

# LARGE ALUMINUM ELECTROLYTIC CAPACITORS



Upgrade

# HK

Miniaturized Series



Solvent Proof  
WV ≤ 100V



Miniaturized



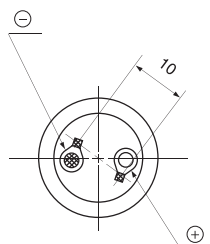
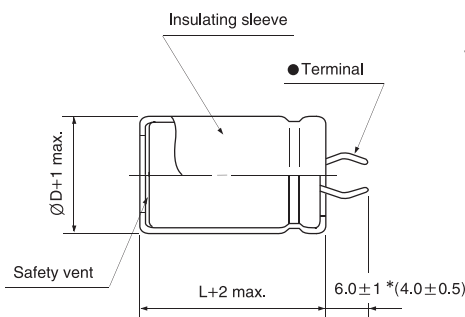
- Smaller case sizes than HE series
- Load life of 3000 hours at 105°C
- Complied to the RoHS directive



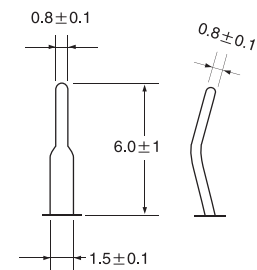
Item	Characteristics															
Operating temperature range	WV < 350 : -40 ~ +105°C, WV ≥ 350 : -25 ~ +105°C															
Capacitance tolerance	± 20% at 120Hz, 20°C															
Leakage current max.	$I = 3\sqrt{CV}$ (µA) (after 5 minutes)															
Dissipation factor max. (at 120Hz, 20°C)	Capacitance > 1000µF : tanδ increases by 0.01 for each 1000µF from below value.															
	<table border="1"> <thead> <tr> <th>WV</th> <th>6.3, 10</th> <th>16</th> <th>25, 35</th> <th>50, 63</th> <th>80, 100</th> <th>160~400</th> <th>450, 500</th> </tr> </thead> <tbody> <tr> <td>tanδ</td> <td>0.50</td> <td>0.40</td> <td>0.35</td> <td>0.25</td> <td>0.20</td> <td>0.15</td> <td>0.20</td> </tr> </tbody> </table>	WV	6.3, 10	16	25, 35	50, 63	80, 100	160~400	450, 500	tanδ	0.50	0.40	0.35	0.25	0.20	0.15
WV	6.3, 10	16	25, 35	50, 63	80, 100	160~400	450, 500									
tanδ	0.50	0.40	0.35	0.25	0.20	0.15	0.20									
Load life (after application of the rated voltage for 3000 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. The measurement shall be performed at 20°C by the KS C IEC 60384 - 4															

## ● DRAWING

Unit : mm



## ● Terminal



\* Shorter terminal(4.0±0.5) is also available upon request.  
Terminal length of height 20mm products is applied shorter terminal to standard terminal type.

## ● FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

WV	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz ≤
~ 100	~ 100	0.85	1.00	1.06	1.15	1.20
	160 ~ 250	0.85	1.00	1.20	1.25	1.45
350 ~		0.85	1.00	1.15	1.20	1.40

LARGE TYPES

# LARGE ALUMINUM ELECTROLYTIC CAPACITORS

**HK** series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV μF ∅D	6.3					10					16				
	22	25.4	30	35	40	22	25.4	30	35	40	22	25.4	30	35	40
8200											22×25 2.14				
10000						22×25 2.17					22×30 2.48	25.4×25 2.56			
12000	22×25 2.19					22×30 2.48					22×35 2.80	25.4×30 2.90	30×25 2.97		
15000	22×30 2.53					22×35 2.83	25.4×25 2.75				22×40 3.17	25.4×35 3.29	30×30 3.38		
18000	22×35 2.85	25.4×25 2.77				22×35 3.00	25.4×30 3.11				22×45 3.50	25.4×40 3.65	30×30 3.57		
22000	22×35 3.04	25.4×30 3.15				22×40 3.35	25.4×35 3.48	30×25 3.38				25.4×45 4.03	30×35 3.98		
27000	22×40 3.40	25.4×35 3.53	30×25 3.42			22×50 3.88	25.4×40 3.87	30×30 3.79				25.4×50 4.42	30×40 4.39	35×30 4.29	
33000	22×50 3.92	25.4×40 3.91	30×30 3.83				25.4×45 4.26	30×35 4.20					30×45 4.79	35×35 4.71	
39000		25.4×45 4.26	30×35 4.20				25.4×50 4.60	30×40 4.57	35×30 4.46				30×50 5.16	35×40 5.10	
47000		25.4×50 4.63	30×40 4.60	35×30 4.50				30×45 4.95	35×35 4.87					35×45 5.50	40×40 5.60
56000			30×50 5.17	35×40 5.12					35×45 5.49	40×40 5.59					40×50 6.22
68000				35×45 5.52	40×40 5.62						40×50 6.22				40×60 6.83

