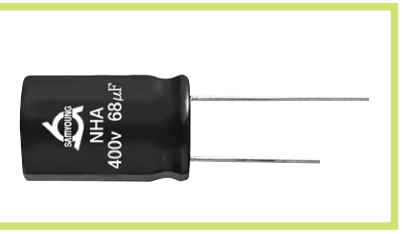
MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

NHA Series

• 105℃ 1,000~2,000Hrs assured

Solvent-proof

WV≦100VDC



- Downsized of KMG series.
- For Digital Household Appliance
- RoHS compliant.
- Halogen-free capacitors are also available.

KMG → NHA

Downsized

SPECIFICATIONS

Item	Characteristics		
Rated Voltage Range	6.3 ~ 100 VDC	160 ~ 400 VDC	450 ~ 500 VDC
Operating Temperature Range	-55 ~ +105℃	-40 ~ +105℃	-25 ~ +105℃
Capacitance Tolerance	±20% (M)		(at 20℃, 120Hz)
Leakage Current	After 1 minute:0.03 CV(μA) or 4 μA, whichever is greater After 2 minutes:0.01 CV(μA) or 3 μA, whichever is greater		

After 1 minute		After 5 minutes	
CV≦1,000	CV>1,000	CV≦1,000	CV>1,000
0.1CV+40	0.04CV+100	0.03CV+15	0.02CV+25

Where, C=Nominal capacitance(μF) V=Rated Voltage(VDC) (at 20℃)

Dissipation Factor (Tanδ)

Rated Voltage(VDC)	6.3	10	16	25	35	50	63	100	160~250	350~500
Tanδ(Max.)	0.34	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.20	0.24

When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase. (at 20℃, 120Hz)

Temperature Characteristics (Max. Impedance ratio)

Rated Voltage(VDC)	6.3	10	16	25	35	50	63~100	160	200~250	350~500
Z(-25℃)/Z(20℃)	5	4	3	2	2	2	3	4	8	16
Z(-40℃)/Z(20℃)	12	10	8	5	4	3	4	-	-	-

(at 120Hz)

Load Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000 hours at 105℃.(where, 1,000 hours ≤ ø8)

Capacitance change ≦ ±20% of the initial value
Tanδ ≦ 200% of the initial specified value
Leakage current ≦ The initial specified value

Shelf Life

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage applied.(where, 500 hours ≤ ø8)
The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements.

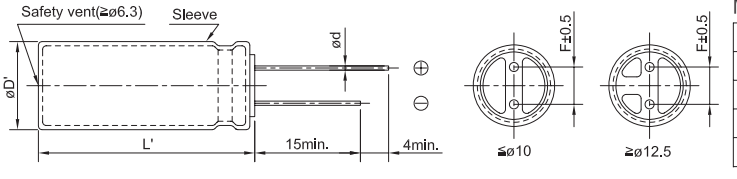
Capacitance change ≦ ±20% of the initial value
Tanδ ≦ 200% of the initial specified value
Leakage current ≦ The initial specified value (where, 200% for ≧ WV 160 VDC)

Others

Satisfied characteristics KS C IEC 60384-4

DIMENSIONS OF NHA Series

Unit(mm)



Marking : BROWN SLEEVE, WHITE INK

øD	5	6.3	8	10	12.5	16	18	22
ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
øD'	øD+0.5 max.							
L'	L+1.5 max.			L+2.0 max.				

