



# 承认书

## APPROVAL SHEET

客户名称:

Customer

产品名称:

Part Name

产品规格:

Specification

版本号:

Version No.

日期:

DATE

功率电感器

Power Inductor

HA-Series

17.01

2017-3-21

制造 Manufacturer			客户 Customer		
拟制 Draft by	审核 Checked by	确认 Approve by	检验 Check by	审核 Checked by	批准 Approval by
黎剑燕	谭新霖	冯东梅			





序号 No	目 录 TABLE OF CONTENTS
1	履历表 Resume
2	结构及尺寸 Structure And Dimensions
3	型号规格表示办法 How To Order
4	电气性能 Performance Specification
5	可靠性 Reliability Data
6	包装 Package
7	环保情况说明 Environmental Protection Statement
8	推荐使用的焊接曲线 Recommended soldering profile
9	清洗 Cleaning
10	贮存方法 Storage Methods
11	使用注意事项 Precautions For Use



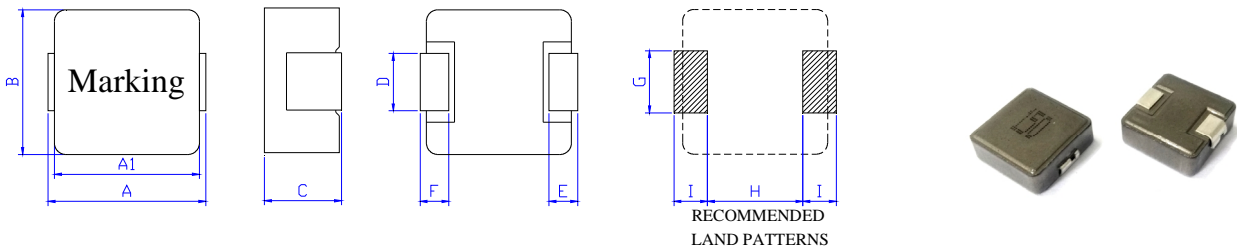
### 1. 履历表 Resume

版本 Version No.	修改明细 Modify Details	日期 Date
17.01	首次发行 Initial issue	2017-3-21



## 2. 结构及尺寸 Structure And Dimensions

单位 Unit: mm



顶部印字 Marking: 1.0 $\mu$ H→1R0, 10 $\mu$ H→100, 100 $\mu$ H→101, 1000 $\mu$ H→102

系列 Series	A MAX	A1 MAX	B MAX	C MAX	D	E	F	G typical	H typical	I typical
HA42	4.9	4.4	4.4	2.0	1.5±0.3	1.0±0.3	1.0±0.3	2.5	1.75	1.5
HA52	5.9	5.2	5.2	2.2	2.0±0.3	1.2±0.3	1.2±0.3	2.5	2.0	1.6
HA53	5.9	5.2	5.2	3.2	2.0±0.3	1.2±0.3	1.2±0.3	2.5	2.0	1.6
HA63	7.6	7.0	7.0	3.2	3.0±0.3	1.6±0.3	1.6±0.3	3.5	3.6	2.4
HA65	7.6	7.0	7.0	5.2	3.0±0.3	1.6±0.3	1.6±0.3	3.5	3.6	2.4
HA104	11.5	10.5	10.5	4.2	3.0±0.5	2.0±0.5	2.0±0.5	4.0	5.5	3.5
HA105	11.5	10.5	10.5	5.2	3.0±0.5	2.0±0.5	2.0±0.5	4.0	5.5	3.5
HA125	14.5	13.5	13.5	5.2	3.5±0.5	2.5±0.5	2.5±0.5	5.0	8.0	3.25
HA127	14.5	13.5	13.5	6.5	3.5±0.5	2.5±0.5	2.5±0.5	5.0	8.0	3.25

### 结构图 Structural drawing:

No.	部位 Component	材料 Material
①	磁芯 Core	金属材料 Metal material
②	线圈 Winding	漆包线 Enamelled Wire H class
③	电极片 Base	Phosphor bronze
④	粘结剂 Glue	环氧树脂 Epoxy
⑤	印字 Marking	油墨 INK

## 3. 型号规格表示办法 How To Order

HA 63 - 100 M T □□□  
① ② ③ ④ ⑤ ⑥

- ① 产品代号, Product symbol
- ② 尺寸规格, Dimension
- ③ 电感量标称值, Inductance
- ④ 电感量公差, Tolerance
- ⑤ 包装代码, T-编带卷盘; B-散装, Packing code: T-Tape & reel; B-Bulk
- ⑥ 标准代码, 空缺-标准品, 标示-定制品, eg: C01.

