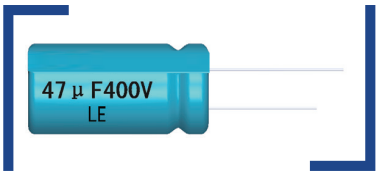
SLE SERIES

特点 Features



- 耐高纹波，耐高温，特长寿命，105℃ 8000 小时~10000 小时。
  High Ripple Current High Temperature , extremely Long Life,
  Life time 105℃ 8000 hours~10000 hours.
- 专为LED驱动电源设计制造。
  Specially designed for light emitting diode lamp (LED)drive source.
- 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℃
额定电压范围 Rated Voltage Range	16~100V | 160~450V
标称电容量范围 Nominal Capacitance Range	0.47~6800μF
标称电容量允许偏差 Capacitance Tolerance	±20% (120Hz, +20°C)
漏电流 Leakage Current（+20℃）	I ≤ 0.01CV 或 3(μA) 2分钟 取较大者 (at 20℃, after 2 minutes)（whichever is greater) | I ≤0.02 CV+10μA (2分钟,20℃) 0.02CV+10μA (at 20℃, after 2 minutes) C: 标称容量Capacitance (μF)；V: 额定电压Rated voltage range (V)

损耗角正切值（tgδ）
Dissipation Factor (+20℃, 120Hz)

U_R (V)	16	25	35	50	63	100
tgδ	0.16	0.14	0.12	0.10	0.09	0.09
U_R (V)	160	200	250	350	400	450
tgδ	0.15	0.15	0.15	0.20	0.20	0.20

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.

温度特性 Temperature Characteristics
(Impedance ratio at 120Hz)

U_R (V)	16	25	35	50	63	100	160	200	250	350	400	450
Z-40℃ / Z+20℃	8	6	6	6	4	4	6	6	6	7	7	9

耐久性
Load Life

在+105℃ 条件下， 施加含额定纹波电流的额定电压，持续规定时间，并在+20℃下恢复16小时后，电容器应符合下列要求
The following specifications shall be met when the capacitors are restored to +20℃ for 16 hours after D.C. bias rated ripple current is applied at +105℃, the peak voltage shall not exceed the voltage.

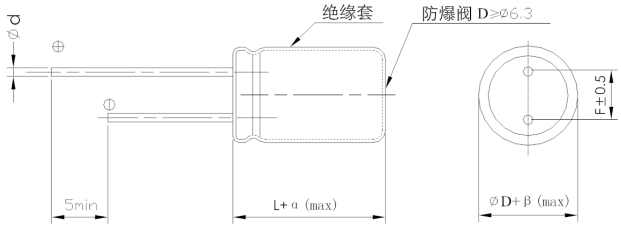
Time :		
16WV~100WV	φ5~φ6.3	8000hours
	φ≥8	10000hours
160WV~450WV	10000hours	

Capacitance change : ±20%初始测量值以内 ±20% of the initial measured value
Leakage current : ≤初始规定值 ≤Initial specified value
Dissipation factor : ≤2倍初始规定值 ≤2 times of the initial specified value

高温贮存
Shelf Life

+105℃ 1000小时贮存后，恢复16小时后
After storage for 1000 hours at +105℃ and then resumed for 16 hours:
Capacitance change : ±20%初始测量值以内 ±20% of the initial measured value
Leakage current : ≤2倍初始规定值 ≤2 times of the initial specified value
Dissipation factor : ≤2倍初始规定值 ≤2 times 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
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
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	0.5

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允许纹波电流的修正系数 Coefficient of Allowable Ripple Current

