

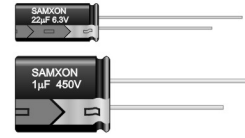
RL Series



Long Life Assurance(長壽命), High Ripple Current(高紋波)

FEATURES

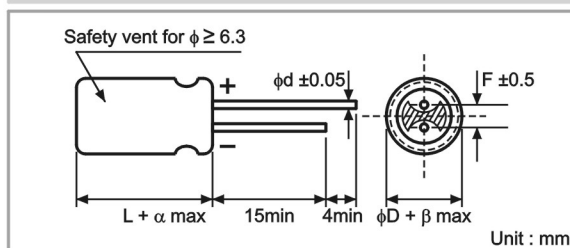
1. High temperature and long load life, 3000~8000 hours.



SPECIFICATIONS

Item	Performance Characteristics								
Operating Temperature Range	-40 to +105°C	-25 to +105°C							
Rated Working Voltage Range	6.3 to 100V	160 to 450V							
Nominal Capacitance Range	0.1 to 22000µF								
Capacitance Tolerance	±20% (120Hz, +20°C)								
Leakage Current	$I \leq 0.03CV$ or $4(\mu A)$ after 1 minute whichever is greater measured with rated working voltage at +20°C	$I \leq 0.04CV + 40(\mu A)$ after 1 minute whichever is greater measured with rated working voltage at +20°C							
Dissipation Factor tan δ (120Hz, +20°C)	Working Voltage (V)	6.3 10 16 25 35 50 63 100							
	tan δ (max.)	0.28 0.24 0.20 0.16 0.14 0.12 0.10 0.08							
	Working Voltage (V)	160 200 250 315 350 400 450							
	tan δ (max.)	0.20 0.20 0.20 0.25 0.25 0.25 0.25							
For capacitance value > 1000µF, add 0.02 per another 1000µF									
Low Temperature Characteristics	Impedance ratio max. at 120Hz								
	Working Voltage (V)	6.3	10	16	25	35	50	63	100
	Z-25°C / Z+20°C	5	4	3	2	2	2	2	2
	Z-40°C / Z+20°C	12	10	8	5	4	3	3	3
	Working Voltage (V)	160	200	250	315	350	400	450	
Z-25°C / Z+20°C	3	3	4	4	4	6	15		
For capacitance value > 1000µF, Add 0.5 per another 1000µF for Z-25°C / Z+20°C Add 1.0 per another 1000µF for Z-40°C / Z+20°C									
High Temperature Loading	Test conditions		Post test requirements at +20°C						
	Duration :	ϕD 5 ~ 6.3 8 ~ 10 12.5 ~	Leakage current : ≤ Initial specified value						
	Load life	3000h 5000h 8000h	Cap. change : within ±25% of initial measured value tan δ : ≤ 200% of initial specified value						
Ambient temp. : +105°C		Applied voltage : Rated DC working voltage with rated ripple current							
Shelf Life	Test conditions		Post test requirements at +20°C						
	Duration	: 1000 hours	Leakage current : ≤ Initial specified value						
	Ambient temp.	: +105°C	Cap. change : within ±20% of initial measured value						
	Applied voltage	: (None)	tan δ : ≤ 200% of initial specified value						
Others	JIS C - 5101 (IEC 60384)								

CASE SIZE TABLE



ϕD	5	6.3	8	10	12.5	16	18	22	
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	
ϕd	0.5			0.6		0.8			
α	(L < 20) 1.5				(L ≥ 20) 2.0				
β	(D < 20) 0.5				(D ≥ 20) 1.0				

RIPPLE CURRENT MULTIPLIER

Temperature Coefficient					
Temperature(°C)	~ 55	60	70	85	105
Factor	2.23	2.17	2.00	1.75	1.00

Frequency Coefficient							
Rated Voltage(V)	Cap(µF)	Freq.(Hz)	50	120	300	1K	10K ~
6.3 ~ 100	~ 47		0.75	1.00	1.35	1.57	2.00
	100 ~ 470		0.80	1.00	1.23	1.34	1.50
	≥ 560		0.85	1.00	1.10	1.13	1.15
160 ~ 450	0.47 ~ 220		0.80	1.00	1.25	1.40	1.60
	≥ 270		0.90	1.00	1.10	1.13	1.15

RL

Miniature Aluminum Electrolytic Capacitors

Long Life Assurance(長壽命), High Ripple Current(高紋波)

