

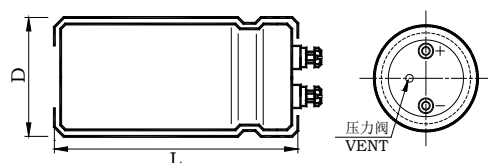
- HR P144
↑ Long life
HA
↑ Increased to 105°C
TA P133



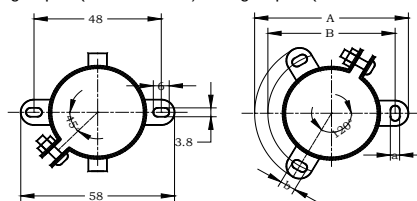
SPECIFICATIONS											
Items	Characteristics										
Operating Temperature Range	-40~+105°C						-25~+105°C				
Rated Working Voltage Range	25~100V						160~600V				
Capacitance Range	220~330000 μ F										
Capacitance Tolerance	±20% (20°C, 120Hz)										
Dissipation Factor (MAX) 20°C, 120Hz	U _R (V)	25-100	160	200	250	350	400	450	500	550	600
	tanδ	见规格表	0.15							0.20	
Leakage Current (MAX)	I=0.01C _R U _R or 5mA whichever is minimum. (at 20°C, After 5 minutes application of rated voltage) I=Leakage Current (μA) U _R =Rated Voltage (V) C _R =Rated Capacitance (μF)										

	Useful Life		Load Life	Endurance Test	Shelf Life	
Life Time	4000h	>200000h	2000h	2000h	1000h U _R ≤500V	500h U _R ≥550V
Leakage Current	≤Specified value		≤Specified value	≤Specified value	≤Specified value	
tanδ Change	≤300% of specified value		≤規定値の 175% ≤175% of specified value	≤ 130% of specified value	≤150% of specified value	
Capacitance Change	Within±30% of initial value		Within±15% of initial value	Within±10% of initial value	Within±15% of initial value	
Condition Applied Voltage Applied Ripple Current Applied Temperature Failure Rate Level	U _R I _R 105°C ≤1% Failure Rate	U _R 1.2×I _R 40°C ≤1% Failure Rate	U _R I _R 105°C 0%	U _R I _R =0 105°C 0%	U _R =0 I _R =0 105°C 0%	Back up to 20 °C and placed more than 24 hours. U _R to be applied for 60 min before measurement.

Ring Clip: T (Φ35 Standard) Ring Clip: S (Φ51~Φ89 Standard)



L-Type: Small terminal M5 thread
S-Type: Large terminal M6 thread



Ring Clip Dimensions:

ΦD	A	B	a	b
51	73.0	63.5	4.5	7
64	85.1	76.2	4.5	7
76	98.4	88.9	4.5	7
89	111.1	101.6	4.5	7

For detailed dimension & tolerance, please refer to P130

- Please consult to us for the terminal type not displayed in content.

◆ Rated Ripple Current Multiplies

- Example HA 400V4700μF Φ76×130 ±20%

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 H A G 4 7 2 M 7 6 1 3 0 S V A

special requirement
 Sleeve Code
 Lead Form Code
 (example: 130→130) The height of the code (mm)
 (example: 64→64, 76→76) Diameter code (mm)
 (example: ±20%→M) Capacitance Tolerance code
 (example: 4700→472, 33000→333) Capacitance Code (μF)
 (example: 400V→G, 500V→C) Rated Voltage Code (V)
 (example: HA→HA) Series Code

