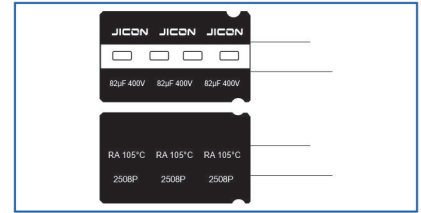


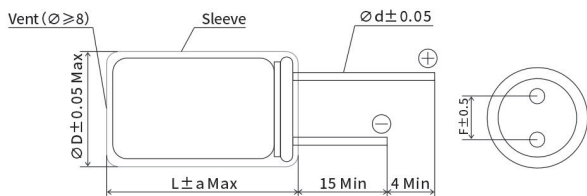
RA系列 SERIES

- 2000-3000h at 105°C
- Standard series for general purpose
- Switching power supplies
- Smoothing, Buffering, Filtering
- RoHS Compliant



Items	Characteristics	
Operating Temperature Range(°C)	-40~+105	-25~+105
Voltage Range (V)	6.3~100	160~500
Capacitance Range (µF)	0.1~15000	
Capacitance Tolerance(20°C,120Hz)	±20%	
Leakage Current (µA)	6.3~100V	160~500V
	$I \leq 0.01CV$ or $3\mu A$ whichever is greater After 2 minute at 20°C application of rated voltage	$I \leq 0.02CV+15\mu A$ After 2 minute at 20°C application of rated voltage
I:Max. leakage current (µA) C:Nominal Capacitance (µF) V:Rated Voltage (V)		
Dissipation Factor (20°C,120Hz)	Rated Voltage (V)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 420 450 500
	Tanδ(max)	0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 0.15 0.20 0.24
For Capacitances >1000µF add 0.02 to every 1000µF		
Low Temperature Characteristics (Max. Impedance Ratio at 120Hz)	Rated Voltage (V)	6.3 10 16 25 35 50 63 100 160 200 250 350 400 420 450 500
	Z-25°C/Z+20°C	4 3 2 4 6 8
	Z-40°C/Z+20°C	8 6 3 -
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for the specified period of time at 105°C.	
	Capacitance change	$\leq \pm 20\%$ of the initial value
	D.F.(Tanδ)	$\leq 200\%$ of specified value
	Leakage current	$\leq$ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.	
	Capacitance change	$\leq \pm 20\%$ of the initial value
	D.F.(Tanδ)	$\leq 200\%$ of specified value
	Leakage current	$\leq 200\%$ of specified value

◆ Dimensions(mm)



ΦD	5	6.3	8	10	13	16	18	20	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	7.5	10
Φd	0.5			0.6		0.8			
a	1.5					2.0			

◆ Frequency Coefficient

Rated Voltage(V)	Frequency	50/60HZ	120HZ	1KHZ	10KHZ	100KHZ
	Cap(µF)					
6.3~100	<10	0.65	1.00	1.75	2.30	2.50
	10~82	0.75	1.00	1.50	1.75	1.80
	100~1000	0.80	1.00	1.30	1.40	1.50
	>1000	0.85	1.00	1.05	1.08	1.08
160~500	1.0~10	0.80	1.00	1.75	2.00	2.50
	12~47	0.80	1.00	1.60	1.80	2.00
	56~470	0.80	1.00	1.30	1.40	1.60

◆ Temperature Coefficient

Rated Voltage (V)	Temperature(°C)	+70	+85	+105
6.3~100		2.00	1.70	1.00
160~500		1.80	1.40	1.00