Standard code, Vacant-Standard product, Indicate-custom product



#### 4. 电气性能 Performance Specification

##### HA42 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电 流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA42-R22MT	0.22	M: $\pm 20\%$	8.0	9.0	12.0	R22
	HA42-R33MT	0.33		10.0	8.0	12.0	R33
	HA42-R47MT	0.47		14.0	6.0	10.0	R47
	HA42-R56MT	0.56		18.0	5.0	8.0	R56
	HA42-R68MT	0.68		21.0	5.0	8.0	R68
	HA42-1R0MT	1.00		27.0	4.5	7.0	1R0
	HA42-1R5MT	1.5		45.0	4.0	6.0	1R5
	HA42-2R2MT	2.2		58.0	3.0	5.0	2R2
	HA42-3R3MT	3.3		90.0	2.0	3.0	3R3
	HA42-4R7MT	4.7		150.0	2.0	3.0	4R7
	HA42-6R8MT	6.8		170.0	2.0	2.5	6R8
	HA42-100MT	10		200.0	1.5	1.8	100

##### HA52 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电 流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA52-R22□T	0.22	N $\pm 30\%$ M $\pm 20\%$	6.00	10.50	16.00	R22
	HA52-R33□T	0.33		8.00	10.00	15.00	R33
	HA52-R47□T	0.47		12.00	9.00	12.00	R47
	HA52-1R0□T	1.00		20.00	7.00	7.50	1R0
	HA52-1R5□T	1.50		30.00	5.00	7.00	1R5
	HA52-2R2□T	2.20		50.00	4.00	5.00	2R2
	HA52-3R3□T	3.30		76.00	3.50	5.00	3R3
	HA52-4R7□T	4.70		115.00	3.00	3.50	4R7
	HA52-5R6□T	5.60		92.00	2.20	3.00	5R6
	HA52-6R8□T	6.80		130.00	2.00	2.80	6R8
	HA52-100□T	10.00		190.00	1.50	2.50	100



### HA53 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA53-R47□T	0.47	N $\pm$ 30% M $\pm$ 20%	11.00	10.00	13.00	R47
	HA53-R68□T	0.68		13.00	8.50	12.00	R68
	HA53-1R0□T	1.00		16.00	7.00	11.00	1R0
	HA53-1R2□T	1.20		16.00	6.50	11.00	1R2
	HA53-1R5□T	1.50		25.00	5.00	10.00	1R5
	HA53-2R2□T	2.20		35.00	4.50	9.00	2R2
	HA53-3R3□T	3.30		38.00	4.00	7.00	3R3
	HA53-4R7□T	4.70		60.00	3.00	5.00	4R7
	HA53-6R8□T	6.80		90.00	2.50	3.50	6R8
	HA53-100□T	10.00		100.00	2.00	3.00	100
	HA53-150□T	15.00		165.00	1.50	2.00	150
	HA53-220□T	22.00		230.00	1.50	1.50	220

### HA63 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA63-R22□T	0.22	N $\pm$ 30% M $\pm$ 20%	4.00	22.00	34.00	R22
	HA63-R33□T	0.33		4.50	20.00	25.00	R33
	HA63-R47□T	0.47		5.00	18.00	20.00	R47
	HA63-R68□T	0.68		6.00	14.00	17.00	R68
	HA63-1R0□T	1.00		10.00	10.00	15.00	1R0
	HA63-1R5□T	1.50		15.00	9.00	15.00	1R5
	HA63-2R2□T	2.20		20.00	8.00	11.00	2R2
	HA63-3R3□T	3.30		30.00	6.00	10.00	3R3
	HA63-4R7□T	4.70		40.00	5.50	7.00	4R7
	HA63-5R6□T	5.60		60.00	5.00	7.00	5R6
	HA63-6R8□T	6.80		60.00	4.50	6.00	6R8
	HA63-8R2□T	8.20		74.00	4.00	6.00	8R2
	HA63-100□T	10.00		92.00	3.50	5.50	100
	HA63-150□T	15.00		135.00	3.00	4.00	150
	HA63-220□T	22.00		150.00	2.50	3.00	220



