

HA series

- Low ESR, high ripple current 低等效串联电阻, 耐高纹波电流
- Load life of 2000 hours at 145°C 工作寿命 145°C-2000 小时
- Compliant to the RoHS2.0 directive 符合 RoHS2.0 规范
- Compliant to AEC-Q200, contact us for more information 符合 AEC-Q200 标准, 详情请另行咨询



Specifications 系列参数

Items 项目	Characteristics 特性	
Rated Voltage Range 额定电压范围	25V 80V DC	
Capacitance Range 容量范围	10 ~ 470μF	
Capacitance Tolerance 容量偏差	M : ±20%	
Operating Temp. Range 工作温度范围	-55°C ~ +145°C	
Dissipation Factor 损耗角正切	Not to exceed the value specified 不超过规格值	
Leakage Current 漏电流	$I \leq 0.01CV$ (after 2 minutes) 充电 2 分钟后测试漏电流不超过 $0.01 \times (\text{静电容量 } \mu\text{F}) \times (\text{额定电压 } V)$	
ESR (100K~300KHz) 等效串联电阻	Not to exceed the value specified 不超过规格值	
Endurance: 145°C, 2000h	Capacitance Change 容量变化	Within ±30% of the value before test 初始值±30%以内
Rated voltage applied (with the rated ripple current)	Dissipation Factor 损耗角正切	Not to exceed 200% of the value specified 不超过 2 倍规格值
寿命: 145°C, 2000 小时	ESR 等效串联电阻	Not to exceed 200% of the value specified 不超过 2 倍规格值
加载额定电压 (叠加额定纹波电流)	Leakage current 漏电流	Not to exceed the value specified 不超过规格值
Moisture Resistance	Capacitance Change 容量变化	Within ±30% of the value before test 初始值±30%以内
85°C, RH85%, 2000h, Rated voltage applied	Dissipation Factor 损耗角正切	Not to exceed 200% of the value specified 不超过 2 倍规格值
耐湿性	ESR 等效串联电阻	Not to exceed 200% of the value specified 不超过 2 倍规格值
85°C, RH85% 加载额定电压连续工作 2000 小时	Leakage Current 漏电流	Not to exceed the value specified 不超过规格值

Dimensions 尺寸 (Unit单位:mm)

Standard
标准产品

Technical drawing of a standard capacitor. The side view shows a cylindrical body with a diameter of $D \pm 0.5\text{max}$ and a length of $L \pm 0.3$. The top view shows a rectangular footprint with width $W \pm 0.2$ and height $H \pm 0.2$. The distance between the two mounting holes is $P \pm 0.2$, and the distance from the center of the holes to the edge is R . The thickness of the capacitor is T_1 and T_2 . The distance from the center of the holes to the corner is $C \pm 0.2$.

ΦD	L	W	H	C	P	R	T_1, T_2
8	10.5	8.3	8.3	9.0	3.2	0.8~1.1	0.2max.
8	12.2	8.3	8.3	9.0	3.2	0.8~1.1	0.2max.
10	10.5	10.3	10.3	11.0	4.6	0.8~1.1	0.2max.
10	12.8	10.3	10.3	11.0	4.6	0.8~1.1	0.2max.

Anti-vibration
耐振产品

Technical drawing of an anti-vibration capacitor. The side view shows a cylindrical body with a diameter of $D \pm 0.5\text{max}$ and a length of $L \pm 0.3$. The top view shows a rectangular footprint with width $W \pm 0.2$ and height $H \pm 0.2$. The distance between the two mounting holes is $P \pm 0.2$, and the distance from the center of the holes to the edge is R . The thickness of the capacitor is T_1 and T_2 . The distance from the center of the holes to the corner is $C \pm 0.2$. The distance from the center of the holes to the edge of the mounting holes is M and N . The distance from the center of the holes to the corner of the mounting holes is S .