◆ Ratings for RA Series

UR (Surge Voltage) Code (V)	Rated Capacitance (μF)	Max ESR 20°C120Hz (Ω)	Rated Ripple Current 105°C120Hz (mA rms)	Size φD×L (mm)
6.3(7.2)0J	33	2.50	54	5×11
	47	1.50	64	5×11
	100	1.20	94	5×11
	220	0.87	140	6.3×12
	330	0.58	190	6.3×12
	470	0.39	230	8×12
	1000	0.23	380	10×13
	2200	0.095	710	10×20
	3300	0.090	840	13×20
	4700	0.061	1090	16×25
	6800	0.056	1350	16×25
	10000	0.045	1650	16×30
	15000	0.036	2010	18×35
	22	2.50	46	5×11
10(13)1A	33	1.90	57	5×11
	47	1.50	68	5×11
	100	1.20	100	5×11
	220	0.58	170	6.3×12
	330	0.47	200	8×12
	470	0.39	250	8×12
	1000	0.18	460	10×16
	2200	0.09	760	13×20
	3300	0.068	1000	13×25
	4700	0.056	1260	16×25
	6800	0.045	1570	16×30
	10000	0.036	1890	18×35
	10	2.50	34	5×11
	22	1.90	51	5×11
16(20)1C	33	1.50	63	5×11
	47	1.20	75	5×11
	100	0.58	110	6.3×12
	220	0.47	180	8×12
	330	0.39	260	8×12
	470	0.23	310	10×13
	1000	0.12	560	10×20
	2200	0.068	920	13×25
	3300	0.056	1170	16×25
	4700	0.045	1480	16×30
	6800	0.036	1780	18×35
	4.7	3.00	25	5×11
	10	2.50	36	5×11
	22	1.90	54	5×11
25(32)1E	33	1.50	67	5×11
	47	1.20	80	5×11
	100	0.58	130	6.3×12
	220	0.39	230	8×12
	330	0.23	310	10×13
	470	0.18	380	10×16
	1000	0.09	680	13×20
	2200	0.056	1090	16×25
	3300	0.045	1400	16×30
	4700	0.036	1710	18×35

UR (Surge Voltage) Code (V)	Rated Capacitance (μF)	Max ESR 20°C 120Hz (Ω)	Rated Ripple Current 105°C120Hz (mA rms)	Size φD×L (mm)
35(44)1V	4.7	2.50	28	5×11
	10	1.80	41	5×11
	22	1.50	61	5×11
	33	1.50	75	5×11
	47	0.58	90	6.3×12
	100	0.39	150	8×12
	220	0.23	270	10×13
	330	0.18	350	10×16
	470	0.12	460	10×20
	1000	0.068	810	13×25
	2200	0.045	1260	16×30
	3300	0.036	1610	18×35
	0.1	18	1.3	5×11
	0.22	13.00	2.9	5×11
50(63)1H	0.33	10.00	4.3	5×11
	0.47	7	6.2	5×11
	1	4.9	13	5×11
	2.2	4.20	20	5×11
	3.3	3.90	25	5×11
	4.7	3.60	30	5×11
	10	2.70	40	5×11
	22	1.90	65	5×11
	33	1.10	90	6.3×12
	47	0.90	110	6.3×12
	100	0.50	180	8×12
	220	0.27	300	10×16
	330	0.18	410	10×20
	470	0.12	530	13×20
63(79)1J	1000	0.076	950	16×25
	2200	0.05	1470	18×35
	4.7	5.80	35	5×11
	10	3.60	46	5×11
	22	2.10	71	6.3×12
	33	1.70	100	6.3×12
	47	1.20	120	8×12
	100	0.65	215	10×13
	220	0.32	335	10×20
	330	0.22	510	13×20
	470	0.16	640	13×25
	1000	0.098	930	16×30
	0.47	13.00	7.1	5×11
	1	11	15	5×11
100(125)2A	2.2	9.2	21	5×11
	3.3	7.2	29	5×11
	4.7	6.3	62	5×11
	10	3.30	54	6.3×12
	22	1.40	93	8×12
	33	0.94	130	10×13
	47	0.68	165	10×16
	100	0.28	265	13×20
	220	0.16	440	16×25
	330	0.13	540	16×25
	470	0.11	715	16×30