### HA65 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA65-R47□T	0.47	N $\pm$ 30% M $\pm$ 20%	4.50	18.00	21.00	R47
	HA65-R56□T	0.56		6.50	17.00	22.00	R56
	HA65-R68□T	0.68		8.50	14.00	18.00	R68
	HA65-1R0□T	1.00		9.00	13.00	17.00	1R0
	HA65-1R5□T	1.50		13.00	11.50	12.00	1R5
	HA65-2R2□T	2.20		21.00	8.00	12.00	2R2
	HA65-3R3□T	3.30		25.00	7.00	9.00	3R3
	HA65-4R7□T	4.70		35.00	6.00	7.00	4R7
	HA65-5R6□T	5.60		45.00	6.00	6.00	5R6
	HA65-6R8□T	6.80		60.00	5.00	6.00	6R8
	HA65-100□T	10.00		75.00	4.50	5.30	100
	HA65-150□T	15.00		85.00	3.00	5.00	150
	HA65-220□T	22.00		130.00	2.00	4.00	220
	HA65-330□T	33.00		180.00	1.50	3.00	330
	HA65-470□T	47.00		220.00	1.50	2.00	470
	HA65-680□T	68.00		280.00	1.20	1.80	680

### HA104 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance( $\mu$ H)		直流电阻 RDC ( $m\Omega$ ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA104-R22□T	0.22	N $\pm$ 30% M $\pm$ 20%	2.00	30.00	60.00	R22
	HA104-R33□T	0.33		2.00	30.00	50.00	R33
	HA104-R36□T	0.36		2.00	30.00	50.00	R36
	HA104-R47□T	0.47		2.50	26.00	38.00	R47
	HA104-R56□T	0.56		2.50	23.00	33.00	R56
	HA104-R68□T	0.68		3.50	23.00	30.00	R68
	HA104-1R0□T	1.00		5.00	18.00	28.00	1R0
	HA104-1R5□T	1.50		6.00	16.00	23.00	1R5
	HA104-2R2□T	2.20		9.00	12.00	18.00	2R2
	HA104-3R3□T	3.30		15.00	10.00	16.00	3R3
	HA104-4R7□T	4.70		18.00	8.00	14.00	4R7
	HA104-5R6□T	5.60		25.00	8.00	13.00	5R6
	HA104-6R8□T	6.80		28.00	7.00	12.00	6R8
	HA104-8R2□T	8.20		32.00	6.00	9.00	8R2
	HA104-100□T	10.00		35.00	5.00	8.50	100
	HA104-150□T	15.00		48.00	4.00	7.00	150
	HA104-220□T	22.00		66.00	3.50	5.50	220
	HA104-470□T	47.00		190.00	3.00	3.00	470
	HA104-680□T	68.00		205.00	2.00	3.50	680



### HA105 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance(μH)		直流电阻 RDC (mΩ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA105-R82□T	0.82	N ±30% M: ±20%	3.50	16.00	32.00	R82
	HA105-1R0□T	1.00		4.00	15.00	30.00	1R0
	HA105-2R2□T	2.20		8.50	12.00	21.50	2R2
	HA105-3R3□T	3.30		11.00	10.00	18.60	3R3
	HA105-4R7□T	4.70		17.00	9.00	14.00	4R7
	HA105-5R6□T	5.60		20.00	8.50	15.00	5R6
	HA105-6R8□T	6.80		25.00	8.00	10.00	6R8
	HA105-8R2□T	8.20		30.00	7.00	12.50	8R2
	HA105-100□T	10.0		38.00	6.80	10.00	100
	HA105-150□T	15.0		50.00	5.00	9.00	150
	HA105-220□T	22.0		60.00	4.50	7.00	220
	HA105-330□T	33.0		105.00	3.50	6.00	330
	HA105-470□T	47.0		135.00	3.00	5.00	470