ΦD	L	W	H	C	P	R	M	N	S	T_1, T_2
8	10.5	8.3	8.3	9.0	3.2	0.8~1.1	1.35	0.7	5.40	0.2max.
8	12.2	8.3	8.3	9.0	3.2	0.8~1.1	1.35	0.7	5.40	0.2max.
10	10.5	10.3	10.3	11.0	4.6	0.8~1.1	1.35	1.0	6.74	0.2max.
10	12.8	10.3	10.3	11.0	4.6	0.8~1.1	1.35	1.0	6.74	0.2max.

Capacitance List 容量对照表

W.V (S.V) SIZE	25 (31)	35 (44)	50 (63)	63 (79)	80 (100)
8×10.5	100 ~ 220 μ F	82 ~ 150 μ F	47 ~ 68 μ F	33 ~ 47 μ F	10 ~ 18 μ F
8×12.2	150 ~ 270 μ F	100 ~ 180 μ F	56 ~ 82 μ F	39 ~ 56 μ F	15 ~ 22 μ F
10×10.5	180 ~ 330 μ F	120 ~ 270 μ F	68 ~ 100 μ F	47 ~ 82 μ F	15 ~ 33 μ F
10×12.8	220 ~ 470 μ F	150 ~ 330 μ F	82 ~ 150 μ F	56 ~ 100 μ F	27 ~ 47 μ F

Characteristics List 规格特性表

W.V. 工作电压 (V)	Capacitance 容量 (μ F)	tg δ 损耗角正切 (120Hz, 20°C)	ESR 等效串联电阻 (m Ω , 100kHz)	Rated Ripple Current 额定纹波电流 (145°C, mA, r.m.s)	Size 尺寸 Φ D×L(mm)	Part Number 物料编码
25	150	0.12	27	800	8×10.5	PHA151M025F1ETR□□□□
	220	0.12	25	900	8×12.2	PHA221M025F1CTR□□□□
	270	0.12	20	1000	10×10.5	PHA271M025G1ETR□□□□
	330	0.12	18	1200	10×12.8	PHA331M025G1DTR□□□□
35	100	0.10	28	775	8×10.5	PHA101M035F1ETR□□□□
	120	0.10	26	825	8×12.2	PHA121M035F1CTR□□□□
	150	0.10	22	960	10×10.5	PHA151M035G1ETR□□□□
	220	0.10	20	1150	10×12.8	PHA221M035G1DTR□□□□
50	56	0.10	35	725	8×10.5	PHA560M050F1ETR□□□□
	68	0.10	30	800	8×12.2	PHA680M050F1CTR□□□□
	100	0.10	25	925	10×10.5	PHA101M050G1ETR□□□□
	120	0.10	22	1050	10×12.8	PHA121M050G1DTR□□□□
63	33	0.08	40	650	8×10.5	PHA330M063F1ETR□□□□
	47	0.08	35	725	8×12.2	PHA470M063F1CTR□□□□
	56	0.08	28	875	10×10.5	PHA560M063G1ETR□□□□
	82	0.08	25	960	10×12.8	PHA820M063G1DTR□□□□
80	10	0.08	55	540	8×10.5	PHA100M080F1ETR□□□□
	15	0.08	50	600	8×12.2	PHA150M080F1CTR□□□□
	22	0.08	40	725	10×10.5	PHA220M080G1ETR□□□□
	33	0.08	35	800	10×12.8	PHA330M080G1DTR□□□□

* For the last 4 digits of the part number, please refer to the part number system on page 178.

物料编码的最后 4 位, 请参考 178 页物料编码系统。

Frequency Coefficient for Ripple Current 纹波电流频率系数

Frequency 频率	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<50KHz	50KHz≤freq.<100KHz	100KHz≤freq.<1000KHz
Coefficient 系数 (C≤47 μ F)	0.05	0.25	0.55	0.80	1.00
Coefficient 系数 (C>47 μ F)	0.05	0.30	0.70	0.85	1.00