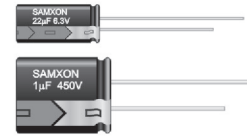


**Long Life Assurance(長壽命), High Ripple Current(高紋波)**

**FEATURES**

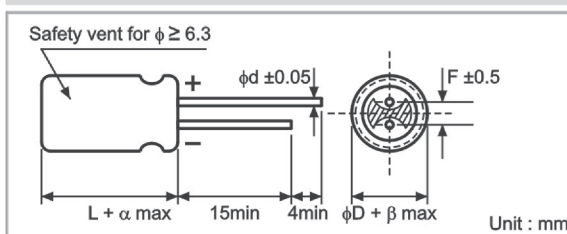
1. High temperature and long load life, 3000~8000 hours.



**SPECIFICATIONS**

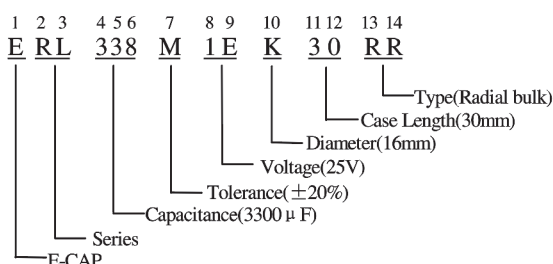
Item	Performance Characteristics								
Operating Temperature Range	-40 to +105°C	-25 to +105°C							
Rated Working Voltage Range	6.3 to 100V	160 to 450V							
Nominal Capacitance Range	0.1 to 22000µF								
Capacitance Tolerance	±20% (120Hz, +20°C)								
Leakage Current	$I \leq 0.03CV$ or $4(\mu A)$ after 1 minute whichever is greater measured with rated working voltage at +20°C	$I \leq 0.04CV + 40(\mu A)$ after 1 minute measured with rated working voltage at +20°C							
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							
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 : <table border="1"> <tr> <td>φD</td> <td>5 ~ 6.3</td> <td>8 ~ 10</td> <td>12.5 ~</td> </tr> <tr> <td>Load life</td> <td>3000h</td> <td>5000h</td> <td>8000h</td> </tr> </table> Ambient temp. : +105°C Applied voltage : Rated DC working voltage with rated ripple current	φD	5 ~ 6.3	8 ~ 10	12.5 ~	Load life	3000h	5000h	8000h
φD	5 ~ 6.3	8 ~ 10	12.5 ~						
Load life	3000h	5000h	8000h						
Shelf Life	Test conditions	Post test requirements at +20°C							
	Duration : 1000 hours Ambient temp. : +105°C Applied voltage : (None)	Leakage current : ≤ Initial specified value Cap. change : within ±20% of initial measured value 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				

**PART NUMBER SYSTEM(EXAMPLE:25V3300µF)**



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

**STANDARD RATINGS**

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
						22 x 30	2617		
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)

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

Miniature Aluminum Electrolytic Capacitors

RL

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

**STANDARD RATINGS**

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
150	157	16 x 25	500	16 x 25	600	18 x 25	550	18 x 40	697
						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 20	238	16 x 20	264	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)

**RIPPLE CURRENT MULTIPLIER**

Frequency Coefficient							
Rated Voltage(V)	Cap(μF)	Coefficient	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

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

**SE** General Purpose Series

- Features: 105°C 1000 hours
- Recommended Applications: For general purpose coupling, decoupling, by pass, and filtering circuit in entertainment electronics
- Corresponding product to RoHS