### HA125 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance(μH)		直流电阻 RDC (mΩ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA125-R33□T	0.33	N ±30% M ±20%	1.50	32.00	60.00	R33
	HA125-R36□T	0.36		1.50	28.00	50.00	R36
	HA125-R47□T	0.47		1.80	25.00	45.00	R47
	HA125-R56□T	0.56		2.00	23.00	40.00	R56
	HA125-R68□T	0.68		2.30	20.00	38.00	R68
	HA125-R82□T	0.82		3.00	19.00	35.00	R82
	HA125-1R0□T	1.00		4.00	18.00	32.00	1R0
	HA125-1R5□T	1.50		5.00	18.00	27.00	1R5
	HA125-2R2□T	2.20		7.00	16.00	25.00	2R2
	HA125-3R3□T	3.30		10.00	15.00	23.00	3R3
	HA125-4R7□T	4.70		16.00	11.00	21.00	4R7
	HA125-6R8□T	6.80		20.00	8.50	15.00	6R8
	HA125-8R2□T	8.20		24.00	8.00	13.00	8R2
	HA125-100□T	10.00		26.00	6.00	12.50	100
	HA125-150□T	15.00	35.00	6.00	12.00	150	
	HA125-220□T	22.00	55.00	4.00	8.00	220	
	HA125-330□T	33.00	75.00	3.00	6.00	330	
	HA125-470□T	47.00	110.00	2.50	3.50	470	
	HA125-560□T	56.00	180.00	2.00	3.50	560	
	HA125-680□T	68.00	210.00	1.50	3.50	680	





## HA127 Series

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance(μH)		直流电阻 RDC (mΩ) MAX	温升电流 I <sub>rms</sub> (A)	饱和电流 I <sub>sat</sub> (A)	印字 Marking
		中心值 Normal	公差 Tolerance				
	HA127-R22□T	0.22	N ±30% M ±20%	0.82	60.00	60.00	R22
	HA127-R56□T	0.56		1.70	30.00	60.00	R56
	HA127-R68□T	0.68		2.00	28.00	54.00	R68
	HA127-R82□T	0.82		2.00	25.00	50.00	R82
	HA127-1R0□T	1.00		3.00	25.00	49.00	1R0
	HA127-1R5□T	1.50		3.50	22.00	45.00	1R5
	HA127-2R2□T	2.20		4.50	18.00	40.00	2R2
	HA127-3R3□T	3.30		8.50	16.00	28.00	3R3
	HA127-4R7□T	4.70		14.00	14.00	22.50	4R7
	HA127-5R6□T	5.60		15.00	12.00	20.00	5R6
	HA127-6R8□T	6.80		15.00	11.50	18.00	6R8
	HA127-8R2□T	8.20		25.00	10.00	16.00	8R2
	HA127-100□T	10.00		25.00	10.00	15.50	100
	HA127-150□T	15.00		38.00	6.00	9.00	150
	HA127-220□T	22.00		48.00	5.00	7.50	220
	HA127-330□T	33.00		66.00	4.00	6.50	330
	HA127-470□T	47.00		90.00	3.50	5.00	470
	HA127-560□T	56.00		110.00	3.00	4.00	560
	HA127-680□T	68.00		123.00	2.50	3.00	680
	HA127-101□T	100.00		180.00	2.50	3.00	101

测试仪器 Test equipment: Inductance\RDC---HP4263B or equivalent, I<sub>sat</sub>\I<sub>rms</sub>--- Microtest 6379 & 6220 or equivalent.

L<sub>s</sub> 测试频率/电压 L<sub>s</sub> Test frequency/Voltage: 100kHz/1V;

I<sub>sat</sub>: 指使电感量比初始值下降 30% 的电流值,

I<sub>rms</sub>: 指使电感器表面温度上升 40℃ 的电流值 (参考周围环境温度 20℃)。

I<sub>sat</sub>: The DC current is that which cause a 30% inductance reduction from the initial value.

I<sub>rms</sub>: The DC current is inductor surface temperature to rise by 40℃ ( Reference ambient temperature 20℃).

