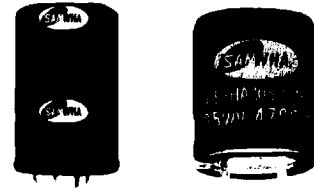


LARGE ALUMINUM ELECTROLYTIC CAPACITORS

HA Snap-in Terminal Type, Wide Temperature Range Series

- Wide temperature range of - 40 ~ +105°C
- Standard snap-in terminal type

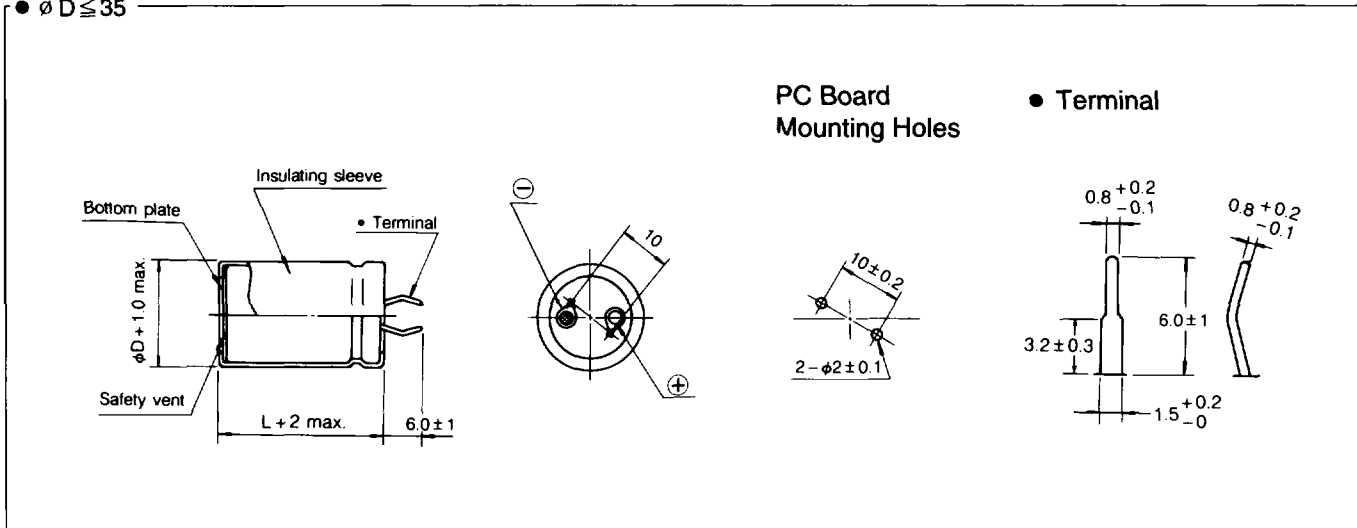


Item	Characteristics						
Operating temperature range	-40 ~ +105°C						
Capacitance tolerance	±20% at 120Hz, 20°C						
Leakage current max.	I=3√CV (µA) (after 5 minutes)						
Dissipation factor max. (at 120Hz, 20°C)	Capacitance > 1000µF : tanδ increases by 0.01 for each 1000µF from below value.						
	WV	6.3, 10	16	25, 35	50, 63	80, 100	160~400
	tanδ	0.50	0.40	0.35	0.25	0.20	0.15
Load life (after application of the rated voltage for 2000 hours at 105°C)	Leakage current	Less than specified value					
	Capacitance change	Within ±20% of initial value					
	tanδ	Less than 200% of specified value					
Shelf life (at 105°C)	After 1000 hours no load test, leakage current, capacitance and tanδ are same as load life value.						