WV μF ∅D	25					35					50				
	22	25.4	30	35	40	22	25.4	30	35	40	22	25.4	30	35	40
2700											22×30 1.94				
3300						22×25 1.62					22×35 2.20				
3900						22×30 1.88					22×40 2.52	25.4×35 2.62	30×25 2.54		
4700	22×25 1.73					22×35 2.14	25.4×25 2.09				22×45 2.81	25.4×40 2.93	30×30 2.87		
5600	22×30 1.98					22×35 2.29	25.4×30 2.37	30×25 2.43			22×50 3.11	25.4×40 3.11	30×35 3.21		
6800	22×30 2.14					22×40 2.61	25.4×35 2.71	30×30 2.79				25.4×50 3.64	30×40 3.61	35×30 3.53	
8200	22×35 2.42	25.4×30 2.50				22×50 3.02	25.4×40 3.02	30×30 2.95					30×45 3.94	35×35 3.87	
10000	22×40 2.77	25.4×35 2.88					25.4×45 3.43	30×35 3.38					30×50 4.42	35×40 4.37	
12000	22×45 3.09	25.4×40 3.22	30×30 3.15				25.4×50 3.78	30×40 3.75	35×30 3.67					35×45 4.78	
15000		25.4×45 3.62	30×35 3.57	35×30 3.65				30×45 4.19	35×35 4.12					35×50 5.24	40×40 5.13
18000		25.4×50 3.98	30×40 3.95	35×35 4.06					35×40 4.52						40×50 5.76
22000			30×45 4.36	35×35 4.28					35×45 4.95	40×40 5.04					40×50 5.98
27000				35×45 4.92	40×40 5.01					40×50 5.92					40×60 6.61

WV μF ∅D	63					80					100				
	22	25.4	30	35	40	22	25.4	30	35	40	22	25.4	30	35	40
820						22×25 1.37					22×30 1.46	25.4×25 1.51			
1000						22×30 1.62	25.4×25 1.67				22×35 1.71	25.4×30 1.77			
1200	22×25 1.37					22×30 1.67	25.4×25 1.72				22×40 1.86	25.4×35 1.94	30×25 1.88		
1500	22×30 1.50	25.4×25 1.54				22×35 1.98	25.4×30 2.05				22×45 2.18	25.4×40 2.28	30×30 2.23		
1800	22×30 1.64	25.4×25 1.69				22×40 2.28	25.4×35 2.37	30×25 2.30				25.4×45 2.61	30×35 2.57		
2200	22×35 1.86	25.4×30 1.92				22×45 2.51	25.4×35 2.49	30×30 2.56				25.4×50 2.85	30×40 2.83	35×30 2.76	
2700	22×40 2.17	25.4×30 2.13	30×25 2.18				25.4×45 3.03	30×35 2.99					30×45 3.27	35×35 3.22	
3300	22×50 2.53	25.4×40 2.53	30×30 2.48				25.4×50 3.33	30×40 3.30	35×30 3.23				30×50 3.59	35×40 3.55	
3900		25.4×45 2.88	30×35 2.84					30×45 3.75	35×35 3.69					35×45 4.03	
4700		25.4×50 3.20	30×40 3.17	35×30 3.10				30×50 4.10	35×40 4.06					35×50 4.40	40×40 4.31
5600			30×45 3.51	35×35 3.46					35×45 4.44						40×50 4.88
6800			30×50 3.92	35×40 3.88					35×50 4.90	40×40 4.80					40×50 5.18
8200				35×45 4.22						40×50 5.32	← Case size ∅D×L (mm) ← Ripple current (Arms) at 105°C, 120Hz				
10000				35×50 4.74	40×40 4.64										