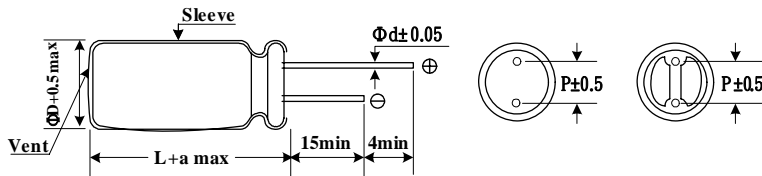
SH  
↑  
SE Long Life



■ Specifications

Item	Characteristics									
Operating Temperature Range	-40~+105°C	-40~+105°C	-25~+105°C							
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 250VDC	350 ~ 450VDC							
Rated Capacitance Range	0.47 ~ 15000µF	0.47 ~ 470µF	0.47 ~ 150µF							
Capacitance Tolerance	± 20 % at 120Hz, 20°C									
Leakage Current (MAX)(20°C)	I=0.01CV or 3(µA), whichever is greater.		I=0.03CV+10(µA)							
	(After rated voltage applied for 2 minutes)									
Dissipation Factor (MAX) (tan δ) (120Hz, 20°C)	WV	6.3	10	16	25	35	50	63~100	160~250	350~450
	tan δ	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.15	0.20
Low Temperature Stability Impedance Ratio (MAX)	When nominal capacitance is over 1000uF, tan δ shall be added 0.02 to the listed value with increase of every 1000uF.									
	Z(120Hz)	6.3	10	16	25	35~100	160~250	315~350	400~450	
	Z-25°C / Z+20°C	8	6	5	3	3	7	10	15	
	Z-40°C / Z+20°C	10	8	6	4	3	7	—	—	
Endurance	After applying rated voltage for 1000 hours at 105°C the capacitors shall meet the following requirements.									
	Capacitance Change	Within ± 20 % of initial value								
	Dissipation Factor	Not more than 200% of the specified value								
	Leakage Current	initial specified value or less								
Shelf Life	After leaving capacitors under no load at 105°C for 500 hours. the capacitors shall meet the same requirement as Endurance.									

■ Diagram of Dimensions



φ D	5	6.3	8	10	12	13	16	18	22
P	2.0	2.5	3.5	5.0			7.5		10.0
φ d	0.5	0.5	0.6	0.6			0.8		0.8 ( 1.0 )
a	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0

( ) : L ≥ 40

■ Multiplier for Ripple Current

Frequency coefficient

Frequency (Hz)	120	300	1K	10K
6.3 ~ 100V Below 68 µF	1.00	1.20	1.30	1.45
6.3 ~ 100V 100 ~ 680 µF	1.00	1.10	1.15	1.25
6.3 ~ 100V 1000 ~ 22000 µF	1.00	1.05	1.10	1.15
160 ~ 450V ALL Cap ( µF )	1.00	1.05	1.10	1.50

**SE** General Purpose Series

■ Dimensions, Rated Ripple Current

Capacitance (μF)	Rated (Surge) Voltage														
	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (79)		
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	
0.47												5x11	7	5x11	8
1.0												5x11	12	5x11	13
2.2												5x11	18	5x11	20
3.3												5x11	25	5x11	27
4.7							5x11	20	5x11	25	5x11	30	5x11	34	
6.8							5x11	25	5x11	30	5x11	32	5x11	37	
10					5x11	25	5x11	30	5x11	40	5x11	50	5x11	55	
15					5x11	40	5x11	45	5x11	50	5x11	60	5x11	65	
22			5x11	45	5x11	55	5x11	60	5x11	65	5x11	75	6.3x11	90	
33			5x11	60	5x11	70	5x11	75	5x11	85	6.3x11	100	6.3x11	110	
													8x11	120	
47	5x11	60	5x11	75	5x11	85	5x11	90	5x11	95	6.3x11	105	8x11	155	
										6.3x11	115	8x11	125		
68	5x11	75	5x11	80	5x11	100	6.3x11	125	8x11	130	8x11	159	10x12.5	198	
100	5x11	100	5x11	110	5x11	110	6.3x11	145	6.3x11	150	8x11	160	8x15	230	
					6.3x11	135			8x11	190	10x12.5	210	10x12.5	260	
150	5x11	120	5x11	110	8x11	180	8x11	200	10x12.5	240	10x12.5	289	10x16	330	
			6.3x11	130											
220	5x11	140	6.3x11	180	6.3x11	180	8x11	200	8x11	230	10x12.5	340	10x16	400	
	6.3x11	165			8x11	235	10x12.5	250	8x15	280	10x16	400	10x20	460	
									10x12.5	315					
330	6.3x11	160	6.3x11	205	8x11	285	8x11	265	8x15	345	10x16	450	10x20	520	
	8x11	200	8x11	255			8x15	320	8x20	420	10x20	535	13x20	650	
							10x12.5	355	10x12.5	380					
									10x16	440					
470	6.3x11	220	6.3x11	245	8x11	310	8x15	365	10x16	415	10x20	580	13x20	700	
	8x11	280	8x11	305	8x15	360	10x12.5	400	10x20	490	13x20	730	13x25	800	
					10x12.5	395	10x16	470	13x20	580					
680	8x11	255	8x11	335	10x12.5	455	10x20	650	13x20	730	13x25	860	13x25	840	
	10x12.5	320	8x15	385	10x16	530							16x25	1000	
			10x12.5	420											
1000	8x11	370	8x11	390	8x20	600	10x20	680	13x20	850	13x25	930	16x25	1020	
	10x12.5	470	8x15	450	10x16	590	12x20	775	13x25	995	16x25	1110	16x32	1200	
			10x12.5	490	10x20	700	13x20	855							
			10x16	570											
1500	10x16	600	10x20	750	10x20	680	13x25	1020	13x25	935	16x32	1350	16x32	1300	
					13x20	860			16x25	1110			16x36	1450	
2200	10x20	740	10x20	800	10x25	895	13x25	1030	16x25	1230	16x36	1360	18x36	1455	
	13x20	930	13x20	1010	12x25	1040	16x25	1230	16x32	1450	18x36	1530			
					13x20	990									
3300					13x25	1150									
	10x20	880	10x25	950	13x25	1140	13x25	1035	16x36	1470	18x36	1540			
	13x20	1100	10x30	1090	16x25	1350	16x25	1230	18x36	1660	18x40	1700			
			13x20	1050			16x32	1450							
4700			13x25	1220											
	13x25	1100	13x25	1190	16x25	1330	16x32	1420	18x36	1580	22x35	1900			
	16x25	1320	16x25	1410	16x32	1560	18x36	1690	18x40	1750					
6800	13x25	1250	16x25	1370	16x36	1590	18x36	1850	22x40	1885					
	16x25	1490	16x32	1610	16x40	1670									
					18x36	1790									
10000	16x25	1560	16x36	1760	18x36	2100									
	16x32	1830	18x36	1980											
15000	18x36	2280	18x40	1960											