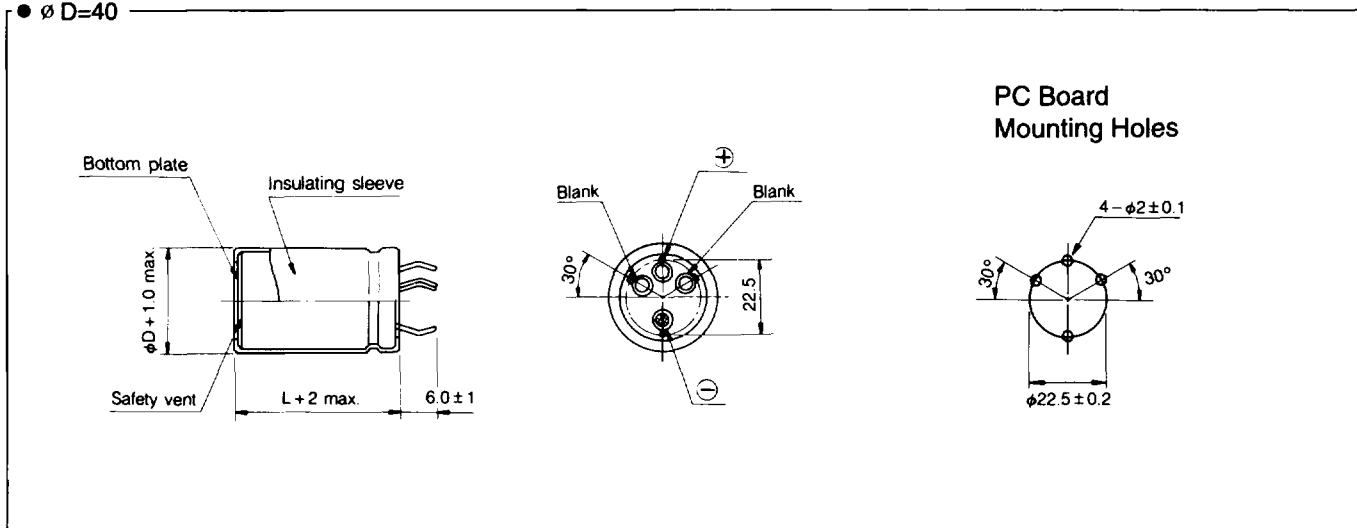
● DRAWING

Unit : mm

● φD ≤ 35



● φD=40



LARGE ALUMINUM ELECTROLYTIC CAPACITORS

HA series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV μF / φ D	6.3						10						16					
	20	22	25.4	30	35	40	20	22	25.4	30	35	40	20	22	25.4	30	35	40
2200													20×25 1.09					
3300							20×25 1.21						20×30 1.41	22×25 1.37				
4700	20×25 1.33						20×30 1.52	22×25 1.48					20×35 1.75	22×30 1.71	25.4×25 1.76			
6800	20×30 1.67	22×25 1.62					20×35 1.89	22×30 1.85	25.4×25 1.90					22×35 2.11	25.4×30 2.18	30×25 2.24		
10000	20×35 2.07	22×30 2.03	25.4×25 2.09					22×35 2.28	25.4×30 2.36	30×25 2.42				22×45 2.69	25.4×40 2.81	30×30 2.75	35×25 2.81	
15000		22×40 2.62	25.4×35 2.72	30×25 2.64				22×45 2.90	25.4×40 3.02	30×30 2.96	35×25 3.02				25.4×50 3.50	30×40 3.47	35×30 3.39	
22000			25.4×40 3.24	30×35 3.35	35×30 3.43				25.4×45 3.56	30×40 3.68	35×30 3.59					30×50 4.21	35×40 4.16	
33000				30×45 4.11	35×35 4.04					30×50 4.44	35×45 4.58	40×40 4.66					35×60 5.32	40×50 5.25
47000				30×60 4.98	35×45 4.78	40×40 4.87					35×60 5.50	40×50 5.43					35×70 6.04	40×60 6.00
68000					35×60 5.71	40×50 5.64					35×70 6.22	40×60 6.18						
100000					35×70 6.42	40×60 6.37												