DIMENSIONS

Voltage (Code)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)	
Cap.(μF)	Code	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
4.7	475							5 x 11	28
10	106					5 x 11	39	5 x 11	41
22	226	5 x 11	47	5 x 11	53	5 x 11	58	5 x 11	62
33	336	5 x 11	57	5 x 11	62	5 x 11	66	5 x 11	83
47	476	5 x 11	67	5 x 11	73	5 x 11	88	5 x 11	92
100	107	5 x 11	103	5 x 11	116	6.3 x 11	138	6.3 x 11	175
220	227	6.3 x 11	191	6.3 x 11	212	8 x 12	279	8 x 12	314
330	337	6.3 x 11	238	8 x 12	313	8 x 12	347	10 x 12.5	433
470	477	8 x 12	337	8 x 12	373	10 x 12.5	466	10 x 16	575
1000	108	10 x 12.5	564	10 x 16	698	10 x 20	825	12.5 x 20	1024
2200	228	12.5 x 20	1019	12.5 x 20	1105	12.5 x 25	1344	16 x 25	1639
3300	338	12.5 x 20	1287	12.5 x 25	1462	16 x 25	1755	16 x 30	1960
4700	478	16 x 25	1784	16 x 25	1885	16 x 30	2072	18 x 35	2530
								22 x 30	2530
6800	688	16 x 25	1964	16 x 30	2172	18 x 35	2743	22 x 40	3216
10000	109	16 x 30	2259	18 x 35	2610	18 x 40	3127		
				22 x 30	2490	22 x 35	2965		
12000	129	16 x 35	2306	18 x 35	2859	22 x 40	3757		
				22 x 30	2728				
15000	159	18 x 35	2752	18 x 40	2711				
		22 x 30	2925	22 x 35	2698				
18000	189	18 x 40	3049	22 x 40	3132				
		22 x 35	3049						
22000	229	22 x 40	3074						

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size φD x L(mm)

Voltage (Code)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
Cap.(μF)	Code	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
0.1	104			5 x 11	1			5 x 11	4
0.22	224			5 x 11	3			5 x 11	6
0.33	334			5 x 11	4			5 x 11	7
0.47	474			5 x 11	8			5 x 11	9
1	105			5 x 11	14			5 x 11	18
2.2	225			5 x 11	22			5 x 11	23
3.3	335			5 x 11	33			5 x 11	37
4.7	475	5 x 11	30	5 x 11	41	5 x 11	44	5 x 11	44
10	106	5 x 11	44	5 x 11	59	5 x 11	65	6.3 x 11	67
22	226	5 x 11	74	6.3 x 11	99	6.3 x 11	96	8 x 12	121
33	336	5 x 11	88	6.3 x 11	127	8 x 12	160	10 x 12.5	183
47	476	6.3 x 11	132	6.3 x 11	146	8 x 12	191	10 x 16	243
100	107	8 x 12	220	8 x 12	252	10 x 12.5	276	12.5 x 20	435
220	227	10 x 12.5	374	10 x 16	560	10 x 20	554	16 x 25	837
330	337	10 x 16	512	10 x 20	756	12.5 x 20	757	16 x 25	1011
470	477	10 x 20	664	12.5 x 20	881	12.5 x 25	987	16 x 30	1179
1000	108	12.5 x 25	1241	16 x 25	1626	18 x 30	1843	18 x 40	2222
								22 x 35	2222
2200	228	16 x 30	1783	18 x 35	2212	18 x 40	2079		
				22 x 30	2212	22 x 35	2193		
3300	338	18 x 35	2274	22 x 40	2828				
		22 x 30	2274						
4700	478	18 x 40	2875						
		22 x 35	2726						

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size φD x L(mm)

Long Life Assurance(長壽命), High Ripple Current(高紋波)

DIMENSIONS

Voltage (Code)		160V (2C)		200V (2D)		250V (2E)		315V (2F)	
Cap.(μF)	Code	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
0.47	474	6.3 x 11	14	6.3 x 11	12	6.3 x 11	9		
1	105	6.3 x 11	21	6.3 x 11	18	6.3 x 11	19	6.3 x 11	20
2.2	225	6.3 x 11	31	6.3 x 11	27	8 x 12	35	8 x 12	33
3.3	335	8 x 12	45	8 x 12	39	8 x 12	38	10 x 12.5	51
4.7	474	8 x 12	54	10 x 12.5	61	8 x 12	42	10 x 16	61
10	106	10 x 16	88	10 x 16	88	10 x 16	100	10 x 20	88
22	226	10 x 20	133	10 x 20	138	10 x 20	168	12.5 x 25	182
33	336	10 x 20	175	10 x 20	150	12.5 x 20	210	16 x 25	220
47	476	10 x 20	237	12.5 x 20	250	12.5 x 20	301	16 x 30	316
100	107	12.5 x 25	429	16 x 20	400	16 x 25	531	18 x 40	537
						22 x 30	531	20 x 35	537
150	157	16 x 25	500	18 x 35	715	18 x 25	550	18 x 40	697
				16 x 25	600	16 x 35	550		
220	227	18 x 25	830	18 x 30	680	18 x 40	633		
		16 x 30	855	16 x 35	723				
270	277	18 x 40	972	18 x 40	1039				
		20 x 35	972						
330	337	20 x 40	1083						

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size φD x L(mm)

Voltage (Code)		350V (2V)		400V (2G)		450V (2W)			
Cap.(μF)	Code	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current		
1	105	8 x 12	24	8 x 12	25	10 x 12.5	24		
2.2	225	8 x 12	38	10 x 12.5	38	10 x 16	34		
3.3	335	10 x 12.5	57	10 x 16	50	10 x 20	44		
4.7	475	10 x 12.5	61	10 x 16	63	10 x 20	58		
10	106	10 x 20	100	10 x 20	110	12.5 x 20	102		
22	226	12.5 x 20	182	16 x 20	206	16 x 20	180		
33	336	16 x 30	238	16 x 20	264	16 x 20	323		
						16 x 25	338		
47	476	18 x 25	361	18 x 20	365	18 x 25	354		
				16 x 25	365				

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size φD x L(mm)

RL

Miniature Aluminum Electrolytic Capacitors