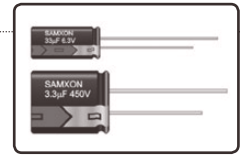


FEATURES

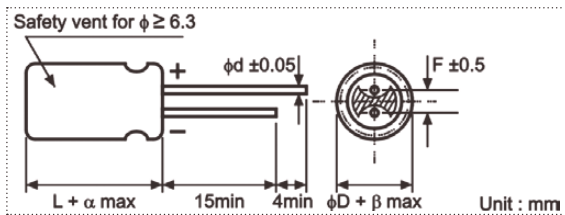
- Rated working voltage range 6.3 to 100V DC / 160 to 450V DC at operation temperature range -40 to +105°C / -25 to +105°C.
- This series is for communication equipments, switching power supply, industrial measuring instruments, automotive electric products, etc.



SPECIFICATIONS

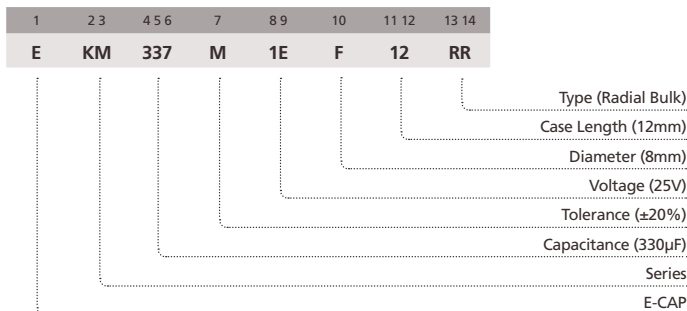
Item	Performance Characteristics	
Operating Temperature Range	-40 to +105°C	-25 to +105°C
Rated Working Voltage Range	6.3 to 100V	160 to 450V
Nominal Capacitance Range	0.47 to 33000µF	
Capacitance Tolerance	±20% at 120Hz, +20°C	
Leakage Current	I ≤ 0.01CV or 3 (µA) whichever is greater measured after 2 minutes application of 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.)	0.26 0.22 0.18 0.16 0.14 0.12 0.10 0.08
	Working Voltage (V)	160 200 220 250 350 400 420 450
	tan δ (max.)	0.20 0.20 0.20 0.20 0.24 0.24 0.24 0.24
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	10 8 6 4 3 3 3 3
Working Voltage (V)	160 200 220 250 350 400 420 450	
Z-25°C / Z+20°C	3 3 3 4 4 6 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 time : 2,000 hours Test temperature : +105°C Test conditions : Rated DC working voltage with rated ripple current.	Post test requirements at +20°C Leakage current : ≤ Initial specified value Cap. change : within ±20% of the initial measured value tan δ : ≤ 200% of the initial specified value
Shelf Life	At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits Leakage current : ≤ Initial specified value Cap. change : within ±20% of the initial measured value tan δ : ≤ 200% of the initial specified value	
Industrial Standard	JIS C - 5101-4 (IEC 60384-4)	

CASE SIZE TABLE



φD	5	6.3	8 (L < 20)	8 (L ≥ 20)	10	12.5	16	18	22	25
F	2.0	2.5	3.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
φd	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8	1.0
α	(L < 20) 1.5				(L ≥ 20) 2.0					
β	(D < 20) 0.5				(D ≥ 20) 1.0					

PART NUMBER SYSTEM (EXAMPLE : 25V 330µF)