WV μF / φ D	25						35						50					
	20	22	25.4	30	35	40	20	22	25.4	30	35	40	20	22	25.4	30	35	40
1000							20×25 0.86						20×25 1.06					
1500	20×25 0.92						20×30 1.10	22×25 1.06					20×30 1.34	22×25 1.30				
2200	20×30 1.17	22×25 1.14					20×35 1.38	22×30 1.34	25.4×25 1.38				20×40 1.76	22×35 1.72	25.4×30 1.78	30×25 1.83		
3300	20×35 1.49	22×30 1.46	25.4×25 1.50				20×40 1.74	22×35 1.70	25.4×30 1.76	30×25 1.81				22×45 2.26	25.4×40 2.35	30×30 2.30	35×25 2.35	
4700	20×40 1.85	22×35 1.81	25.4×30 1.88	30×25 1.92				22×45 2.20	25.4×35 2.18	30×30 2.24	35×25 2.29				25.4×45 2.85	30×35 2.81	35×30 2.88	
6800		22×45 2.33	25.4×35 2.31	30×30 2.37	35×25 2.42				25.4×50 2.89	30×40 2.86	35×30 2.80					30×45 3.50	35×40 3.60	
10000			25.4×50 3.06	30×40 3.04	35×30 2.97					30×50 3.58	35×40 3.54					30×60 4.41	35×50 4.40	40×40 4.31
15000				30×50 3.78	35×40 3.73						35×60 4.64	40×50 4.58					35×70 5.54	40×60 5.50
22000					35×60 4.83	40×50 4.77					35×70 5.44	40×60 5.40						
33000					35×70 5.65	40×60 5.61												

WV μF / φ D	63						80						100					
	20	22	25.4	30	35	40	20	22	25.4	30	35	40	20	22	25.4	30	35	40
150													20×25 0.53					
220													20×30 0.68	22×25 0.66				
330													20×35 0.88	22×30 0.86	25.4×25 0.89			
470							20×25 0.93						20×45 1.17	22×40 1.15	25.4×35 1.19	30×25 1.16		
680	20×25 0.88						20×30 1.20	22×25 1.16						22×50 1.51	25.4×45 1.58	30×35 1.56	35×30 1.60	
1000	20×30 1.14	22×25 1.10					20×40 1.62	22×35 1.59	25.4×30 1.65	30×25 1.69						30×45 2.07	35×40 2.13	
1500	20×40 1.50	22×35 1.47	25.4×30 1.53	30×25 1.56				22×45 2.03	25.4×35 2.01	30×30 2.07	35×25 2.11					30×60 2.67	35×50 2.66	40×40 2.61
2200		22×40 1.81	25.4×35 1.89	30×30 1.94	35×25 1.98				25.4×45 2.54	30×35 2.50	35×30 2.57						35×60 3.28	40×50 3.24
3300			25.4×45 2.46	30×35 2.43	35×30 2.49					30×45 3.20	35×35 3.15							
4700				30×45 3.08	35×40 3.17					30×60 4.09	35×50 4.08	40×40 4.00						
6800				30×60 3.91	35×50 3.90	40×40 3.82					35×70 5.18	40×60 5.14						
10000					35×70 5.01	40×50 4.65												