- Frequency coefficient

Frequency (Hz)	50(60)	100(120)	300	1k	≥10k
Coefficient	0.80	1.00	1.18	1.30	1.40

- Temperature coefficient

Temperature (°C)	+40	+55	+70	+85	+105
Coefficient	3.30	2.85	2.40	2.00	1.00



HA SERIES

◆ Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz Z (Amps)	Catalog Part Number
25 (32)	10000	35×60	0.35	3.2	HAU103M35060□VA
	15000	35×80	0.35	4.8	HAU153M35080□VA
	22000	35×80	0.35	5.8	HAU223M35080□VA
	33000	35×100	0.40	7.2	HAU333M35100□VA
	47000	51×80	0.40	9.3	HAU473M51080□VA
	68000	51×115	0.50	11.5	HAU683M51115□VA
	100000	64×95	0.60	13.0	HAU104M64095□VA
	150000	64×115	0.80	17.9	HAU154M64115□VA
	220000	76×115	1.00	21.3	HAU224M76115□VA
35 (44)	330000	89×130	1.00	23.4	HAU334M89130□VA
	6800	35×60	0.30	2.8	HAT682M35060□VA
	10000	35×80	0.30	4.1	HAT103M35080□VA
	15000	35×80	0.30	5.2	HAT153M35080□VA
	22000	35×100	0.35	6.3	HAT223M35100□VA
	33000	51×80	0.40	8.7	HAT333M51080□VA
	47000	51×95	0.45	11.2	HAT473M51095□VA
	68000	51×150	0.50	14.3	HAT683M51150□VA
	100000	64×115	0.60	17.2	HAT104M64115□VA
50 (63)	150000	76×115	0.70	20.7	HAT154M76115□VA
	220000	89×130	0.70	23.4	HAT224M89130□VA
	3300	35×60	0.20	2.5	HAR332M35060□VA
	4700	35×60	0.25	3.7	HAR472M35060□VA
	6800	35×80	0.25	3.9	HAR682M35080□VA
	10000	35×80	0.25	4.7	HAR103M35080□VA
	15000	35×100	0.30	5.7	HAR153M35100□VA
	22000	51×80	0.35	8.1	HAR223M51080□VA
	33000	51×115	0.40	11.1	HAR333M51115□VA
63 (79)	47000	64×95	0.40	13.9	HAR473M64095□VA
	68000	64×115	0.45	16.6	HAR683M64115□VA
	100000	76×115	0.50	19.5	HAR104M76115□VA
	150000	76×115	0.50	23.9	HAR154M76115□VA
	2200	35×60	0.15	2.5	HAQ222M35060□VA
	3300	35×60	0.20	2.7	HAQ332M35060□VA
	4700	35×80	0.20	3.8	HAQ472M35080□VA
	6800	35×80	0.20	4.4	HAQ682M35080□VA
	10000	35×100	0.25	5.3	HAQ103M35100□VA
80 (100)	15000	51×80	0.25	6.8	HAQ153M51080□VA
	22000	51×95	0.30	9.0	HAQ223M51095□VA
	33000	64×95	0.30	12.0	HAQ333M64095□VA
	47000	64×115	0.35	14.5	HAQ473M64115□VA
	68000	76×115	0.40	18.4	HAQ683M76115□VA
	100000	89×130	0.40	20.0	HAQ104M89130□VA
	2200	35×60	0.15	2.8	HAP222M35060□VA
	3300	35×80	0.15	3.6	HAP332M35080□VA
	4700	35×80	0.15	4.3	HAP472M35080□VA
100 (125)	6800	35×100	0.20	4.9	HAP682M35100□VA
	10000	51×80	0.20	6.4	HAP103M51080□VA
	15000	51×95	0.25	7.4	HAP153M51095□VA
	22000	64×95	0.25	11.0	HAP223M64095□VA
	33000	76×95	0.30	13.9	HAP333M76095□VA
	47000	76×115	0.30	16.5	HAP473M76115□VA
	68000	89×130	0.30	19.7	HAP683M89130□VA
	1000	35×60	0.15	1.6	HAO102M35060□VA
	1500	35×60	0.15	2.0	HAO152M35060□VA
	2200	35×80	0.15	3.0	HAO222M35080□VA
	3300	35×80	0.15	4.2	HAO332M35080□VA
	4700	35×100	0.15	5.0	HAO472M35100□VA
	6800	51×80	0.15	5.8	HAO682M51080□VA