※以上为我司常规品特性需求, 若客户有特殊需求, 我司会根据客户需求进行设计



## 5. 可靠性 Reliability Data

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
1	工作温度范围 Operating Temperature Range	-40℃ ~ +125℃	包括自身发热的上升温度 Including self-heating temperature rise.
2	绝缘电阻 Insulation Resistance	≥100MΩ	在电感器线圈和磁芯之间施加 100 V±15 V 直流电压保持 60 s±2 s。 100 V±15 V DC between inductor coil and core for 60 seconds.
3	可焊性 Solderability	电极面 90%以上覆盖新的焊料。 90% or more of electrode area shall be coated by new solder.	在 245 ℃±5 ℃ 熔融的焊锡 (96.5Sn/3.0Ag/0.5Cu) 中浸 5 s±1 s。 Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at 245 ℃±5 ℃ for (5±1) seconds.
4	耐焊接热 Resistance to Soldering Heat	外观无可见机械损伤; 电感量变化率: ±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	在 260 ℃±5 ℃ 熔融的焊锡 (96.5Sn/3.0Ag/0.5Cu) 中浸 10 s±1 s。 Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at 260℃±5 ℃ for (10±1) seconds.
5	端子强度 Adhesion of terminal electrode	元件的端子与本体结合无松动、无脱落。 Strong bond between the pad and the core, without come off PC board.	将电感器用 260 ℃±5 ℃, 20 s±5 s 焊在带有 0.3 mm 厚锡膏的基板上, 然后用治具垂直电极面方向加压 10 N, 10 s±1 s。 Inductors shall be subjected to 260 ℃ ±5 ℃ for 20 s±5 s Soldering in the base whit 0.3mm solder. And then aplomb electrode way plus tax 10 N for 10± 1s seconds.
6	温度特性 Temperature characteristic	电感量变化率 $P_{c-b}, P_{c-d}$ 不超过 ±20%。 Inductance change $P_{c-b}, P_{c-d}$ : Within ±20%	a: +20 ℃ (30~45) min → b: -40 ℃ (30~45) min → c: +20 ℃ (30~45) min → d: +85 ℃ (30~45) min → e: +20 ℃ (30~45) min $P_{c-b} = \frac{L_b - L_c}{L_c} \times 100\%$ ; $P_{c-d} = \frac{L_d - L_c}{L_c} \times 100\%$
7	恒定湿热 Static Humidity	外观无可见机械损伤; 电感量变化率: ±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	将电感器放置在于湿度(93±3)%RH, 温度 40 ℃±2 ℃ 的环境中存放 96 h±2 h, 在室温下放置 2 小时后、48 小时内测试。 Inductors shall be subjected to (93±3)%RH . at 40 ℃±2 ℃ for 96 h±2 h .Inductors are to be tested after having air dried for 2 hours.



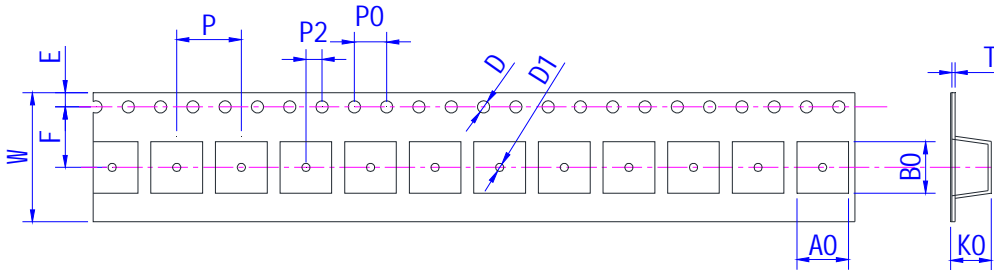
(续上表 Continue on the table)

