

### HE series

- **Low ESR, high ripple current** 低等效串联电阻, 耐高纹波电流
- **Load life of 5000 hours at 105°C** 工作寿命 105°C-5000 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 ~ +105°C	
Capacitance Range 容量范围	10 ~ 1200 $\mu$ F	
Capacitance Tolerance 容量偏差	M : $\pm$ 20%	
Rated Voltage Range 额定电压范围	16V ~ 100V 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	$I \leq 0.01CV$ (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: 105°C · 5000h at rated voltage (with rated ripple current) 寿命: 105°C, 5000 小时 加载额定电压 (叠加额定纹波电流)	Capacitance Change 容量变化	Within $\pm$ 30% of the value before test 初始值 $\pm$ 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 $\pm$ 30% of the value before test 初始值 $\pm$ 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		$\Phi$ D	L	W	H	C	P	R	T <sub>1</sub> , T <sub>2</sub>		
		6.3	6.2	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.		
6.3	9	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.				
6.3	10	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.				
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	8	10.3	10.3	11.0	4.6	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		$\Phi$ D	L	W	H	C	P	R	T <sub>1</sub> , T <sub>2</sub>		
		6.3	9	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.		
		6.3	10	6.6	6.6	7.2	2.1	0.5~0.8	0.2max.		
	$\Phi$ D	L	W	H	C	P	R	M	N	S	T <sub>1</sub> , T <sub>2</sub>
	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	16 (20)	25 (31)	35 (44)	50 (63)	63 (79)	80 (100)	100 (125)
6.3x6.2	100 ~ 180 $\mu$ F	68 ~ 100 $\mu$ F	33 ~ 47 $\mu$ F	10 ~ 27 $\mu$ F	10 ~ 15 $\mu$ F		
6.3x9	220 ~ 330 $\mu$ F	100 ~ 180 $\mu$ F	56 ~ 82 $\mu$ F	27 ~ 47 $\mu$ F	10 ~ 27 $\mu$ F		
6.3x10	270 ~ 390 $\mu$ F	150 ~ 220 $\mu$ F	68 ~ 100 $\mu$ F	33 ~ 56 $\mu$ F	22 ~ 33 $\mu$ F		
8x10.5	390 ~ 680 $\mu$ F	220 ~ 390 $\mu$ F	100 ~ 180 $\mu$ F	47 ~ 100 $\mu$ F	39 ~ 56 $\mu$ F	22 ~ 39 $\mu$ F	
8x12.2	390 ~ 820 $\mu$ F	220 ~ 470 $\mu$ F	100 ~ 220 $\mu$ F	56 ~ 100 $\mu$ F	39 ~ 68 $\mu$ F	22 ~ 39 $\mu$ F	
10x8	220 ~ 470 $\mu$ F	150 ~ 270 $\mu$ F	68 ~ 120 $\mu$ F	39 ~ 68 $\mu$ F	22 ~ 47 $\mu$ F	15 ~ 27 $\mu$ F	
10x10.5	470 ~ 820 $\mu$ F	270 ~ 470 $\mu$ F	120 ~ 220 $\mu$ F	68 ~ 150 $\mu$ F	47 ~ 82 $\mu$ F	27 ~ 47 $\mu$ F	18 ~ 33 $\mu$ F
10x12.8	680 ~ 1200 $\mu$ F	390 ~ 680 $\mu$ F	180 ~ 330 $\mu$ F	82 ~ 180 $\mu$ F	68 ~ 120 $\mu$ F	39 ~ 68 $\mu$ F	22 ~ 47 $\mu$ F

