



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

NHA Series

• 105°C 1,000~2,000Hrs assured.

Solvent-proof

WV ≤ 100V_{DC}

- For Digital Household Appliance.
- RoHS compliant.
- Halogen-free capacitors are also available.

KMG → NHA
Downsized



SPECIFICATIONS

Item	Characteristics										
Rated Voltage Range	6.3 ~ 100 V _{DC}					160 ~ 400 V _{DC}		450 ~ 500 V _{DC}			
Operating Temperature Range	-55 ~ +105℃					-40 ~ +105℃		-25 ~ +105℃			
Capacitance Tolerance	±20% (M) (at 20℃, 120Hz)										
Leakage Current	After 1 minute:I=0.03CV(μA) or 4μA, whichever is greater. After 2 minutes:I=0.01CV(μA) or 3μA, 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, I:Max. Leakage current(μA), C:Nominal capacitance(μF), V:Rated voltage(V _{DC}) (at 20℃)										
Dissipation Factor (Tanδ)	Rated Voltage(V _{DC})	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(V _{DC})	6.3	10	16	25	35	50	63~100	160	200~400	450~500
	Z(-25℃)/Z(20℃)	5	4	3	2	2	2	3	3	6	6
	Z(-40℃)/Z(20℃)	12	10	8	5	4	3	4	5	6	-
(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 ≤ ø 8) 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 ≤ ø 8) 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 V _{DC})										
Others	Satisfied characteristics KS C IEC 60384-4										

DIMENSIONS OF NHA Series

Unit(mm)

		Marking : BROWN SLEEVE, WHITE INK					
øD	8	10	12.5	16	18	22	
ød	0.6	0.6	0.6	0.8	0.8	1.0	
F	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
3.3													10×12.5 41	10×12.5 35	10×12.5 29
4.7													10 ×12.5 48	10×12.5 38	10×12.5 36
6.8												10×12.5 58	10×12.5 59	10×16 54	10×16 50
10											10×12.5 67	10×16 73	10×16 79	10×16 70	12.5×16 66
22									10×12.5 101	10 ×12.5 102	10×16 117	12.5×16 138	10×25 157	12.5×20 125	16×20 123
33									10×16 143	10 ×16 145	12.5×16 169	12.5×25 189	16×20 210	12.5×30 189	16×25 165
47								8×15 189	10×20 202	12.5 ×16 206	12.5×20 218	16×20 246	16×25 280	16×25 222	18×25 188
68								10×12.5 239	12.5×16 252	12.5×20 265	16×20 300	16×25 322	16×31.5 376	18×31.5 338	
100							10 ×12.5 251	10×16 321	12.5×25 360	16×20 366	16×25 405	16×35.5 447	18×35.5 453	22×30 414	
220						10×12.5 395	10×16 474	12.5×20 572	16×25 656	16×31.5 684	18×35.5 719	22×45 780			
330					8×15 398	10×16 529	10×20 633	16×20 810	18×31.5 848	18×35.5 866	22×35 880				
470				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			8×15 455	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		8×15 542	10×16 680	10×16 756	12.5×16 940	12.5×25 1,287	16×25 1,565	18×35.5 1,987							
2,200	10×16 772	10×20 886	12.5×16 1,019	12.5×20 1,188	16×20 1,394	16×31.5 1,724	18×35.5 1,938								
3,300	10×20 1,032	12.5×20 1,205	12.5×20 1,275	16×20 1,535	16×31.5 1,808	18 ×31.5 2,190									
4,700	12.5×20 1,280	12.5×25 1,492	16×20 1,610	16×25 1,865	18×31.5 2,262										
6,800	12.5×25 1,554	16×20 1,699	16 ×25 1,929	18×31.5 2,374	18×40 2,642										
10,000	16×25 1,897	16×31.5 2,082	18×31.5 2,365	18×35.5 2,649											
15,000	16×31.5 2,297		Case Size $\varnothing D \times L$(mm) Rated Ripple Current(mArms/105°C, 120Hz)												

RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Cap.(μF) \ Freq.(Hz)	60	120	300	1k	10k~
3.3~6.8	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.