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
8	气候顺序 Climate order	外观无可见机械损伤; 电感量变化率: $\pm 10\%$ 以内。 No visible mechanical damage. Inductance change: Within $\pm 10\%$	1. 高温: GB/T 2423.2-2008 试验方法 Bb, 温度 $+125\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ , 时间 $96\text{ h} \pm 2\text{ h}$ ; 2. 交变湿热-第一个循环: GB/T 2423.4-2008 试验方法 Db: 温度 $25\text{ }^{\circ}\text{C} \rightarrow +55\text{ }^{\circ}\text{C}$ , 循环1次, 按24小时循环; 3. 低温: GB/T 2423.1-2008, 低温试验方法 Ab, $-40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ , 时间 $96\text{ h} \pm 2\text{ h}$ ; 4. 交变湿热 -其余的循环 GB/T 2423.4-2008 试验方法 Db: 温度 $25\text{ }^{\circ}\text{C} \rightarrow +55\text{ }^{\circ}\text{C}$ , 循环1次, 按24小时循环; 在室温下放置2小时后、48小时内测试。 1. High temperature: According to GB / T 2423.2-2008 Standard Test Method Bb, temperature is $125\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and keep $96 \pm 2$ hours. 2. Alternating hot and humid (The first cycle): According to GB / T 2423.4-2008 Standard Test Method Db, the temperature cycle shall be placed at $25^{\circ}\text{C}$ and $55^{\circ}\text{C}$ for 24h. 3. Low temperature: According to GB / T 2423.1-2008 Standard Test Method Ab, temperature is $-40 \pm 2\text{ }^{\circ}\text{C}$ and keep $96 \pm 2$ hours. 4. Alternating hot and humid (Other cycles): According to GB / T 2423.4-2008 Standard Test Method Db, the temperature cycle shall be placed at $25^{\circ}\text{C}$ and $55^{\circ}\text{C}$ for 24h. Inductors are to be tested after having air dried for 2 hours.
9	温度变化 Thermal shock	外观无可见机械损伤; 电感量变化率: $\pm 10\%$ 以内。 No visible mechanical damage. Inductance change: Within $\pm 10\%$	$(-40 \pm 3)\text{ }^{\circ}\text{C}$ , 时间 $(30 \pm 3)\text{ min} \leftrightarrow (85 \pm 2)\text{ }^{\circ}\text{C} / (30 \pm 3)\text{ min}$ , 转换时间 $(2 \sim 3)\text{ min}$ , 循环5次; 在室温下放置2小时后、48小时内测试。 The test sample shall be placed at $(-40 \pm 3)^{\circ}\text{C}$ and $(85 \pm 2)^{\circ}\text{C}$ for $(30 \pm 3)\text{ min}$ , different temperature conversion time is 2~3 minutes. The temperature cycle shall be repeated 5 cycles.
10	耐久性 (寿命) Life	外观无可见机械损伤; 电感量变化率: $\pm 10\%$ 以内。 No visible mechanical damage. Inductance change: Within $\pm 10\%$	温度 $85\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ , 时间 $1000\text{ h} \pm 24\text{ h}$ , 施加额定电流, 在室温下放置2小时后、48小时内测试。 Inductors shall be store at $85 \pm 2^{\circ}\text{C}$ for 1000 hours with rated current applied. Inductors shall be tested after four hours at room temperature.