频率Frequency（Hz）	50	120	1K	10K	100K
修正系数Coefficient	0.40	0.50	0.80	0.90	1.00

尺寸 Dimensions

电压 UR / 项目 Item / 代码 Code / 容量 CR(μF)		16V(1C)			25V(1E)			35V(1V)			50V(1H)		
		Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple
		φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)
10	100	5×11	0.95	150	5×11	0.95	160	5×11	1.35	165	5×11	1.35	185
15	150	5×11	0.95	155	5×11	0.95	170	5×11	0.95	175	5×11	1.35	195
22	220	5×11	0.36	170	5×11	0.55	185	5×11	0.95	195	5×11	0.55	240
33	330	5×11	0.36	185	5×11	0.55	200	5×11	0.36	205	6.3×11	0.32	400
39	390	5×11	0.36	225	5×11	0.36	225	5×11	0.36	245	6.3×11	0.23	410
47	470	5×11	0.23	245	5×11	0.23	315	5×11	0.36	345	6.3×11	0.23	420
56	560	5×11	0.23	280	5×11	0.23	335	6.3×11	0.23	480	6.3×11	0.23	435
68	680	5×11	0.23	305	5×11	0.23	355	6.3×11	0.23	520	8×11.5	0.23	640
100	101	5×11	0.23	345	6.3×11	0.098	485	6.3×11	0.098	545	8×11.5	0.15	725
120	121	6.3×11	0.098	485	6.3×11	0.098	525	8×11.5	0.098	780	8×16	0.098	975
150	151	6.3×11	0.098	510	6.3×11	0.098	555	8×11.5	0.098	840	8×16	0.098	988
180	181	6.3×11	0.098	525	8×11.5	0.072	875	8×11.5	0.095	965	10×16	0.062	1380
220	221	6.3×11	0.098	555	8×11.5	0.072	905	8×16	0.072	1020	8×20	0.065	1320
								10×12.5	0.072	1180	10×16	0.060	1410
270	271	8×11.5	0.072	870	8×11.5	0.072	965	8×16	0.065	1050	12.5×15	0.061	1762
								10×12.5	0.065	1210	10×20	0.046	1590
330	331	8×11.5	0.072	920	8×11.5	0.072	978	10×12.5	0.065	1340	10×25	0.046	1650
390	391	8×11.5	0.072	940	8×16	0.061	1280	8×20	0.050	1520	10×25	0.040	1880
					10×12.5	0.061	1340	10×16	0.043	1650	12.5×20	0.030	2060
470	471	8×11.5	0.061	960	10×12.5	0.061	1325	10×16	0.043	1755	12.5×20	0.030	2095
560	561	8×16	0.049	1230	8×20	0.031	1540	10×20	0.030	1970	12.5×25	0.025	2420
		10×12.5	0.043	1340	10×16	0.031	1770	12.5×15	0.025	2340			
680	681	8×16	0.049	1280	10×16	0.031	1790	10×25	0.024	2260	12.5×30	0.021	2860
		10×12.5	0.043	1380				12.5×20	0.024	2375			
820	821	8×20	0.031	1540	10×20	0.025	2010	12.5×20	0.024	2490	12.5×30	0.022	2917
		10×16	0.031	1770	12.5×15	0.025	2010						
1000	102	8×20	0.031	1590	10×25	0.020	2260	12.5×20	0.024	2520	12.5×35	0.020	3050
		10×16	0.031	1810	12.5×20	0.019	2260				16×25	0.024	3010
1200	122	10×20	0.022	1970	12.5×20	0.019	2370	12.5×25	0.023	2910	16×30	0.019	3290
		12.5×15	0.020	2340							18×25	0.023	3090
1500	152	10×20	0.022	1990	12.5×20	0.019	2490	12.5×30	0.019	3460	16×35	0.018	3050
		12.5×15	0.020	2390				16×20	0.023	3260	18×25	0.022	3310
1800	182	10×25	0.020	2260	12.5×25	0.017	2910	12.5×35	0.019	3470	16×40	0.016	3440
		12.5×20	0.019	2490				16×25	0.021	3580	18×35	0.0 21	3520
2200	222	12.5×20	0.019	2520	12.5×30	0.014	3460	16×25	0.020	3640	18×35	0.021	3580
					16×20	0.017	3260						
2700	272	12.5×25	0.017	2710	12.5×35	0.013	3580	16×30	0.011	3720			
					16×25	0.014	3640	18×25	0.011	3690			
3300	332	12.5×30	0.014	2960	12.5×40	0.012	3900	18×35	0.010	4090			
		16×20	0.017	2960	16×25	0.014	3695						
3900	392	12.5×30	0.014	3060	16×30	0.012	3900	18×40	0.010	4160			
		16×20	0.017	3060	18×25	0.013	3750						
4700	472	12.5×35	0.013	3280	16×35	0.011	3840						
		16×25	0.014	3240	18×30	0.011	4020						
5600	562	16×30	0.012	3700	18×35	0.010	4090						
		18×25	0.013	3660									
6800	682	16×30	0.012	3900	18×40	0.010	4160						
		18×25	0.013	3860									

Size φD×L(mm)
Maximum Allowable Ripple Current (mA rms) at 105℃ 100KHz
Maximum ESR (Ω) at 20℃ 100KHz

