

Power Choke

BPAG0401HS Series

JinLai's proven design and process support high reliability, high thermal characteristics, and high efficiency power chokes for application.

DATA SHEET

Place of origin: China

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1.Features

- 采用磁性胶水涂敷结构，极大的减小了蜂鸣声音
Adopting a magnetic adhesive coating structure, greatly reducing the buzzing sound.
- 采用金属磁性材料具有高磁通饱和密度特性
High magnetic flux saturation density characteristics by metal magnetic material.
- 通过闭磁路结构减少漏磁通
Magnetically shielded structure to accomplish high resolution in EMC protection.
- 具有独立结构，可靠性高
High reliability by original structure
- 无卤素、无铅化、符合RoHS要求
Halogen free,Lead free、RoHS Compliance.

2.Application

- DC/DC转换器
DC/DC converter
- 智能手机/PAD、HDD/SSD、DVC/DSC
Smart phone/PAD,HDD/SSD,DVC/DSC
- 平板电脑，便携式游戏机，集成电源模块
Mobile display panels, portable game devices, compact power supply modules,other.

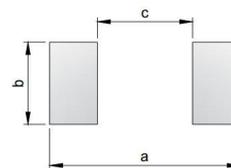
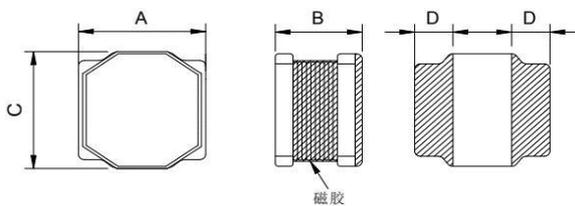
3.Part No. definition

BPAG **0401H** **S** **4R7** **M** **T** □□□
① ② ③ ④ ⑤ ⑥ ⑦

- ① 产品类型 : 磁胶功率电感 ⑤ 公差 : M = ±20% N:±30%
- Product type : Magnetic glue power inductor Tolerance
- ② 产品尺寸 : 4.0×4.0×1.8max(mm) ⑥ 包装类型Packing : T:Taping
- Product size
- ③ 类型 : ⑦ 管理编号 : Management No.
- Type
- ④ 电感值 : 如 4R7=4.7μH
- Inductance
- ※ 工作温度范围: -55℃ ~ +165℃ (包含产品发热)
Operating temperature range : -55℃ ~ +165℃ (Including self-temperature rise)

4.Appearance and dimensions

Reference PCB pattern



单位 / Unit: mm

A	B	C	D	a	b	c
4.00 ± 0.20	1.8Max	4.00 ± 0.20	1.20 ± 0.30	4.20 Typ	3.70 Typ	0.80 Typ

5. Electrical Characteristics

料号 Part No.	电感值 / L(μH) Inductance		直流电阻 / DCR(mΩ) DC Resistance		饱和电流 / Isat(A) Saturation current	温升电流 / Itemp(A) Temperature rise current
	Typ.	Tolerance	Typ.	Max.	Max.	Max.
BPAG0401HS1R0NTP07	1.0	±30%	30	39.0	4.50	2.60
BPAG0401HS1R5NTP07	1.5	±30%	40	52.0	3.30	2.40
BPAG0401HS2R2MTP07	2.2	±20%	45	58.5	2.70	1.65
BPAG0401HS3R3MTP07	3.3	±20%	55	71.5	2.30	2.00
BPAG0401HS4R7MTP07	4.7	±20%	90	117	2.00	1.70
BPAG0401HS6R8MTP07	6.8	±20%	95	124	1.65	1.20
BPAG0401HS100MTP07	10	±20%	180	234	1.30	0.84
BPAG0401HS150MTP07	15	±20%	240	312	1.10	0.85
BPAG0401HS220MTP07	22	±20%	280	364	0.90	0.72

•L 值测试频率：100KHz,OSC LEVEL:1.0V。

Test frequency at 100KHz,OSC LEVEL:1.0V.

•额定电流：以 Isat 和 Itemp 两个中的一个较小值作为额定电流值。

Rated current: smaller value of either Isat or Itemp.

•Isat: 基于电感的变化率（电感量比初期值下降 30%）。

Isat:When based on the inductance change rate (30% below the initial L value).