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz Z (Amps)	Catalog Part Number
100 (125)	10000	51×95	0.15	7.8	HAO103M51095□VA
	15000	64×95	0.20	10.4	HAO153M64095□VA
	22000	76×95	0.20	12.5	HAO223M76095□VA
	33000	76×130	0.25	15.2	HAO333M76130□VA
	47000	89×130	0.25	19.3	HAO473M89130□VA
160 (200)	470	35×60	0.15	1.2	HAN471M35060□VA
	680	35×60	0.15	1.3	HAN681M35060□VA
	1000	35×80	0.15	1.9	HAN102M35080□VA
	1500	35×80	0.15	2.4	HAN152M35080□VA
	2200	35×100	0.15	3.2	HAN222M35100□VA
	3300	51×80	0.15	4.2	HAN332M51080□VA
	4700	51×95	0.15	5.5	HAN472M51095□VA
	6800	64×95	0.15	7.1	HAN682M64095□VA
	10000	76×95	0.15	9.1	HAN103M76095□VA
	15000	76×130	0.15	11.8	HAN153M76130□VA
200 (250)	22000	89×130	0.15	15.2	HAN223M89130□VA
	330	35×60	0.15	0.9	HAL331M35060□VA
	470	35×60	0.15	1.2	HAL471M35060□VA
	680	35×80	0.15	1.4	HAL681M35080□VA
	1000	35×100	0.15	2.0	HAL102M35100□VA
	1500	35×80	0.15	2.5	HAL152M35080□VA
	2200	51×95	0.15	3.2	HAL222M51095□VA
	3300	51×95	0.15	4.3	HAL332M51095□VA
	4700	64×95	0.15	5.2	HAL472M64095□VA
	6800	64×115	0.15	7.3	HAL682M64115□VA
250 (300)	10000	76×155	0.15	9.3	HAL103M76155□VA
	15000	89×157	0.15	12.5	HAL153M89157□VA
	330	35×60	0.15	0.9	HAJ331M35060□VA
	470	35×60	0.15	1.1	HAJ471M35060□VA
	680	35×80	0.15	1.5	HAJ681M35080□VA
	1000	35×100	0.15	2.1	HAJ102M35100□VA
	1500	51×80	0.15	2.6	HAJ152M51080□VA
	2200	51×95	0.15	3.4	HAJ222M51095□VA
	3300	64×95	0.15	4.6	HAJ332M64095□VA
	4700	64×115	0.15	6.0	HAJ472M64115□VA
350 (400)	6800	76×115	0.15	7.9	HAJ682M76115□VA
	10000	76×155	0.15	10.2	HAJ103M76155□VA
	15000	89×157	0.15	13.5	HAJ153M89157□VA
	470	35×60	0.15	1.4	HAH471M35060□VA
	680	35×80	0.15	1.9	HAH681M35080□VA
	1000	35×120	0.15	2.8	HAH103M35120□VA
	1500	51×80	0.15	3.5	HAH152M51080□VA
	2200	51×115	0.15	4.8	HAH222M51115□VA
	3300	64×95	0.15	6.1	HAH332M64095□VA
	4700	76×115	0.15	8.3	HAH472M76115□VA
400 (450)	6800	76×155	0.15	11.0	HAH682M76155□VA
	10000	89×157	0.15	14.6	HAH103M89157□VA
	15000	89×195	0.15	19.1	HAH153M89195□VA
	1000	51×80	0.15	2.7	HAG102M51080□VA
	1200	51×95	0.15	3.2	HAG122M51095□VA
	1500	51×115	0.15	3.9	HAG152M51115□VA
	1800	51×130	0.15	4.4	HAG182M51130□VA
	2200	64×95	0.15	4.9	HAG222M64095□VA
	2700	64×115	0.15	5.7	HAG272M64115□VA
	3300	64×130	0.15	6.6	HAG332M64130□VA
	3900	76×115	0.15	7.5	HAG392M76115□VA
	4700	76×130	0.15	8.7	HAG472M76130□VA
	5600	76×155	0.15	10.3	HAG562M76155□VA

