Hongda Capacitors®
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HCK Series 105°C V- chip Aluminum Electrolytic Capacitor

Operating with wide temperature range -55~+105°C

Endurance 2000 hours

RoHS & REACH compliant, Halogen-free

SPECIFICATIONS

Items	Characteristics		
Operation Temperature Range	-55 ~ +105°C	-40 ~ +105°C	-25 ~ +105°C
Voltage Range	4 ~ 100V	160 ~ 400V	450V
Capacitance Range	0.1 ~ 8200μF	3.3 ~ 100μF	3.3 ~ 33μF
Capacitance Tolerance	±20% at 120Hz, 20°C		

Leakage Current

Rated Voltage	6.3 ~ 100V		160 ~ 450V
Case size	∅4~∅10	∅12.5~∅18	∅6.3~∅18
Time	After 2 min. application of rated voltage at 20°C	After 1 min. application of rated voltage at 20°C	After 5 min. application of rated voltage at 20°C
Leakage current	≤0.01CV or 3μA, whichever is greater	≤0.03CV or 4μA, whichever is greater	≤0.04CV+100μA, whichever is greater

C: Nominal capacitance (μF) , V: Rated voltage (V)

Dissipation Factor (tan δ)

Measurement frequency : 120Hz, Temperature: 20°C

Rated Voltage (V)		4	6.3	10	16	25	35	50	63	100	160~250	350~450
tan δ (max.)	∅4~∅10	0.42	0.30	0.26	0.22	0.16	0.14	0.12	0.10	0.10	0.20	0.25
	∅12.5~∅18	0.45	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25

Stability at Low Temperature

Measurement frequency : 120Hz

Rated Voltage (V)			4	6.3	10	16	25	35	50~63	100	160~250	350~450
Impedance Ratio ZT/Z20 (max.)	∅4~∅10	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2	3	2	3
		Z(-55°C)/Z(20°C)	15	8	6	4	4	3	3	4	3	6
	∅12.5~∅18	Z(-25°C)/Z(20°C)	7	5	4	3	2	2	2	2	2	4
		Z(-55°C)/Z(20°C)	17	12	10	8	5	4	3	3	6	10

Load Life

After 2000 hours application of the rated voltage at 105°C, they meet the characteristics listed below.

Capacitance Change	Within ±20% of initial value for capacitors of 10V or more (Within ±30% of initial value for capacitors of 4V or less)
Dissipation Factor	200% or less of initial specified value
Leakage Current	initial specified value or less

Shelf Life

After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above.

Resistance to Soldering Heat

After reflow soldering and restored at room temperature, they meet the characteristics listed below.

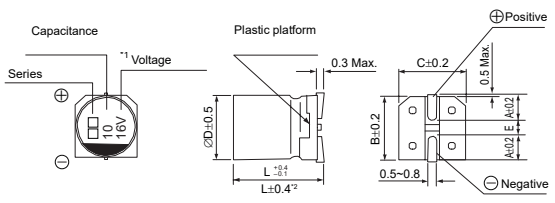
Capacitance Change	Within ±10% of initial value
Dissipation Factor	initial specified value or less
Leakage Current	initial specified value or less

Marking

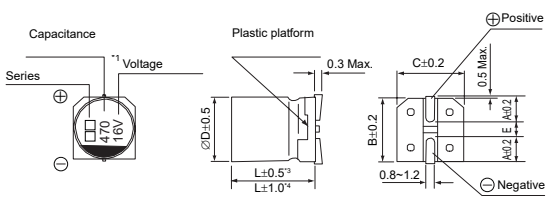
Black print on the case top.

DRAWING (Unit: mm)

(∅4~∅6.3×7.7)



(∅8×10.5~∅18)



*1. Voltage mark for 6.3V is [6V]
*2. Applicable to ∅6.3×7.7
*3. Applicable to ∅8×10.5~∅10
*4. Applicable to ∅12.5~∅18

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DIMENSIONS (Unit: mm)

ØD x L	4 x 5.4	5 x 5.4	6.3 x 5.4 / 7.7	8 x 6.2 / 10.5	10 x 10.5 /12.5 / 13.5	12.5 x 13.5 / 16	16 x 16.5	18 x 16.5 / 18.5
A	2.0	2.2	2.6	3.3 / 3.0	3.3	4.9	5.8	6.2
B	4.3	5.3	6.6	8.4	10.4	13.0	17.0	19.0
C	4.3	5.3	6.6	8.4	10.4	13.0	17.0	19.0
E ± 0.2	1.0	1.4	1.9	2.3 / 3.1	4.7	4.7	6.4	6.4
L	5.4	5.4	5.4 / 7.7	6.2 / 10.5	10.5 / 12.5 / 13.5	13.5 / 16	16.5	16.5 / 18.5

DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 120Hz

WV / Code / μF		4		6.3		10		16		25	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
4.7	475							4 × 5.4	13	4 × 5.4	17
10	106							4 × 5.4	20	5 × 5.4 (4 × 5.4)	23 (20)
22	226	4 × 5.4	20	4 × 5.4	23	5 × 5.4 (4 × 5.4)	29 (22)	5 × 5.4 (4 × 5.4)	32 (25)	6.3 × 5.4 (5 × 5.4)	39 (32)
33	336	5 × 5.4 (4 × 5.4)	30 (25)	5 × 5.4 (4 × 5.4)	34 (30)	5 × 5.4 (4 × 5.4)	35 (30)	6.3 × 5.4 (5 × 5.4)	45 (35)	6.3 × 5.4 (5 × 5.4)	48 (35)
47	476	5 × 5.4 (4 × 5.4)	36 (30)	5 × 5.4 (4 × 5.4)	38 (35)	5 × 5.4	38	6.3 × 5.4 (5 × 5.4)	55 (40)	6.3 × 5.4	60
100	107	6.3 × 5.4 (5 × 5.4)	64 (54)	6.3 × 5.4 (5 × 5.4)	69 (59)	6.3 × 5.4 (5 × 5.4)	80 (60)	6.3 × 5.4	80	6.3 × 7.7 (6.3 × 5.4) (8 × 6.2)	100 (80) (130)
150	157	6.3 × 5.4	80	6.3 × 5.4	85	6.3 × 5.4	85	6.3 × 7.7	105	8 × 10.5 (6.3 × 7.7)	240 (120)
220	227	6.3 × 5.4	90	6.3 × 7.7 (6.3 × 5.4)	120 (95)	6.3 × 7.7 (6.3 × 5.4)	120 (95)	8 × 10.5 (6.3 × 7.7)	270 (120)	8 × 10.5	270
330	337	6.3 × 7.7	120	6.3 × 7.7	120	8 × 10.5 (6.3 × 7.7)	290 (135)	8 × 10.5	290	10 × 10.5 (8 × 10.5)	380 (290)
470	477	6.3 × 7.7	120	8 × 10.5 (6.3 × 7.7)	320 (120)	10 × 10.5 (8 × 10.5)	380 (320)	10 × 10.5 (8 × 10.5)	380 (290)	10 × 10.5	380
680	687	8 × 10.5	320	8 × 10.5	350	10 × 10.5 (8 × 10.5)	380 (350)	10 × 10.5	380	10 × 13.5	400
1000	108	8 × 10.5	320	10 × 10.5 (8 × 10.5)	410 (350)	10 × 10.5	410	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	550 (460) (410)	12.5 × 13.5	580
1500	158	10 × 10.5	410	10 × 13.5 (10 × 10.5)	450 (410)	10 × 13.5	460	12.5 × 13.5	550	12.5 × 16	850
2200	228	10 × 13.5 (10 × 10.5)	440 (410)	12.5 × 13.5 (10 × 13.5)	680 (560)	12.5 × 13.5	680	16 × 16.5 (12.5 × 16)	900 (750)	16 × 16.5	1050
3300	338	10 × 13.5	490	12.5 × 16 (12.5 × 13.5)	850 (810)	16 × 16.5	1000	16 × 16.5	1000	18 × 16.5	1150
4700	478	12.5 × 13.5	600	16 × 16.5	1000	16 × 16.5	1000	18 × 16.5	1225	18 × 18.5	1300
6800	688	16 × 16.5 (12.5 × 16)	950 (650)	18 × 16.5	1290	18 × 16.5	1290				
8200	828			18 × 18.5	1450	18 × 18.5	1450				