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	26
10	106					5 x 11	35	5 x 11	38
22	226			5 x 11	49	5 x 11	54	5 x 11	57
33	336	5 x 11	54	5 x 11	60	5 x 11	64	5 x 11	75
47	476	5 x 11	65	5 x 11	70	5 x 11	80	5 x 11	84
68	686	5 x 11	70	5 x 11	75	5 x 11	90	5 x 11	92
100	107	5 x 11	95	5 x 11	105	5 x 11	125	5 x 11	140
						6.3 x 11	142	6.3 x 11	159
220	227	5 x 11	153	5 x 11	170	6.3 x 11	213	8 x 12	285
				6.3 x 11	193				
330	337	6.3 x 11	216	6.3 x 11	239	8 x 12	315	8 x 12	340
470	477	6.3 x 11	258	6.3 x 11	285	8 x 12	366	8 x 12	406
680	687	8 x 12	365	8 x 12	408	10 x 12.5	480	10 x 12.5	471
								10 x 16	620
1000	108	8 x 12	443	10 x 12.5	571	8 x 20	663	10 x 20	821
						10 x 16	680		
2200	228	10 x 16	740	10 x 20	886	12.5 x 20	1108	12.5 x 20	1176
								12.5 x 25	1296
3300	338	10 x 20	1032	12.5 x 20	1205	12.5 x 25	1389	16 x 25	1646
4700	478	12.5 x 20	1280	12.5 x 25	1492	16 x 25	1740	16 x 30	2012
6800	688	12.5 x 25	1554	16 x 25	1824	16 x 30	2081	16 x 35	2308
10000	109	16 x 25	1897	16 x 30	1980	16 x 35	2379	18 x 35	2500
15000	159	16 x 30	2188	16 x 40	2180	18 x 35	2600		
22000	229	18 x 35	2400	18 x 40	2407				
33000	339	18 x 40	2555						

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

Case Size Φ D 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
1	105			5 x 11	13			5 x 11	16
2.2	225			5 x 11	20			5 x 11	23
3.3	335			5 x 11	30			5 x 11	34
4.7	475	5 x 11	28	5 x 11	37	5 x 11	40	5 x 11	40
10	106	5 x 11	41	5 x 11	54	5 x 11	59	6.3 x 11	61
22	226	5 x 11	67	5 x 11	79	5 x 11	79	6.3 x 11	92
33	336	5 x 11	80	5 x 11	101	6.3 x 11	122	8 x 12	144
47	476	5 x 11	101	6.3 x 11	133	6.3 x 11	146	10 x 12.5	199
68	686	6.3 x 11	138	6.3 x 11	160	8 x 12	155	10 x 16	240
100	107	6.3 x 11	168	8 x 12	229	10 x 12.5	251	10 x 20	349
220	227	8 x 12	294	10 x 16	509	10 x 20	504	12.5 x 25	662
330	337	10 x 12.5	419	10 x 16	589	12.5 x 20	688	12.5 x 25	800
470	477	10 x 16	547	10 x 20	707	12.5 x 20	810	16 x 25	990
680	687	10 x 20	682	12.5 x 20	923	12.5 x 25	1160	16 x 30	1289
1000	108	12.5 x 20	1023	12.5 x 25	1287	16 x 25	1448	18 x 35	1903
				16 x 25	1478			18 x 40	2020
2200	228	16 x 25	1497	16 x 30	1759	18 x 35	1781		
				16 x 35	1884				
3300	338	16 x 30	1808	18 x 35	2167				
4700	478	18 x 35	2335						
6800	688	18 x 40	2400						

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

Case Size Φ D 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.

STANDARD RATINGS

Voltage (Code)		160V (2C)		200V (2D)		220V (2N)		250V (2E)	
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	8
1	105							6.3 x 11	17
2.2	225							6.3 x 11	27
3.3	335			6.3 x 11	30	6.3 x 11	30	6.3 x 11	35
4.7	475	6.3 x 11	41	6.3 x 11	40	8 x 12	40	8 x 12	45
10	106	8 x 12	60	10 x 12.5	72	10 x 12.5	70	10 x 12.5	75
				10 x 16	79				
22	226	10 x 16	110	10 x 16	113	10 x 20	125	10 x 20	130
33	336	10 x 20	156	10 x 20	165	12.5 x 20	165	12.5 x 20	184
47	476	10 x 20	195	10 x 20	194	12.5 x 20	220	12.5 x 25	238
68	686	12.5 x 20	250	12.5 x 20	226	12.5 x 25	245	16 x 20	246
				12.5 x 25	250				
82	826	12.5 x 25	310	10 x 30	320	12.5 x 30	280	16 x 25	351
100	107	12.5 x 25	360	16 x 25	386	16 x 25	335	16 x 25	390
								16 x 30	422
								18 x 30	440
150	157	12.5 x 30	380	16 x 25	525	16 x 30	365	18 x 30	440
180	187	12.5 x 35	420	12.5 x 35	560	16 x 35	500	18 x 35	469
220	227	16 x 30	680	16 x 30	643	16 x 40	615	18 x 35	485
				18 x 25	635				
270	277	16 x 30	728	18 x 30	740				
330	337	18 x 35	830	18 x 30	808				
				18 x 35	864				
390	397	18 x 35	850	18 x 35	904	18 x 40	959		
470	477	18 x 40	880	18 x 40	1016				
560	567	18 x 45	925	18 x 45	1112				