# LARGE ALUMINUM ELECTROLYTIC CAPACITORS



## HK series

### ● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV μF / ØD	160				200				250			
	22	25.4	30	35	22	25.4	30	35	22	25.4	30	35
220									22×25 0.90			
270					22×25 1.05				22×25 1.11			
330	22×25 1.01				22×25 1.23				22×30 1.31	25.4×25 1.36		
390	22×25 1.09				22×30 1.55	25.4×25 1.59			22×35 1.50	25.4×25 1.55		
470	22×25 1.47				22×30 1.564	25.4×25 1.61			22×40 1.65	25.4×30 1.63	30×25 1.68	
560	22×30 1.70	25.4×25 1.76			22×35 1.794	25.4×25 1.76	30×25 1.8055		22×45 1.80	25.4×35 1.87	30×25 1.84	
680	22×35 1.89	25.4×25 1.86			22×40 2.07	25.4×30 2.0585	30×25 2.116			25.4×40 2.05	30×30 2.12	35×25 2.21
820	22×40 2.18	25.4×30 2.16				25.4×35 2.20	30×30 2.22	35×25 2.27			30×35 2.34	35×30 2.44
1000	22×45 2.51	25.4×35 2.51	30×25 2.45			25.4×40 2.55	30×30 2.60	35×25 2.67			30×40 2.68	35×30 2.70
1200		25.4×40 2.72	30×30 2.69	35×25 2.76			30×35 2.88	35×30 2.96			30×45 3.00	35×35 3.00
1500		25.4×45 3.18	30×35 3.15	35×30 3.08			30×40 3.32	35×35 3.41				35×40 3.50
1800			30×40 3.60	35×30 3.65			30×50 3.82	35×40 3.92				
2200			30×45 4.13	35×35 4.10				35×45 4.35				
2700				35×40 4.61								

WV μF / ØD	350				400				450			
	22	25.4	30	35	22	25.4	30	35	22	25.4	30	35
68									22×20 0.47			
82					22×20 0.62				22×25 0.55			
100	22×25 0.58				22×25 0.74				22×25 0.72			
120	22×25 0.68				22×25 0.79				22×30 0.83	25.4×25 0.82		
150	22×25 0.76	25.4×25 0.81			22×30 0.94	25.4×25 0.91			22×35 0.92	25.4×25 0.90		
180	22×30 0.78	25.4×25 0.80			22×35 1.07	25.4×25 1.06			22×40 1.12	25.4×35 1.05	30×25 1.09	
220	22×35 0.93	25.4×30 0.95	30×25 0.98		22×40 1.18	25.4×30 1.18	30×25 1.20			25.4×35 1.18	30×30 1.20	
270	22×40 1.06	25.4×30 1.04	30×25 1.08			25.4×35 1.37	30×25 1.35			25.4×40 1.35	30×30 1.37	35×25 1.40
330	22×45 1.23	25.4×30 1.23	30×30 1.25	35×25 1.29		25.4×40 1.51	30×30 1.50	35×25 1.46			30×35 1.56	35×30 1.54
390		25.4×40 1.43	30×30 1.39	35×25 1.43			30×35 1.63	35×25 1.67			30×40 1.69	35×30 1.67
470		25.4×45 1.64	30×35 1.63	35×30 1.66			30×40 1.85	35×30 1.88				35×35 1.90
560			30×40 1.85	35×35 1.90				35×35 2.08				35×40 2.06
680			30×45 2.11	35×35 2.09				35×40 2.38				35×50 2.45
820				35×40 2.38				35×45 2.65				
1000				35×45 2.71								

WV μF / ØD	500				
	22	25.4	30	35	
82	22×35 0.65	25.4×30 0.68			
100	22×40 0.74	25.4×35 0.78	30×25 0.80		
120	22×45 0.80	25.4×35 0.82	30×30 0.82	35×25 0.82	
150		25.4×40 0.89	30×35 0.90	35×30 0.90	
180		25.4×45 1.12	30×40 1.15	35×30 1.12	
220			30×45 1.24	35×35 1.20	
270			30×50 1.30	35×40 1.35	
330			30×55 1.38	35×45 1.40	
390				35×50 1.64	
470				35×60 1.79	

← Case size ØD×L (mm)  
← Ripple current (Arms) at 105°C, 120Hz