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尺寸 Dimensions

电压 UR / 项目 Item / 容量 CR(μF) / 代码 Code		63V(1J)			100V(2A)			160V(2C)			200V(2D)		
		Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple
		φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)
0.47	R47	5×11	1.35	80	5×11	1.85	95						
1.0	010	5×11	1.35	95	5×11	1.85	105						
1.8	1R8	5×11	1.35	95	5×11	1.80	110	6.3×11	13.94	65			
2.2	2R2	5×11	1.35	105	5×11	1.80	115	6.3×11	13.94	70	6.3×11	14.5	75
2.7	2R7	5×11	1.35	105	5×11	1.80	120	6.3×11	13.94	75	6.3×11	14.5	80
3.3	3R3	5×11	1.35	115	5×11	1.80	125	6.3×11	13.94	80	6.3×11	10.15	95
3.9	3R9	5×11	1.35	115	5×11	1.80	135	6.3×11	13.94	85	6.3×11	10.15	105
4.7	4R7	5×11	1.35	120	5×11	1.80	145	8×11.5	11.30	85	8×11.5	10.15	130
5.6	5R6	5×11	1.35	135	6.3×11	1.25	205	8×11.5	11.30	100	8×11.5	7.98	135
6.8	6R8	5×11	1.35	135	6.3×11	1.25	235	8×11.5	11.30	105	8×11.5	7.98	145
8.2	8R2	5×11	1.35	145	6.3×11	1.05	255	8×11.5	11.30	115	8×11.5	7.98	165
10	100	5×11	1.35	145	6.3×11	1.05	280	8×16	7.50	135	8×12	3.65	175
12	120	5×11	1.35	155	8×11.5	0.65	320	8×16	7.50	140	8×16	3.65	190
15	150	5×11	1.35	165	8×11.5	0.65	330	8×16	4.27	285	8×16	3.65	360
								10×12.5	4.27	290			
18	180	6.3×11	0.38	265	8×11.5	0.60	345	8×16	4.27	310	10×16	3.24	385
22	220	6.3×11	0.38	295	8×11.5	0.52	365	8×20	2.25	390	10×16	3.24	390
								10×16	2.25	390			
27	270	6.3×11	0.38	305	8×16	0.55	455	10×16	2.25	410	10×20	2.38	410
					10×12.5	0.56	460						
33	330	6.3×11	0.38	335	8×16	0.46	465	10×20	1.87	530	10×25	1.65	530
					10×12.5	0.48	475	12.5×15	1.87	570			
39	390	8×11.5	0.23	420	10×12.5	0.38	485	10×25	1.87	590	12.5×20	1.38	620
								12.5×15	1.87	590			
47	470	8×11.5	0.23	435	10×12.5	0.32	510	10×25	1.87	610	12.5×20	1.38	630
								12.5×20	1.87	630	8×50	1.38	650
56	560	8×11.5	0.23	445	10×12.5	0.28	540	12.5×20	1.55	740	12.5×25	1.25	670
								8×50	1.55	740	10×50	1.25	670
68	680	8×11.5	0.23	460	8×20	0.28	675	12.5×20	1.10	800	12.5×30	1.25	850
82	820	8×16	0.17	560	10×16	0.19	785	12.5×25	1.10	830	16×25	1.15	860
100	101	8×16	0.17	580	10×20	0.13	865	16×20	1.10	1120	16×25	1.15	930
		10×12.5	0.17	570	12.5×15	0.14	845	10×50	1.10	1210			
120	121	10×12.5	0.17	580	10×25	0.12	1050	16×25	0.91	1240	16×30	1.03	1090
150	151	8×20	0.12	680	12.5×20	0.085	1440	16×30	0.91	1280	16×35	1.03	1125
		10×16	0.19	705				12.5×50	0.91	1280			
180	181	10×16	0.19	725	12.5×25	0.066	1590	16×30	0.81	1360	18×30	0.80	1340
220	221	10×20	0.086	1050	12.5×25	0.066	1630	18×30	0.81	1410	18×35	0.74	1420
		12.5×15	0.080	1020									
270	271	10×20	0.086	1080	12.5×30	0.056	1729	18×35	0.67	1500			
		12.5×15	0.080	1045	16×20	0.064	1650						
330	331	10×25	0.076	1250	12.5×35	0.047	1950	18×40	0.67	1590			
		12.5×20	0.066	1320	16×25	0.048	1920						
390	391	12.5×20	0.066	1350	12.5×40	0.040	2050						
470	471	12.5×25	0.047	1860	16×30	0.036	2010						
560	561	12.5×30	0.039	2050	16×35	0.032	2430						
		16×20	0.047	1980	18×30	0.034	2480						
680	681	12.5×35	0.036	2250	16×40	0.030	2680						
		16×25	0.035	2315	18×35	0.030	2870						
820	821	12.5×40	0.030	2430	18×40	0.028	3250						
		16×25	0.035	2480									
1000	102	16×30	0.026	2620									
1200	122	16×30	0.026	2650									
		18×25	0.034	2635									
1500	152	16×35	0.023	2730									
		18×30	0.028	2780									
1800	182	16×40	0.021	3250									
2200	222	18×40	0.028	3430									

Size φD×L(mm)
Maximum Allowable Ripple Current (mA rms) at 105℃ 100KHz
Maximum ESR (Ω) at 20℃ 100KHz