RATINGS OF NHA Series

μF \ Vdc	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	500
0.1						5×11 2.1	5×11 3.2	5×11 3.6							
0.22						5×11 3.2	5×11 4.3	5×11 4.8							
0.33						5×11 6.3	5×11 7.2	5×11 7.8							
0.47						5×11 10	5×11 11	5×11 12	6.3×11 12	6.3×11 12	6.3×11 12	6.3×11 12			
0.68						5×11 12	5×11 13	5×11 14	6.3×11 14	6.3×11 15	6.3×11 15	6.3×11 15			
1						5×11 13	5×11 15	5×11 16	6.3×11 14	6.3×11 15	6.3×11 17	6.3×11 18	6.3×11 19	6.3×11 14	6.3×11 13
2.2						5×11 18	5×11 19	5×11 21	6.3×11 20	6.3×11 24	6.3×11 27	8×11.5 29	8×11.5 30	8×11.5 25	8×11.5 22
3.3						5×11 30	5×11 33	5×11 34	6.3×11 35	6.3×11 36	6.3×11 37	8×11.5 38	10×12.5 41	10×12.5 35	10×16 32
4.7				5×11 25	5×11 27	5×11 37	5×11 39	5×11 40	6.3×11 41	6.3×11 43	8×11.5 45	8×11.5 45	10×12.5 46	10×16 42	10×16 40
6.8				5×11 31	5×11 33	5×11 44	5×11 48	5×11 49	8×11.5 52	8×11.5 54	8×11.5 56	10×16 62	10×16 65	10×20 59	10×20 55
10			5×11 35	5×11 37	5×11 40	5×11 54	5×11 59	5×11 59	8×11.5 60	8×11.5 62	10×16 74	10×20 79	10×20 86	10×20 76	12.5×20 72
22		5×11 48	5×11 53	5×11 56	5×11 67	5×11 79	5×11 87	6.3×11 100	10×16 111	10×16 113	10×20 127	12.5×20 150	10×25 157	12.5×25 136	16×25 132
33	5×11 52	5×11 56	5×11 60	5×11 75	5×11 80	5×11 97	6.3×11 122	8×11.5 144	10×20 156	10×20 158	12.5×20 184	12.5×25 189	16×20 210	12.5×30 189	16×31.5 178
47	5×11 61	5×11 66	5×11 77	5×11 80	5×11 101	6.3×11 133	6.3×11 146	8×15 189	10×20 202	12.5×20 220	12.5×25 238	16×20 246	16×25 280	16×31.5 240	18×31.5 200
68	5×11 69	5×11 83	5×11 92	5×11 113	6.3×11 138	6.3×11 156	8×11.5 207	10×16 264	12.5×20 274	12.5×25 288	16×20 300	16×31.5 348	16×35.5 384	18×35.5 349	
100	5×11 90	5×11 100	5×11 125	6.3×11 159	6.3×11 168	8×11.5 229	10×12.5 251	10×20 349	12.5×25 360	16×20 366	16×25 405	16×35.5 447	18×40 461	22×35 425	
220	5×11 153	5×11 170	6.3×11 213	6.3×11 238	8×11.5 294	10×12.5 395	10×16 474	12.5×20 572	16×25 656	16×31.5 684	18×40 730	22×45 780			
330	6.3×11 216	6.3×11 239	6.3×11 265	8×11.5 340	8×15 398	10×16 529	10×20 633	16×20 810	18×31.5 848	18×40 880	22×40 900				
470	6.3×11 258	6.3×11 286	8×11.5 366	8×15 447	10×16 547	10×20 690	12.5×20 886	16×25 1,072	22×35 1,130	22×40 1,156					
680	8×11.5 365	8×11.5 405	8×15 455	10×16 620	12.5×16 777	12.5×20 973	12.5×25 1,160	16×31.5 1,364	22×45 1,463						
1,000	8×11.5 443	8×15 542	10×16 680	10×20 821	12.5×20 1,023	12.5×25 1,287	16×25 1,565	18×40 2,020							
2,200	10×16 772	10×20 886	12.5×20 1,108	12.5×25 1,297	16×25 1,497	16×31.5 1,724	18×35.5 1,938								
3,300	10×20 1,032	12.5×20 1,205	12.5×25 1,389	16×25 1,646	16×31.5 1,808	18×35.5 2,260	← Case Size ØD×L(mm) ← Rated Ripple Current(mArms/105℃, 120Hz)								
4,700	12.5×20 1,280	12.5×25 1,492	16×20 1,610	16×31.5 2,012	18×35.5 2,335										
6,800	12.5×25 1,554	16×25 1,824	16×31.5 2,081	18×35.5 2,452	18×40 2,642										
10,000	16×25 1,897	16×31.5 2,082	18×31.5 2,365	18×40 2,692											
15,000	16×35.5 2,344														

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap.(μF) \ Freq.(Hz)	60	120	300	1k	10k~
~6.8	0.65	1.00	1.35	1.75	2.30
10~68	0.75	1.00	1.25	1.50	1.75
100~1,000	0.80	1.00	1.15	1.30	1.40
2,200~15,000	0.85	1.00	1.03	1.05	1.08

* SMT Products are available upon request.
Please check with us about individual characteristics.