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms). 105°C, 120Hz

## ■ Dimensions, Rated Ripple Current

Capacitance ( $\mu$ F)	Rated (Surge) Voltage													
	100 (125)		160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.47	5x11	10	5x11	12	5x11	14	5x11	14	5x11	14	6.3x11	14	6.3x11	14
1.0	5x11	15	5x11	17	5x11	19	6.3x11	19	6.3x11	20	6.3x11	16	6.3x11	16
2.2	5x11	22	6.3x11	25	6.3x11	22	6.3x11	23	8x11	35	6.3x11	20	8x11	20
					8x11	28	8x11	29			8x11	28	10x12.5	35
											10x12.5	35		
3.3	5x11	29	6.3x11	30	6.3x11	32	8x11	33	8x11	37	8x11	38	10x16	54
			8x11	36	8x11	40	10x12.5	42	10x12.5	47	10x12.5	50		
4.7	5x11	37	6.3x11	34	8x11	40	8x11	41	10x12.5	47	8x11	40	10x16	60
			8x11	43	10x12.5	50	10x12.5	52	10x16	55	8x15	45		
											10x12.5	49		
6.8	5x11	46	10x12.5	54	10x12.5	60	8x15	57	10x16	65	8x15	50	10x16	65
							10x12.5	62			10x16	60	10x20	70
											10x20	72		
10	5x11	55	8x11	56	10x12.5	69	10x16	88	10x16	95	10x16	65	10x20	75
	6.3x11	65	10x12.5	70	10x16	80					10x20	77	13x20	85
											13x20	97	13x25	100
15	8x11	82	10x16	90	10x16	110	10x16	120	10x20	140	10x20	100	16x25	160
											13x20	125		
											13x25	150		
22	8x11	115	8x20	125	10x16	140	10x20	155	13x20	165	10x25	130	13x20	100
			10x16	130							13x20	150	13x25	125
											13x25	175	16x25	150
													16x32	180
33	8x11	120	10x20	180	10x20	190	13x20	170	13x25	220	13x25	190	13x25	140
	10x12.5	160					13x25	200			16x20	195	16x25	190
											16x25	230	16x36	240
47	10x12.5	180	13x20	270	13x20	240	13x25	330	16x25	340	16x25	280	16x32	270
	10x16	210			13x25	290					16x32	315	16x36	300
											16x36	350	18x40	360
											18x20	275		
68	10x16	241	13x25	300	13x25	330	16x25	350	16x32	370	16x32	320	18x32	305
											16x36	335	22x40	400
											18x25	305		
											18x36	380		
100	10x20	385	13x25	330	13x25	340	16x32	430	18x36	460	16x36	425	18x36	380
			16x25	400	16x25	410					18x32	430	18x40	400
120											18x36	450		
											18x32	440		
150											18x36	450		
											18x40	460		
180											18x40	460		
220	13x25	590	16x32	550	18x32	520	22x40	680						
			16x36	620	18x36	580								
					18x40	650								
330	13x25	600	18x36	770	18x36	705								
	16x25	720	18x40	850	18x40	780								
470					22x40	920								
	16x25	740	22x40	980										
680	16x32	875												
	16x36	1200												
1000	18x40	1340												
	22x40	1500												

☆ Size: D  $\phi$  x L (mm) ☆ Ripple Current: (mA/rms). 105 °C, 120Hz