← Case size φ D × L (mm)
 ← Ripple current (A rms) at 105°C, 120Hz

LARGE ALUMINUM ELECTROLYTIC CAPACITORS

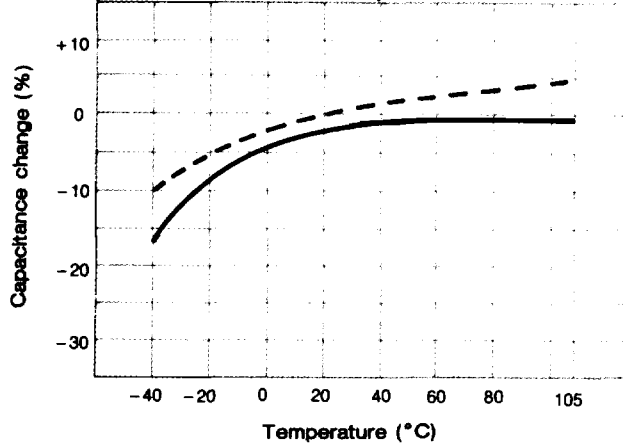
HA series

TYPICAL PERFORMANCE

— 50 V 10000 μ F
 ... 200V 220 μ F

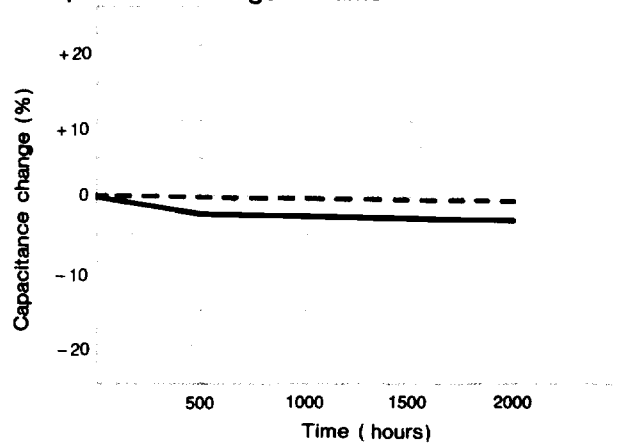
● **TEMPERATURE CHARACTERISTICS**

Capacitance change vs. temperature

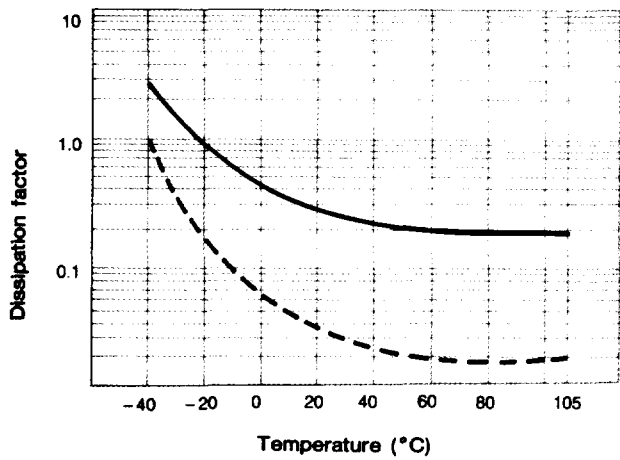


● **LOAD LIFE (at + 105°C)**

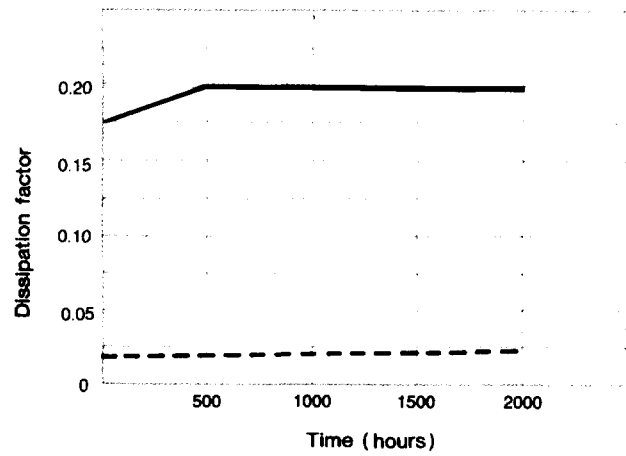
Capacitance change vs. time



Dissipation factor vs. temperature

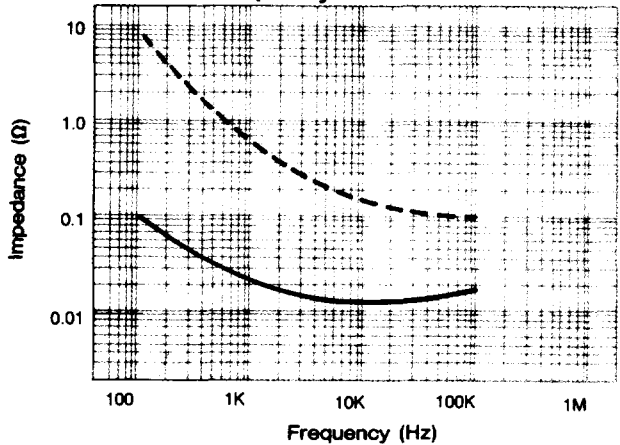


Dissipation factor vs. time



● **FREQUENCY CHARACTERISTICS**

Impedance vs. frequency



Leakage current vs. time

