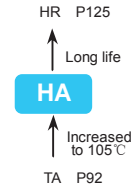


HA 系列 SERIES



- 全焊结构，确保可靠的电气接触性
All-welded construction ensures reliable electrical contact
- 额定工作电压 500V 以下
Rated working voltage below 500V
- 保证 105℃、2000 小时寿命。(叠加纹波电流)
Endurance with ripple current: 2000 hours at 105℃
- 应用：变频器、专业电源和电焊机
Applications: Frequency converters, Professional power supplies and Electric welding machine



规格表 SPECIFICATIONS

项目 Items	特性 Characteristics																			
工作温度范围 Operating Temperature Range	-40~+105℃	-25~+105℃																		
额定工作电压范围 Rated Working Voltage Range	25~100V	160~500V																		
静电容量范围 Capacitance Range	220~330000 μF																			
静电容量允许偏差 Capacitance Tolerance	±20% (20℃, 120Hz)																			
损耗角正切值 Dissipation Factor (MAX) 20℃, 120Hz	<table border="1"> <tr> <td>U_R(V)</td> <td>25-100</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> <td>500</td> </tr> <tr> <td>tanδ</td> <td>见规格表</td> <td colspan="7">0.15</td> </tr> </table>		U _R (V)	25-100	160	200	250	350	400	450	500	tanδ	见规格表	0.15						
U _R (V)	25-100	160	200	250	350	400	450	500												
tanδ	见规格表	0.15																		
漏电流 Leakage Current (MAX)	I=0.01C _R U _R 或 5mA 取小者 (20℃, 施加额定电压 5 分钟后) I=0.01C _R U _R or 5mA whichever is minimum. (at 20℃, After 5 minutes application of rated voltage) I=漏电流 (μA) U _R =额定电压 (V) C _R =静电容量 (μF) Leakage Current Rated Voltage Rated Capacitance																			

	使用寿命 Useful Life		负荷寿命 Load Life	耐久性特性 Endurance Test	高温无负荷特性 Shelf Life
产品寿命 Life Time	4000h	>200000h	2000h	2000h	1000h
漏电流 Leakage Current	≤规定值 ≤Specified value		≤规定值 ≤Specified value	≤规定值 ≤Specified value	≤规定值 ≤Specified value
损耗角正切值变化率 tanδ Change	≤规定值的 300% ≤300% of specified value		≤规定值的 175% ≤175% of specified value	≤规定值的 130% ≤130% of specified value	≤规定值的 150% ≤150% of specified value
静电容量变化率 Capacitance Change	初始值±30%以内 Within±30% of initial value		初始值±15%以内 Within±15% of initial value	初始值±10%以内 Within±10% of initial value	初始值±15%以内 Within±15% of initial value
施加条件 Condition 施加电压 Applied Voltage 施加纹波电流 Applied Ripple Current 环境温度 Applied Temperature 失效等级 Failure Rate Level	U _R I _R 105℃ ≤1% Failure Rate	U _R 1.2×I _R 40℃ ≤1% Failure Rate	U _R I _R 105℃ 0%	U _R I _R =0 105℃ 0%	U _R =0 I _R =0 105℃ 0% Back up to 20℃ and placed more than 24 hours. U _R to be applied for 60 min before measurement.

尺寸图 Dimensions

●常用端子型式代码: Terminal Code

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

Ring Clip: T (Φ35 Standard)

Ring Clip: S (Φ51~Φ89 Standard)

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

产品详细尺寸和公差请参照 P90
For detailed dimension & tolerance, please refer to P90

●记载以外的端子形状，请另行咨询。Please consult to us for the terminal type not displayed in content.

产品编码体系 PART NUMBER SYSTEM

●例如: 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

客户特殊要求 special requirement
套管材代码 Sleeve Code
端子型式代码 Lead Form Code
高度代码 (例: 130→130) The height of the code (mm)
直径代码 (例: 64→64, 76→76) Diameter code (mm)
容差代码 (例: ±20%→M) Capacitance Tolerance code
容量代码 (例: 4700→472, 33000→333) Capacitance Code (μF)
电压代码 (例: 400V→G, 500V→C) Rated Voltage Code (V)
产品系列代码 (例: HA→HA) Series Code

纹波电流修正系数 Rated Ripple Current Multiplies

●频率修正系数 Frequency coefficient

频率 Frequency (Hz)	50(60)	100(120)	300	1k	≥10k
系数 Coefficient	0.80	1.00	1.10	1.30	1.40

●温度修正系数 Temperature coefficient

温度 Temperature (℃)	+40	+55	+70	+85	+105	
系数 Coefficient	≤250V	4.9	3.9	3.0	1.8	1.0
	>250V	3.8	3.3	2.5	2.0	1.0



◆产品一览表 Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C 120Hz	Ripple Current 105°C 120Hz (Arms)	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
330000	89×130	1.00	23.4	HAU334M89130□VA	
35 (44)	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
	150000	76×115	0.70	20.7	HAT154M76115□VA
220000	89×130	0.70	23.4	HAT224M89130□VA	
50 (63)	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
	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	
63 (79)	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
	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	
80 (100)	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
	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	
100 (125)	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 (Arms)	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	
22000	89×130	0.15	15.2	HAN223M89130□VA	
200 (250)	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	HAL472M6495□VA
	6800	64×115	0.15	7.3	HAL682M64115□VA
10000	76×155	0.15	9.3	HAL103M76155□VA	
15000	89×155	0.15	12.5	HAL153M89155□VA	
250 (300)	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
	6800	76×115	0.15	7.9	HAJ682M76115□VA
10000	76×155	0.15	10.2	HAJ103M76155□VA	
15000	89×155	0.15	13.5	HAJ153M89155□VA	
350 (400)	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
	6800	76×155	0.15	11.0	HAH682M76155□VA
	10000	89×155	0.15	14.6	HAH103M89155□VA
15000	89×195	0.15	19.1	HAH153M89195□VA	
400 (450)	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	

*产品编码中□内为产品端子引出型式代码
*□Enter the appropriate terminal code

HA SERIES

◆ 产品一览表 Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μ F)	Size D×L (mm)	tan δ 20°C 120Hz	Ripple Current 105°C 120Hz (Arms)	Catalog Part Number
400 (450)	6800	89×155	0.15	12.1	HAG682M89155□VA
	8200	89×155	0.15	13.2	HAG822M89155□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	89×155	0.15	15.8	HAE562M89155□VA
	6800	89×155	0.15	18.0	HAE682M89155□VA

WV _{DC} (Surge Voltage) (V)	Cap (μ F)	Size D×L (mm)	tan δ 20°C 120Hz	Ripple Current 105°C 120Hz (Arms)	Catalog Part Number
450 (500)	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
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		89×155	0.15	10.6	HAC472M89155□VA
5600		89×155	0.15	11.6	HAC562M89155□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

*产品编码中□内为产品端子引出型式代码

*□Enter the appropriate terminal code

*记载之外的体积, 请另行咨询。

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

*铝电解电容器由于承受纹波电流而发热, 随着温升而发生性能劣化, 每升高5°C寿命减少一半。请在使用中降低产品承受的纹波电流。

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.