

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	
Operating Temp. Range 工作温度范围	-55°C ~ +145°C	
Capacitance Range 容量范围	10 ~ 470 μF	
Capacitance Tolerance 容量偏差	M : ±20%	
Rated Voltage Range 额定电压范围	25V ~ 80V DC	
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 ≤ 0.01CV (after 2 minutes) 充电 2 分钟后测试漏电流不超过 0.01×(静电容量 μF)×(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 at rated voltage (with rated ripple current) 寿命: 145°C, 2000 小时 加载额定电压 (叠加额定纹波电流)	Capacitance Change 容量变化	Within ±30% of the value before test 初始值±30%以内
	Dissipation Factor 损耗角正切	Not to exceed 200% of the value specified 不超过 2 倍规格值
	ESR 等效串联电阻	Not to exceed 200% of the value specified 不超过 2 倍规格值
	Leakage current 漏电流	Not to exceed the value specified 不超过规格值
Moisture Resistance 85°C, RH85%, 2000h, at rated voltage 耐湿性 85°C, RH85%加载额定电压连续工作 2000 小时	Capacitance Change 容量变化	Within ±30% of the value before test 初始值±30%以内
	Dissipation Factor 损耗角正切	Not to exceed 200% of the value specified 不超过 2 倍规格值
	ESR 等效串联电阻	Not to exceed 200% of the value specified 不超过 2 倍规格值
	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		<table border="1"> <thead> <tr> <th>ΦD</th> <th>L</th> <th>W</th> <th>H</th> <th>C</th> <th>P</th> <th>R</th> <th>T₁、T₂</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>10.5</td> <td>8.3</td> <td>8.3</td> <td>9.0</td> <td>3.2</td> <td>0.8~1.1</td> <td>0.2max.</td> </tr> <tr> <td>8</td> <td>12.2</td> <td>8.3</td> <td>8.3</td> <td>9.0</td> <td>3.2</td> <td>0.8~1.1</td> <td>0.2max.</td> </tr> <tr> <td>10</td> <td>10.5</td> <td>10.3</td> <td>10.3</td> <td>11.0</td> <td>4.6</td> <td>0.8~1.1</td> <td>0.2max.</td> </tr> <tr> <td>10</td> <td>12.8</td> <td>10.3</td> <td>10.3</td> <td>11.0</td> <td>4.6</td> <td>0.8~1.1</td> <td>0.2max.</td> </tr> </tbody> </table>								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.																	
		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		<table border="1"> <thead> <tr> <th>ΦD</th> <th>L</th> <th>W</th> <th>H</th> <th>C</th> <th>P</th> <th>R</th> <th>M</th> <th>N</th> <th>S</th> <th>T₁、T₂</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>10.5</td> <td>8.3</td> <td>8.3</td> <td>9.0</td> <td>3.2</td> <td>0.8~1.1</td> <td>1.35</td> <td>0.7</td> <td>5.40</td> <td>0.2max.</td> </tr> <tr> <td>8</td> <td>12.2</td> <td>8.3</td> <td>8.3</td> <td>9.0</td> <td>3.2</td> <td>0.8~1.1</td> <td>1.35</td> <td>0.7</td> <td>5.40</td> <td>0.2max.</td> </tr> <tr> <td>10</td> <td>10.5</td> <td>10.3</td> <td>10.3</td> <td>11.0</td> <td>4.6</td> <td>0.8~1.1</td> <td>1.35</td> <td>1.0</td> <td>6.74</td> <td>0.2max.</td> </tr> <tr> <td>10</td> <td>12.8</td> <td>10.3</td> <td>10.3</td> <td>11.0</td> <td>4.6</td> <td>0.8~1.1</td> <td>1.35</td> <td>1.0</td> <td>6.74</td> <td>0.2max.</td> </tr> </tbody> </table>										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.
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)
8x10.5	100 ~ 220 μ F	82 ~ 150 μ F	47 ~ 68 μ F	33 ~ 47 μ F	10 ~ 18 μ F
8x12.2	150 ~ 270 μ F	100 ~ 180 μ F	56 ~ 82 μ F	39 ~ 56 μ F	15 ~ 22 μ F
10x10.5	180 ~ 330 μ F	120 ~ 270 μ F	68 ~ 100 μ F	47 ~ 82 μ F	15 ~ 33 μ F
10x12.8	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 $^{\circ}$ C)	ESR 等效串联电阻 (m Ω , 100kHz)	Rated Ripple Current 额定纹波电流 (145 $^{\circ}$ C, mA, r.m.s)	Size 尺寸 Φ DxL(mm)	Part Number 物料编码
25	150	0.12	27	800	8x10.5	PHA151M025F1ETR□□□□
	220	0.12	25	900	8x12.2	PHA221M025F1CTR□□□□
	270	0.12	20	1000	10x10.5	PHA271M025G1ETR□□□□
	330	0.12	18	1200	10x12.8	PHA331M025G1DTR□□□□
35	100	0.10	28	775	8x10.5	PHA101M035F1ETR□□□□
	120	0.10	26	825	8x12.2	PHA121M035F1CTR□□□□
	150	0.10	22	960	10x10.5	PHA151M035G1ETR□□□□
	220	0.10	20	1150	10x12.8	PHA221M035G1DTR□□□□
50	56	0.10	35	725	8x10.5	PHA560M050F1ETR□□□□
	68	0.10	30	800	8x12.2	PHA680M050F1CTR□□□□
	100	0.10	25	925	10x10.5	PHA101M050G1ETR□□□□
	120	0.10	22	1050	10x12.8	PHA121M050G1DTR□□□□
63	33	0.08	40	650	8x10.5	PHA330M063F1ETR□□□□
	47	0.08	35	725	8x12.2	PHA470M063F1CTR□□□□
	56	0.08	28	875	10x10.5	PHA560M063G1ETR□□□□
	82	0.08	25	960	10x12.8	PHA820M063G1DTR□□□□
80	10	0.08	55	540	8x10.5	PHA100M080F1ETR□□□□
	15	0.08	50	600	8x12.2	PHA150M080F1CTR□□□□
	22	0.08	40	725	10x10.5	PHA220M080G1ETR□□□□
	33	0.08	35	800	10x12.8	PHA330M080G1DTR□□□□

* For the last 4 digits of the part number, please refer to the part number system on page 154.

物料编码的最后 4 位, 请参考 154 页物料编码系统。

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

Frequency 频率	120Hz \leq freq.<1KHz	1KHz \leq freq.<10KHz	10KHz \leq freq.<50KHz	50KHz \leq freq.<100KHz	100KHz \leq freq.<1000KHz
Coefficient 系数 (C \leq 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