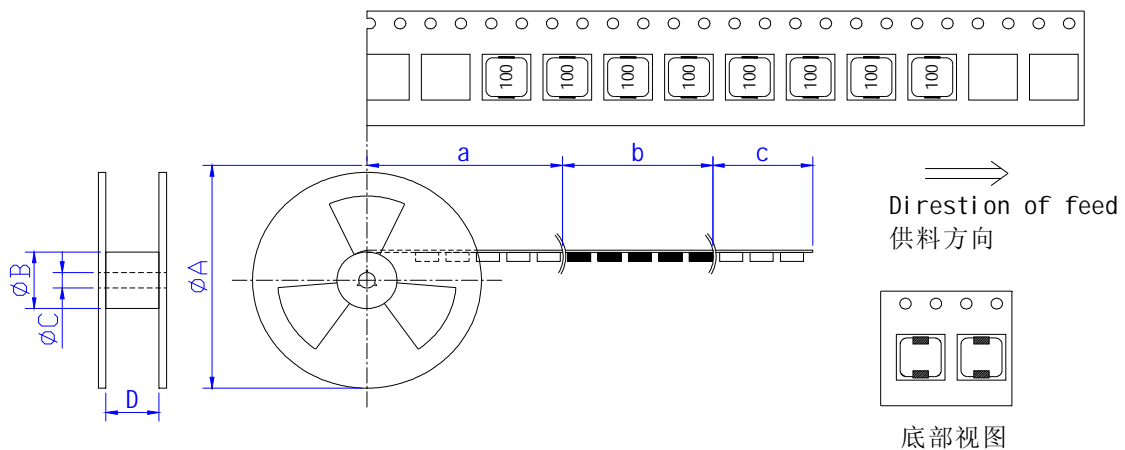
## 6. 包装 Package

### 6.1 载带尺寸 Tape Dimension(单位: 毫米 Unit:mm)



Series	W	A0	B0	D	D1	E	F	K0	P0	P2	P	T
HA42	12.0±0.5	5.1±0.3	4.5±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	2.3±0.3	4.0±0.3	2.0±0.3	8.0±0.3	0.35±0.10
HA52	16±0.5	5.1±0.3	5.6±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	2.3±0.3	4.0±0.3	2.0±0.3	12.0±0.3	0.35±0.10
HA53	16±0.5	5.1±0.3	5.6±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	3.2±0.2	4.0±0.3	2.0±0.3	12.0±0.3	0.35±0.10
HA63	16±0.5	7.6±0.2	7.6±0.2	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	3.6±0.2	4.0±0.3	2.0±0.3	12.0±0.2	0.35±0.10
HA65	16±0.5	7.4±0.3	7.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	7.5±0.3	5.2±0.3	4.0±0.3	2.0±0.3	12.0±0.2	0.35±0.10
HA104	24±0.5	10.5±0.3	11.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	4.3±0.2	4.0±0.3	2.0±0.3	16.0±0.3	0.35±0.10
HA105	24±0.5	10.5±0.3	11.4±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	5.1±0.3	4.0±0.3	2.0±0.3	16.0±0.3	0.35±0.10
HA125	24±0.5	13.4±0.3	15±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	5.6±0.3	4.0±0.3	2.0±0.3	20.0±0.3	0.40±0.10
HA127	24±0.5	13.0±0.3	13±0.3	1.5±0.3	1.5±0.3	1.75±0.3	11.5±0.3	8.3±0.3	4.0±0.3	2.0±0.3	20.0±0.3	0.40±0.10

### 6.2 供料方向 Direction of feed(单位: 毫米 Unit:mm)



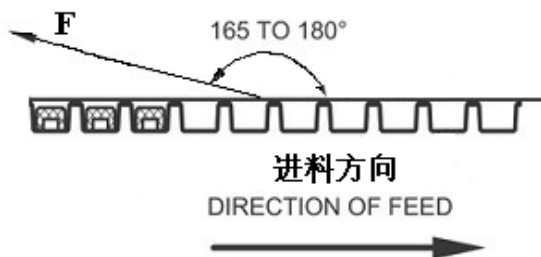
Series	A	B	C	D	a	b	c
HA42 HA52	330	100	13	16.4	空带 blank portions	装元件 chip cavity	引带 leader
HA53 HA63 HA65	typical	typical	typical	typical			
HA104 HA105 HA125 HA127	330 typical	100 typical	13 typical	24.4 typical			



### 6.3 包装数量 Packing quantity

Series	卷盘 REEL (PCS)	纸盒 BOX (PCS)	纸箱 Carton (PCS) ( Size: 35.5*35.5*21.5cm )
HA42	3,000	9,000	27,000
HA52	2,000	6,000	18,000
HA53	2,000	6,000	18,000
HA63	1,500	4,500	13,500
HA65	1,000	3,000	9,000
HA104	750	2,250	6,750
HA105	750	2,250	6,750
HA125	500	1,500	4,500
HA127	400	1200	3,600

- 6.4 剥离力要求 Peeling required ① F 力大小 F force: 20 ~ 100g;  
② 面带剥离速度 Peeling speed: 300mm/min $\pm$ 10%;  
③ 面带剥离角度 Peeling angle: 165° ~ 180°.



## 7. 环保情况说明 Environmental Protection Statement

**RoHS 指令:** 公司产品符合 RoHS 指令。

Response to RoHS directive: Our products are RoHS compliance.

## 8. 推荐使用的焊接曲线 Recommended soldering profile

本产品建议使用回流焊接法。

Applicable soldering process to the products is reflow soldering.

### 8.1 焊接材料 Soldering Materials

(1) 焊料: Sn-3.0Ag-0.5Cu

(2) 助焊剂: 使用松香基助焊剂, 禁止使用卤化物含量超过 0.2wt% 的强酸性助焊剂和水溶性助焊剂。

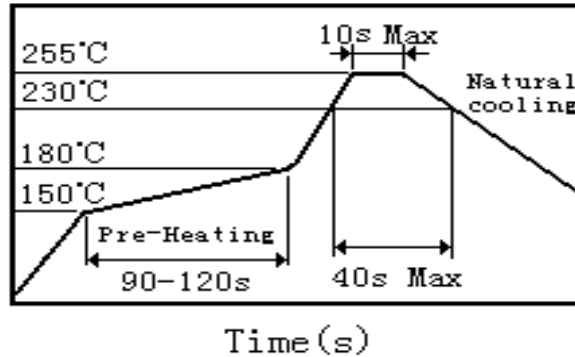
(1) Solder: Sn-3.0Ag-0.5Cu

(2) Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2 wt%). Do not use water-soluble flux.