WV / Code / μF		35		50		63		100	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
0.1	104			4 × 5.4	2	4 × 5.4	2		
0.22	224			4 × 5.4	4	4 × 5.4	4		
0.33	334			4 × 5.4	4	4 × 5.4	4		
0.47	474			4 × 5.4	5	4 × 5.4	5		
1	105			4 × 5.4	8	4 × 5.4	8	4 × 5.4	8
2.2	225			4 × 5.4	12	4 × 5.4	12	6.3 × 5.4 (5 × 5.4)	14 (12)
3.3	335	4 × 5.4	13	4 × 5.4	14	5 × 5.4	17	6.3 × 7.7 (6.3 × 5.4)	55 (20)
4.7	475	4 × 5.4	17	5 × 5.4 (4 × 5.4)	20 (14)	5 × 5.4	20	6.3 × 7.7 (6.3 × 5.4)	50 (21)
10	106	5 × 5.4 (4 × 5.4)	27 (18)	6.3 × 5.4 (5 × 5.4)	32 (27)	6.3 × 7.7 (6.3 × 5.4)	58 (32)	8 × 10.5 (8 × 6.2) (6.3 × 7.7)	77 (55) (58)
22	226	6.3 × 5.4 (5 × 5.4)	44 (36)	6.3 × 7.7 (6.3 × 5.4)	58 (44)	8 × 10.5 (6.3 × 7.7)	100 (58)	10 × 10.5 (8 × 10.5)	126 (100)
33	336	6.3 × 5.4	50	6.3 × 7.7	65	8 × 10.5	140	10 × 10.5	150
47	476	6.3 × 7.7 (6.3 × 5.4)	80 (58)	8 × 10.5 (6.3 × 7.7)	170 (70)	10 × 10.5 (8 × 10.5)	170 (160)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	250 (180) (160)
68	686							12.5 × 13.5 (10 × 13.5)	300 (180)

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 120Hz

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DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 120Hz

WV / Code / µF		35		50		63		100		160	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
22	226									10 × 13.5	50
33	336									12.5 × 13.5	95
47	476							10 × 10.5	160	12.5 × 13.5 (16 × 16.5)	205 (240)
100	107	8 × 10.5 (6.3 × 7.7)	240 (92)	10 × 10.5 (8 × 10.5)	250 (210)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	400 (350) (310)	16 × 16.5 (12.5 x 13.5)	450 (380)	16 × 16.5	250
150	157	8 × 10.5	240	10 × 10.5	300	10 × 13.5	350				
220	227	10 × 10.5 (8 × 10.5)	270 (250)	10 × 13.5 (10 × 10.5)	330 (280)	16 × 16.5 (12.5 × 13.5)	560 (470)	16 × 16.5	550		
330	337	10 × 10.5	370	16 × 16.5 (12.5 × 13.5) (10 × 13.5)	600 (490) (295)	16 × 16.5 (12.5 × 16)	700 (510)	18 × 16.5	590		
470	477	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	520 (400) (370)	16 × 16.5 (12.5 × 16) (12.5 × 13.5)	700 (550) (470)	16 × 16.5	750	18 × 18.5	980		
680	687	12.5 × 13.5	530	16 × 16.5	750	18 × 16.5	790				
1000	108	16 × 16.5 (12.5 × 16)	800 (600)	18 × 16.5	990						
1500	158	16 × 16.5	750								
2200	228	18 × 16.5	1050								

WV / Code / µF		200		250		350		400		450	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
3.3	335							10 × 13.5 (8 × 10.5)	40 (35)	10 × 13.5 (8 × 12.5)	40 (38)
4.7	475			10 × 13.5	65	10 × 13.5	45	10 × 13.5 (12.5 × 13.5)	45 (48)	10 × 13.5 (12.5 × 13.5)	42 45
10	106	10 × 13.5	75	10 × 13.5	70	12.5 × 13.5	50	12.5 × 13.5	50	12.5 × 13.5	70
22	226	12.5 × 13.5	105	12.5 × 13.5	105	16 × 16.5	85	16 × 16.5	85	16 × 16.5	85
33	336	12.5 × 13.5	120	16 × 16.5	180	18 × 16.5	100	18 × 16.5	100	18 × 16.5	100
47	476	16 × 16.5	220	16 × 16.5	220						
100	107	18 × 16.5	280	18 × 16.5	260						

•Case size ∅D×L(mm), ripple current (mA rms) at 105°C, 120Hz

FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

Frequency			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient	Ø4 ~ Ø10	0.1 ~ 68µF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300µF	0.85	1.00	1.08	1.20	1.30
	Ø12.5 ~ Ø18	~ 68µF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680µF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800µF	0.85	1.00	1.10	1.13	1.15

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5~10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

◆ How to order

HCK	106	M	0035	0405	R	-
↓	↓	↓	↓	↓	↓	↓
Type	Capacitance code	Tolerance	Rated Voltage	Size Code	Package	Additional characters may be added for special requirements
HCK	pF Code: 1st two digits represent significant figures 3rd digit represents mulitplier (number of zeros to follow) 106 = 10uF 107 = 100uF	M: +/-20%	Code 0035: 35VDC For DC Voltage 0006: 6.3VDC 0035: 35VDC 0450: 450VDC	Code 0405: Size 4x5.4mm Size for V-chip E-cap 0405: Size 4x5.4mm 1010: Size 10x10.5mm 1818: Size 18x18.5mm	R: Tape & Reel	