*□Enter the appropriate terminal code



HA SERIES

◆ Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz Z (Arms)	Catalog Part Number
400 (450)	6800	89×157	0.15	12.1	HAG682M89157□VA
	8200	89×157	0.15	13.2	HAG822M89157□VA
	10000	89×195	0.15	15.6	HAG103M89195□VA
	12000	89×195	0.15	17.1	HAG123M89195□VA
	15000	89×235	0.15	20.8	HAG153M89235□VA
450 (500)	220	35×60	0.15	1.1	HAE221M35060□VA
	330	35×100	0.15	1.5	HAE331M35100□VA
	470	51×80	0.15	2.1	HAE471M51080□VA
	680	51×95	0.15	2.7	HAE681M51095□VA
	1000	51×105	0.15	4.2	HAE102M51105□VA
	1500	51×130	0.15	5.7	HAE152M51130□VA
	2200	64×115	0.15	7.3	HAE222M64115□VA
	2700	64×130	0.15	8.3	HAE272M64130□VA
	3300	76×130	0.15	10.1	HAE332M76130□VA
	4700	76×155	0.15	12.6	HAE472M76155□VA
	5600	89×157	0.15	15.8	HAE562M89157□VA
	6800	89×157	0.15	18.0	HAE682M89157□VA
	8200	89×195	0.15	19.8	HAE822M89195□VA
	10000	89×195	0.15	22.0	HAE103M89195□VA
	12000	89×235	0.15	26.0	HAE123M89235□VA
	15000	89×250	0.15	29.0	HAE153M89250□VA
500 (550)	330	51×80	0.15	1.5	HAC331M51080□VA
	470	51×80	0.15	1.8	HAC471M51080□VA
	680	51×105	0.15	2.5	HAC681M51105□VA
	1000	51×115	0.15	3.1	HAC102M51115□VA
	1500	64×115	0.15	4.4	HAC152M64115□VA
	2200	64×130	0.15	5.6	HAC222M64130□VA
	3300	76×155	0.15	8.1	HAC332M76155□VA
	4700	89×157	0.15	10.6	HAC472M89157□VA

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz Z (Arms)	Catalog Part Number
500 (500)	5600	89×157	0.15	11.6	HAC562M89157□VA
	6800	89×170	0.15	13.3	HAC682M89170□VA
	8200	89×235	0.15	16.9	HAC822M89235□VA
	10000	89×250	0.15	18.1	HAC103M89250□VA
	820	51×115	0.20	3.2	HAZ821M51115□VA
550 (600)	1000	51×130	0.20	3.7	HAZ102M51130□VA
	1200	64×95	0.20	4.1	HAZ122M64095□VA
	1500	64×115	0.20	4.9	HAZ152M64115□VA
	1800	64×130	0.20	5.7	HAZ182M64130□VA
	2200	76×115	0.20	6.6	HAZ222M76115□VA
	2700	76×130	0.20	7.4	HAZ272M76130□VA
	3300	76×155	0.20	8.6	HAZ332M76155□VA
	3900	76×170	0.20	9.8	HAZ392M76170□VA
	4700	89×157	0.20	11.0	HAZ472M89157□VA
	5600	89×195	0.20	12.9	HAZ562M89195□VA
	6800	89×220	0.20	14.0	HAZ682M89220□VA
	8200	89×250	0.20	14.9	HAZ822M89250□VA
	820	51×130	0.20	3.0	HAB821M51130□VA
	1000	64×95	0.20	3.5	HAB102M64095□VA
	1200	64×115	0.20	4.2	HAB122M64115□VA
	1500	64×130	0.20	5.0	HAB152M64130□VA
600 (650)	1800	76×115	0.20	5.7	HAB182M76115□VA
	2200	76×130	0.20	6.6	HAB222M76130□VA
	2700	76×155	0.20	7.6	HAB272M76155□VA
	3300	76×170	0.20	8.4	HAB332M76170□VA
	3900	89×157	0.20	9.7	HAB392M89157□VA
	4700	89×195	0.20	11.4	HAB472M89195□VA
	5600	89×220	0.20	12.3	HAB562M89220□VA
	6800	89×250	0.20	14.0	HAB682M89250□VA

*□Enter the appropriate terminal code

*Please ask for advice for other sizes.

*Aluminum electrolytic capacitor will emit heat when ripple current is applied, the performance will deteriorate when temp. rises. the useful life will be half of original life when temp rises every 5°C. Please reduce the ripple current when using capacitor.