radial type terminal code (please refer to page 12~15)

Snap-in Type and Screw Type terminal code (please refer to page 16~17)

Note: When a terminal code is required and not shown in the table, please contact with us for further discussion.

### ⑦ Brand

The Surge trademark is represented by the letter "S".

### ⑧ Sleeve

The sleeve material is represented by the letter E for PET and V for PVC.

### ⑨ Other

It is represented by a letter or number for rubber shape or other information.

### ⑩ Supplement Code

For special control purposes.

For example: SGR 16V 2200 $\mu\text{F}$  20% 12.5 $\times$ 25 taping F=5.0 Brand: Surge PVC Sleeve

S	G	R	1	C	2	2	2	M	I	2	5	0	B	5	0	S	V	0
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010