•Itemp: 基于温度上升的情况(自身发热温度上升 40℃)。

Itemp:When based on the temperature increase(temperature increase of 40° C by self heating).

※Itemp 是基于本公司的使用环境的参考值。

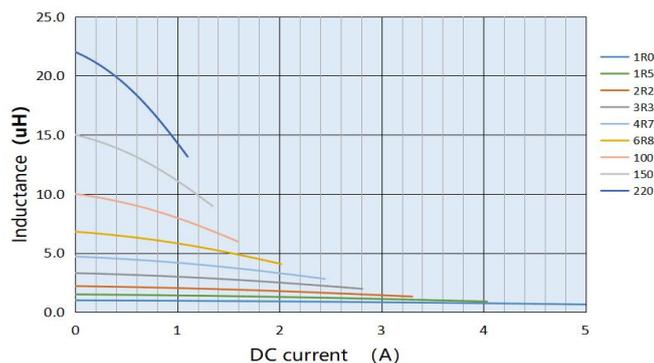
Itemp is a reference value according to our usage environment.

※在最终应用中，必须在产品温度上升不超过 40° C 的条件下进行电路设计。

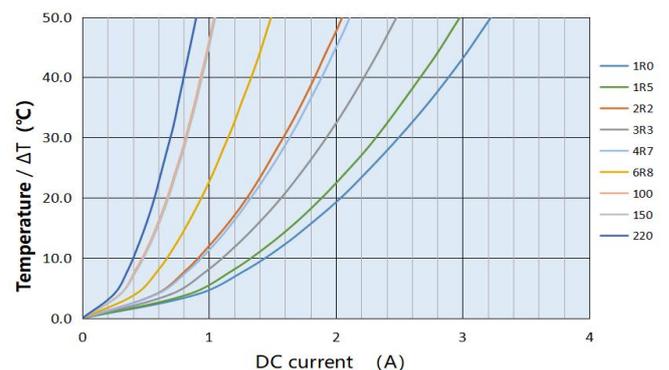
In the end application, the circuit design should be such that the part temperature rise does not exceed 40° C.