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

Case Size ΦD x L (mm)

STANDARD RATINGS

Voltage (Code)		350V (2V)		400V (2G)		420V (2M)		450V (2W)	
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	8	6.3 x 11	8	6.3 x 11	8		
1	105	6.3 x 11	18	6.3 x 11	19	6.3 x 11	15	6.3 x 11	16
2.2	225	6.3 x 11	25	6.3 x 11	25	8 x 12	29	8 x 12	24
3.3	335	8 x 12	40	8 x 12	35	8 x 12	35	8 x 12	29
4.7	475	8 x 12	43	8 x 12	40	10 x 12.5	46	10 x 12.5	37
				10 x 12.5	46	10 x 16	52	10 x 16	42
10	106	10 x 16	73	8 x 16	68	10 x 16	77	10 x 20	74
				10 x 12.5	70				
				10 x 16	78	10 x 20	85	12.5 x 20	84
18	186	12.5 x 20	100	12.5 x 20	105	12.5 x 25	124	10 x 30	108
22	226	12.5 x 20	150	12.5 x 20	148	12.5 x 20	126	12.5 x 20	118
				12.5 x 25	163	12.5 x 25	140	12.5 x 25	131
27	276	12.5 x 25	177	10 x 30	192	12.5 x 25	170	12.5 x 30	164
				12.5 x 20	181				
33	336	16 x 25	200	12.5 x 20	175	16 x 25	200	16 x 20	215
				12.5 x 25	193			16 x 25	237
39	396	16 x 25	258	16 x 25	251	12.5 x 30	248	12.5 x 35	256
47	476	16 x 25	265	12.5 x 25	245	12.5 x 35	288	16 x 25	281
				12.5 x 30	266			16 x 30	305
				16 x 20	256	18 x 20	277		
56	566	16 x 30	280	12.5 x 30	313	12.5 x 40	344	16 x 30	352
				12.5 x 35	336				
68	686	16 x 30	288	16 x 25	365			16 x 30	342
				16 x 30	396	16 x 30	408		
				18 x 20	356			18 x 30	366
82	826	18 x 30	372	16 x 30	414	16 x 35	456		
				18 x 25	409			18 x 30	440
				18 x 30	443	18 x 25	420		
100	107	18 x 35	460	16 x 30	457			16 x 35	459
				18 x 25	452	18 x 35	488	18 x 30	457
				18 x 30	489			18 x 35	490
120	127			16 x 40	567	18 x 30	464		
				18 x 30	532	18 x 40	528	18 x 40	592
				18 x 35	570				
150	157			16 x 40	577	18 x 35	507	18 x 40	606
				18 x 35	580				
				18 x 40	616	18 x 45	568	18 x 45	640
180	187			18 x 40	636	18 x 40	573		
				18 x 50	704	18 x 45	622		

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

Case Size Φ D x L (mm)

RIPPLE CURRENT MULTIPLIER

Frequency Coefficient

Rated Voltage	Coefficient		Freq. (Hz)				
	Cap. (μF)		50	120	300	1k	10k~
6.3~100V	≤47		0.75	1.00	1.35	1.57	2.00
	68~470		0.80	1.00	1.23	1.34	1.50
	≥560		0.85	1.00	1.10	1.13	1.15
160~450V	0.47~220		0.80	1.00	1.25	1.40	1.60
	≥270		0.90	1.00	1.10	1.13	1.15

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