◆ Ratings for RA Series

UR (Surge Voltage) Code (V)	Rated Capacitance (μF)	Max ESR 20°C 120Hz (Ω)	Rated Ripple Current 105°C120Hz (mA rms)	Size φD×L (mm)
160(200)2C	6.8	29.30	82	6.3×12
	10	19.90	125	8×12
	15	13.30	164	8×14
	18	11.00	180	8×16
	22	9.00	200	10×13
	33	6.00	250	10×16
	39	5.10	280	10×16
	47	4.20	300	10×20
	56	3.20	345	13×16
	68	2.90	470	13×16
	82	2.40	510	13×20
	100	2.00	620	13×20
	150	1.30	770	16×20
	220	0.90	1020	16×25
	330	0.60	1390	18×30
	390	0.51	1617	18×35
200(250)2D	470	0.42	1884	18×40
	4.7	42.30	70	6.3×12
	8.2	24.20	106	8×12
	10	19.90	125	8×14
	15	13.20	146	8×16
	18	11.00	166	10×13
	22	9.00	200	10×16
	33	6.00	260	10×20
	47	4.20	390	10×25
	56	3.50	430	13×16
	68	2.90	470	13×20
	82	2.40	550	13×25
	100	2.00	630	16×20
	150	1.30	840	16×25
	180	3.50	950	16×30
	220	0.90	1050	16×35
250(300)2E	270	0.73	1245	16×40
	330	0.60	1430	18×35
	470	0.42	1680	18×40
	4.7	42.30	71	6.3×12
	6.8	29.20	98	8×12
	8.2	24.20	115	8×14
	10	19.90	140	10×13
	15	13.20	160	10×16
	22	9.00	200	10×20
	27	7.30	250	10×25
	33	6.00	320	13×16
	47	4.20	390	13×20
	56	3.50	450	13×25
	68	2.90	520	16×20
	82	2.40	550	16×25
	100	2.00	680	16×25
350(400)2V	150	1.30	860	18×25
	180	1.10	980	18×30
	220	0.90	1130	18×35
	270	0.73	1329	18×40
	330	0.60	1549	22×35
	2.2	120.60	52	6.3×12
	4.7	56.40	78	8×12
	6.8	39.00	110	10×13
	10	26.50	140	10×16
	15	17.60	204	10×20
	22	12.00	260	13×16
	33	8.00	360	13×20
	47	5.60	430	16×20
	56	4.70	469	16×25
	68	3.90	560	16×30
	82	3.20	610	18×25
400(450)2G	100	2.60	700	18×30
	120	2.20	809	18×35
	150	1.70	960	18×40
	180	1.40	1109	22×35
	220	1.20	1300	22×40
	2.2	120.00	35	6.3×12
	3.3	80.40	50	8×12
	4.7	56.40	75	8×14
400(450)2G	5.6	47.30	96	8×16
	6.8	39.00	110	10×13
400(450)2G	8.2	32.30	121	10×16
	10	26.50	140	10×16
	15	17.60	220	10×20
	18	14.70	241	10×25
	22	12.00	260	13×16
	27	9.80	317	13×20
	33	8.00	360	13×25
	47	5.60	450	16×20
	56	4.70	491	16×25
	68	3.90	585	16×30
	82	3.20	610	18×25
	100	2.60	765	18×30
	120	2.20	865	18×35
	150	1.70	985	18×40
	180	1.40	1138	22×35
	220	1.20	1334	22×40
420(470)W6	1	265.30	22	6.3×12
	2.2	120.00	35	6.3×12
	3.3	80.40	50	8×12
	4.7	56.40	75	8×14
	5.6	47.30	96	8×16
	6.8	39.00	110	10×13
	8.2	32.30	121	10×16
	10	26.50	180	10×16
	15	17.60	230	10×20
	18	14.70	250	13×16
	22	12.00	275	13×20
	27	9.80	320	13×20
	33	8.00	375	13×25
	47	5.60	465	16×25
	56	4.70	524	16×30
	68	3.90	615	18×25
450(500)2W	82	3.20	705	18×30
	100	2.60	785	18×35
	120	2.20	880	18×40
	150	1.70	1050	22×35
	1	265.30	22	6.3×12
	2.2	120.00	35	8×12
	3.3	80.40	50	8×12
	4.7	56.40	75	8×14
	5.6	47.30	96	10×13
	6.8	39.00	110	10×16
	8.2	32.30	121	10×16
	10	26.50	180	10×20
	15	17.60	240	10×25
	18	14.70	263	13×16
	22	12.00	290	13×20
	27	9.80	329	16×20
500(550)2H	33	8.00	390	16×20
	47	5.60	480	16×25
	56	4.70	524	16×30
	68	3.90	630	18×25
	82	3.20	715	18×30
	100	2.60	800	18×35
	120	2.20	865	18×40
	150	1.70	1100	22×35
	2.2	120.00	49	8×12
	3.3	80.40	68	8×14
	4.7	56.40	84	10×13
	5.6	47.30	101	10×16
	6.8	39.00	111	10×16
	8.2	32.30	129	10×20
	10	26.50	145	10×20
	15	17.60	196	13×16
	18	14.70	214	13×20
	22	12.00	230	13×25
	27	9.80	261	16×20
	33	8.00	295	16×25
	47	5.60	418	16×30
	56	4.70	493	18×25
	68	3.90	530	18×30
	82	3.20	590	18×35
	100	2.60	687	18×40
	120	2.20	798	22×35