6.Heat rating current VS saturation current curv

饱和电流曲线 / Inductance vs. DC Bias Characteristics

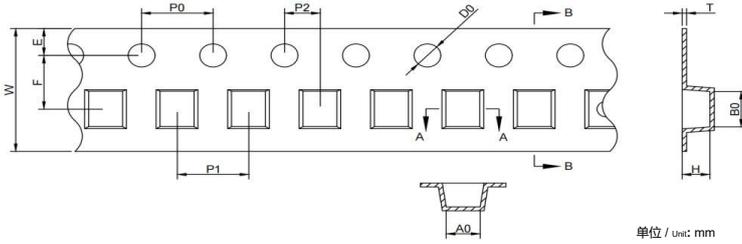


温升电流曲线 / Temperature rise Characteristics



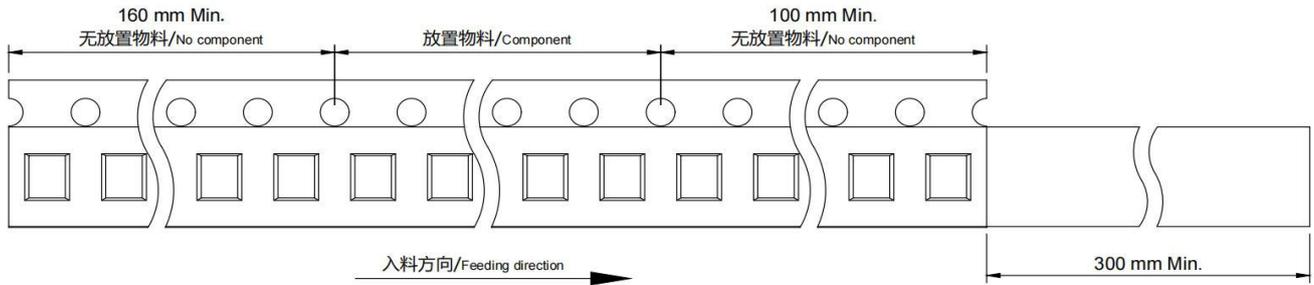
7. Packaging Specifications

○ 载带尺寸 / Taping Dimensions

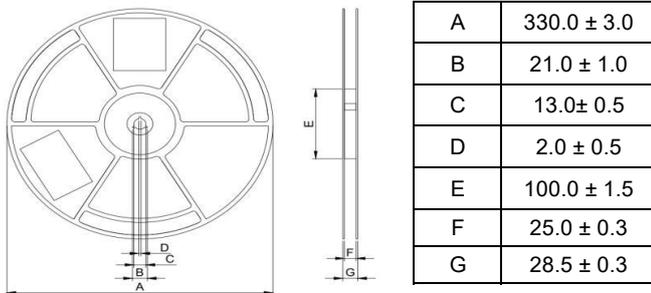


W	E	F
12.00 ± 0.30	1.75 ± 0.10	5.50 ± 0.10
P0	P1	P2
4.00 ± 0.10	8.00 ± 0.10	2.00 ± 0.10
D0	T	H
1.50 + 0.10/-0	0.35 ± 0.03	2.00 ± 0.10
A0	B0	
4.30 ± 0.10	4.30 ± 0.10	

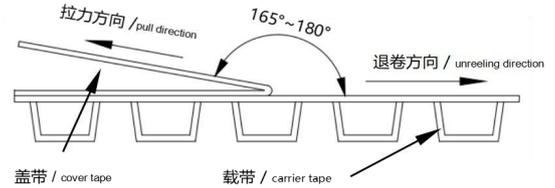
○ 包装方向 / Packaging direction



○ 卷盘尺寸 / Reel Dimensions



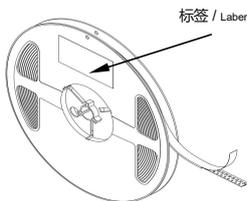
○ 盖带强度 / Cover tape strength



剥离强度 / Peel-off strength	20~80gf
剥离角度 / Peel-off angle	165° ~180°
剥离速度 / Peel-off speed	300mm/min.

○ 纸箱尺寸和包装数量 / Carton dimensions and packaging quantity

卷盘 / Reel

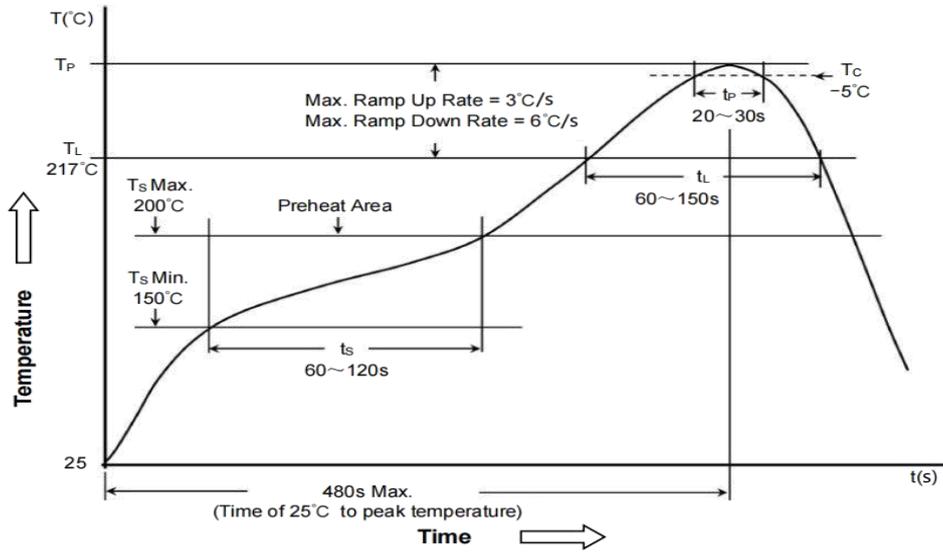


包装数量 / Per reel quatity
3K pcs

尺寸与实际配合有关, 仅供参考

The dimensions are related to the actual fit, for reference only.