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尺寸 Dimensions

电压 UR / 项目 Item / 容量 CR(μF) / 代码 Code	250V(2E)			350V(2V)			400V(2G)			450V(2W)		
	Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple	Size	ESR	Ripple
	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)	φD×L(mm)	ΩMAX	(mA)
1.0	010				6.3×11	21.5	55	6.3×11	25.0	65	6.3×11	33.0	50
1.2	1R2				6.3×11	21.5	55	6.3×11	25.0	70	6.3×11	25.0	55
1.5	1R5				6.3×11	21.5	60	6.3×11	25.0	75	8×11.5	25.0	80
1.8	1R8				6.3×11	21.5	65	6.3×11	25.0	85	8×11.5	20.0	85
2.2	2R2	6.3×11	10.15	80	6.3×11	21.5	70	8×11.5	20.0	90	8×16	15.72	95
2.7	2R7	6.3×11	10.15	90	8×11.5	15.72	85	8×11.5	15.72	95	8×16	15.72	100
3.3	3R3	6.3×11	10.15	100	8×11.5	15.72	95	8×11.5	15.72	100	8×16	15.72	110
3.9	3R9	8×11.5	10.15	110	8×11.5	15.72	100	8×11.5	15.72	105	8×16	15.72	120
4.7	4R7	8×11.5	10.15	135	8×11.5	15.72	130	8×11.5	12.00	110	8×20	10.51	150
								8×16	12.00	115	10×16	10.51	150
5.6	5R6	8×11.5	9.00	150	8×16	10.51	155	8×16	10.51	160	8×20	7.50	180
					10×12.5	10.51	155	10×12.5	10.50	180	10×16	7.50	180
6.8	6R8	8×11.5	6.70	160	10×12.5	10.51	170	8×20	8.70	180	10×16	7.50	220
								10×16	8.70	220			
8.2	8R2	8×12	3.65	170	8×20	7.50	240	10×16	7.50	252	10×20	6.20	265
					10×16	7.50	240						
10	100	8×16	3.65	250	10×16	7.50	250	10×20	4.90	288	10×25	6.20	305
		10×12.5	3.65	250							12.5×20	5.20	305
15	150	8×20	3.24	380	10×25	6.20	340	12.5×20	4.20	400	12.5×20	5.20	400
		10×16	3.24	390	12.5×15	6.20	340				8×50	5.20	400
18	180	10×16	3.24	410	10×25	6.20	430	12.5×20	4.20	470	12.5×25	3.60	470
					12.5×20	3.10	430						
22	220	10×20	3.24	475	12.5×20	3.10	475	12.5×25	2.25	475	16×20	2.02	550
					8×50	3.10	475	8×50	2.25	475	10×40	2.02	550
33	330	12.5×20	1.38	570	12.5×25	2.25	570	16×25	1.70	610	16×25	1.82	665
		8×50	1.38	570	10×50	2.25	570	10×50	1.70	610	10×50	1.82	665
47	470	12.5×25	1.38	650	16×25	2.25	800	18×25	1.70	795	16×35	1.38	730
											12.5×50	1.38	730
56	560	12.5×30	1.25	750	16×30	2.02	840	16×30	1.70	820	16×35	1.38	750
								12.5×50	1.70	820			
68	680	12.5×30	1.25	870	18×25	1.38	880	18×30	1.38	910	18×35	1.25	970
		10×50	1.25	870	12.5×50	1.38	880						
82	820	16×30	1.15	910	18×30	1.38	940	16×40	1.25	980	18×40	0.97	1030
								18×35	1.25	980			
100	101	16×30	1.18	960	18×35	1.25	1120	18×40	0.97	1100			
		12.5×50	1.18	960									
120	121	18×30	1.02	1210	18×35	1.25	1200						
150	151	18×30	0.98	1400									
180	181	18×35	0.74	1540									
220	221	18×40	0.61	1620									

Size φD×L(mm)
Maximum Allowable Ripple Current (mA rms) at 105℃ 100KHz
Maximum ESR (Ω) at 20℃ 100KHz

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Product symbol system for Aluminum Electrolytic Capacitors

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
① Series			② Voltage		③ Capacitance			④ Tolerance	⑤ Size code				⑥ Terminal Code			⑦ Brand	⑧ Sleeve	⑨ Other	⑩ Supplement Code	

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 μF is represented by a three-digit code.the first two digis are significant and the third digit indicates the number of zeros following the significant figure "R" represents the decimal point for capacitance under 10μF.
Example:

Capacitance(μF)	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 indicate 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:

ΦD	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 page11)
Radial type terminal code (please refer to page 12~15)
Snap-in Type and ScrewType 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 2200μF 20% 12.5×25 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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