### Characteristics List 规格特性表

W.V. 工作电压 (V)	Capacitance 容量 ( $\mu$ F)	tg $\delta$ 损耗角正切 (120Hz, 20 $^{\circ}$ C)	ESR 等效串联电阻 (m $\Omega$ , 100kHz)	Rated Ripple Current 额定纹波电流 (mA, r.m.s)	Size 尺寸 $\Phi$ DxL(mm)	Part Number 物料编码
16	100	0.10	33	1600	6.3x6.2	PHE101M016E62TR□□□□
	220	0.10	18	2400	6.3x9	PHE221M016E09TR□□□□
	330	0.10	18	2500	6.3x10	PHE331M016E10TR□□□□
	470	0.10	15	3200	8x10.5	PHE471M016F1ETR□□□□
	680	0.10	15	3300	8x12.2	PHE681M016F1CTR□□□□
	330	0.10	20	2600	10x8	PHE331M016G08TR□□□□
	820	0.12	15	3300	10x10.5	PHE821M016G1ETR□□□□
1000	0.12	12	4000	10x12.8	PHE102M016G1DTR□□□□	
25	100	0.10	40	1400	6.3x6.2	PHE101M025E62TR□□□□
	100	0.10	22	2140	6.3x9	PHE101M025E09TR□□□□
	220	0.10	22	2250	6.3x10	PHE221M025E10TR□□□□
	330	0.10	18	2850	8x10.5	PHE331M025F1ETR□□□□
	470	0.10	18	3000	8x12.2	PHE471M025F1CTR□□□□
	270	0.10	25	2290	10x8	PHE271M025G08TR□□□□
	470	0.10	18	2950	10x10.5	PHE471M025G1ETR□□□□
680	0.10	15	3500	10x12.8	PHE681M025G1DTR□□□□	
35	47	0.10	50	1350	6.3x6.2	PHE470M035E62TR□□□□
	82	0.10	30	2000	6.3x9	PHE820M035E09TR□□□□
	100	0.10	30	2100	6.3x10	PHE101M035E10TR□□□□
	150	0.10	25	2640	8x10.5	PHE151M035F1ETR□□□□
	220	0.10	23	2920	8x12.2	PHE221M035F1CTR□□□□
	100	0.10	38	2030	10x8	PHE101M035G08TR□□□□
	220	0.10	25	2730	10x10.5	PHE221M035G1ETR□□□□
330	0.10	22	3200	10x12.8	PHE331M035G1DTR□□□□	
50	22	0.10	70	1300	6.3x6.2	PHE220M050E62TR□□□□
	33	0.10	35	1940	6.3x9	PHE330M050E09TR□□□□
	47	0.10	33	2040	6.3x10	PHE470M050E10TR□□□□
	68	0.10	28	2540	8x10.5	PHE680M050F1ETR□□□□
	100	0.10	26	2800	8x12.2	PHE101M050F1CTR□□□□

W.V. 工作电压 (V)	Capacitance 容量 ( $\mu$ F)	tg $\delta$ 损耗角正切 (120Hz,20°C)	ESR 等效串联电阻 (m $\Omega$ ,100kHz)	Rated Ripple Current 额定纹波电流 (mA,r.m.s)	Size 尺寸 $\Phi$ DxL(mm)	Part Number 物料编码
50	68	0.10	40	2010	10x8	PHE680M050G08TR□□□□
	100	0.10	28	2620	10x10.5	PHE101M050G1ETR□□□□
	150	0.10	23	3100	10x12.8	PHE151M050G1DTR□□□□
63	10	0.10	70	1260	6.3x6.2	PHE100M063E62TR□□□□
	10	0.10	35	1880	6.3x9	PHE330M063E09TR□□□□
	22	0.10	33	1970	6.3x10	PHE390M063E10TR□□□□
	47	0.10	28	2460	8x10.5	PHE560M063F1ETR□□□□
	56	0.10	26	2710	8x12.2	PHE820M063F1CTR□□□□
	33	0.10	40	1950	10x8	PHE330M063G08TR□□□□
	82	0.10	28	2540	10x10.5	PHE121M063G1ETR□□□□
	100	0.10	23	3000	10x12.8	PHE101M063G1DTR□□□□
	80	22	0.10	33	2190	8x10.5
33		0.10	30	2440	8x12.2	PHE330M080F1CTR□□□□
22		0.10	45	1780	10x8	PHE220M080G08TR□□□□
56		0.10	30	2370	10x10.5	PHE560M080G1ETR□□□□
68		0.10	28	2690	10x12.8	PHE680M080G1DTR□□□□
100	22	0.10	35	2120	10x10.5	PHE220M100G1ETR□□□□
	47	0.10	30	2510	10x12.8	PHE470M100G1DTR□□□□

\* 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 6 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≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<50KHz	50KHz≤freq.<100KHz	100KHz≤freq.<1000KHz
Coefficient 系数 (C≤47 $\mu$ F)	0.05	0.25	0.55	0.80	1.00
Coefficient 系数 (1000 $\mu$ F≥C>47 $\mu$ F)	0.05	0.30	0.70	0.85	1.00
Coefficient 系数 (C>1000 $\mu$ F)	0.10	0.33	0.85	1.00	1.00