## 8.2 焊接曲线 Soldering Profile

### (1) 回流焊接曲线 Reflow Soldering Profile



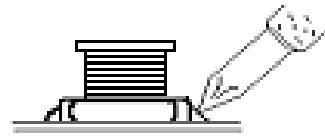
## 8.3 烙铁焊接 Soldering Iron

使用烙铁进行返修时要求在 150°C 下预热至少 1 分钟，不能直接用焊头接触磁体，返修焊接条件如下：

- ①烙铁头温度：350°C；②烙铁输出功率：≤30W；③烙铁头直径：≤1.0mm；④焊接时间：<3 秒

Reworking with Soldering Iron must preheating at 150°C for 1 minute is required, and do not directly touch the core with the tip of the soldering iron. The reworking soldering conditions are as follows:

- ① Temperature of soldering iron tip: 350°C;
- ② Soldering iron power output: 30W max.
- ③ Diameter of soldering iron end: 1.0mm max.
- ④ Soldering time: within 3 sec.



## 9. 清洗 Cleaning

对本产品进行清洗操作前，需确认以下条件：

(1)清洗温度：≤60°C（酒精清洗剂≤40°C）

(2)超声波清洗

输出：≤20 W/L      持续时间：≤5 分钟      频率：28 ~ 40kHz

▲清洗时要避免 PCB 板和安装产品的共振。

The following conditions should be observed when cleaning the products:

(1)Cleaning Temperature: 60°C max. (40°C max. for alcohol cleaning agents)

(2)Ultrasonic

Output: 20 W/L max.

Duration: 5 min max.

Frequency: 28 to 40kHz

▲ Care should be taken not to cause resonance of the PCB and mounted products.



## 10. 贮存方法 Storage Methods

### 10.1 存储期限 Storage Period

为保证端子电极的焊接特性和包装材料处于良好状态，请于本公司发货后 6 个月内使用本产品。同时，由于端子电极的焊接特性会随时间发生变化，如果贮存时间超过 6 个月，请首先确认其焊接特性后再安装使用。

To maintain the solderability of terminal electrodes and to keep the packing material in good condition, product should be used within 6 months from the time of delivery. And the solderability of products electrodes may decrease as time passes, so in case of storage over 6 months, solderability shall be checked before actual usage.

### 10.2 存储条件 Storage Conditions

(1) 存放货物的仓库应满足以下条件：

温度:  $-10 \sim +40^{\circ}\text{C}$                       相对湿度: 30~70%RH

(2) 不要使产品遭受温度和湿度的快速变化。

(3) 不要将产品存放在化学环境中，如硫酸气体或碱性气体中，否则会降低电极端子的焊接特性和使电感器腐蚀。

(4) 不要以散包装的形式存放产品以防止电感器间的相互碰撞造成磁芯破裂或断线。

(5) 为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。

(6) 产品应避免热冲击、振动以及直接光照等等。

(1) Store products in a warehouse in compliance with the following condition:

Temperature:  $-10$  to  $+40^{\circ}\text{C}$                       Humidity: 30~70%RH

(2) Do not subject products to rapid changes in temperature and humidity.

(3) Do not store the products in chemical atmosphere such as one containing sulfurous acid gas or alkaline gas, that will causes poor solderability and corrosion of inductors.

(4) Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.

(5) Store products on pallets to protect from humidity, dust, etc.

(6) Avoid heat shock, vibration, direct sunlight, etc.





## 11. 使用注意事项 Precautions For Use

- 11.1 本公司产品适用于 AV 设备、OA 设备、家电、信息服务等一般电子设备中。
- 11.2 当本公司的产品使用在一般电子设备以外的领域时,对于此所引发的设备失效我司将不承担任何法律责任。
- 11.3 本承认书只保证我司产品作为一个单体时的质量情况,当我司产品被安装到贵司产品上时,请贵司对使用在贵司电路上的产品情况进行了有效评价和确认。
- 11.4 不要对产品施加过大的振动或机械冲击;
- 11.5 为防止断线,请不要使用锋利的物体接触线圈,如镊子;
- 11.6 在产品贴装时不要使用过大的压力,避免磁芯断裂。

- 11.1. Our products are designed and promoted for use in general electronic devices such as audio-equipment, office automation equipment, home electric appliance and information service.
- 11.2. In case of using the product for the purpose other than general electronics devices, we shall not be held liable for any dysfunctions in or damage to the equipment with which the product is used.
- 11.3. Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.
- 11.4. Do not apply excessive vibration or mechanical shock to products.
- 11.5. Do not touch wire with sharp objects such as tweezers to prevent wire breakage.
- 11.6. Do not apply excessive stress to products mounted on boards to prevent core breakage.