8.Recommended Reflow Profile

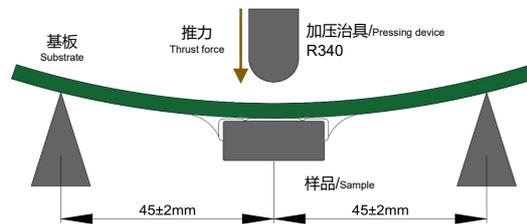
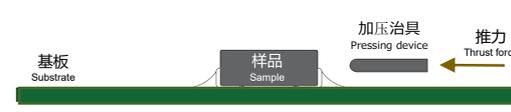


封装体积与峰值温度(TP)关系分类 / Classification of peak package body temperature (TP)				
无铅装配 PB-Free Assembly	封装厚度 Package Thickness	封装体积 / Package Volume		
		<350 mm ³	350 ~ 2000 mm ³	>2000 mm ³
	<1.6mm	260°C	260°C	260°C
	1.6 ~ 2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

※ 回流焊参照标准 IPC/JEDEC J-STD-020D。 / Reflow is referred to standard IPC/JEDEC J-STD-020D.

9. Reliability and Test Condition

试验项目/Test item	试验条件/Test condition	规格/Specification															
耐热试验 Dry heat Test AEC-Q200 Test No.3	<ul style="list-style-type: none"> 温度: +165±2°C Temperature: +165±2°C 放置时间: 1000±12Hr Load time: 1000±12Hr 放置于常温常湿中, 在24±4小时以内测定 Measurement shall be made within 24±4 h. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															
温度循环试验 Temperature cycle Test AEC-Q200 Test No.4	<ul style="list-style-type: none"> 1循环条件 / Condition of 1 cycle <table border="1" data-bbox="459 524 954 786"> <thead> <tr> <th>步骤 Step</th> <th>温度(°C) Temp.</th> <th>时间(min.) Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>常温 Room temp.</td> <td>2以下 Within 2</td> </tr> <tr> <td>3</td> <td>+165±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>常温 Room temp.</td> <td>2以下 Within 2</td> </tr> </tbody> </table> 放置循环数: 1000±12cycle Load cycle: 1000±12cycle 放置于常温常湿中, 在24±4小时以内测定 Measurement shall be made within 24±4 h. 	步骤 Step	温度(°C) Temp.	时间(min.) Duration	1	-55±3	30±3	2	常温 Room temp.	2以下 Within 2	3	+165±2	30±3	4	常温 Room temp.	2以下 Within 2	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test.
步骤 Step	温度(°C) Temp.	时间(min.) Duration															
1	-55±3	30±3															
2	常温 Room temp.	2以下 Within 2															
3	+165±2	30±3															
4	常温 Room temp.	2以下 Within 2															
耐湿试验 Humidity Test AEC-Q200 Test No.7	<ul style="list-style-type: none"> 温度: +85±2°C Temperature: +85±2°C 湿度: 85%RH Humidity: 85%RH 放置时间: 1000±12Hr Load time: 1000±12Hr 放置于常温常湿中, 在24±4小时以内测定 Measurement shall be made within 24±4 h. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															
高温负载试验 High Temperature Operating Test AEC-Q200 Test No.8	<ul style="list-style-type: none"> 温度: +85±2°C Temperature: +85±2°C 额定电流: Isat和Itemp中的较小值。 Rated current: smaller value of either Isat or Itemp. 放置时间: 1000±12Hr Load time: 1000±12Hr 放置于常温常湿中, 在24±4小时以内测定 Measurement shall be made within 24±4 h. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															
外观尺寸 Physical Dimensions AEC-Q200 Test No.10	<ul style="list-style-type: none"> 使用游标卡尺以及显微镜进行测量 Measures using digital slide calipers and an optical microscope. 	<ul style="list-style-type: none"> 根据规格书要求 According to specification 															
耐溶剂性试验 Resistance to Solvent AEC-Q200 Test No.12	<ul style="list-style-type: none"> 在25±5°C的异丙醇中浸泡5分钟, 在1小时内测试。 Immerse in Isopropyl-Alcohol for 5 minutes at 25±5°C. Measurement shall be made within 1h 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															
耐冲击试验 Mechanical shock test AEC-Q200 Test No.13	<ul style="list-style-type: none"> 加速度: 981 m/s² (≈100G) Peak acceleration: 981 m/s² (≈100G) 作用时间: 6ms Duration of pulse: 6ms ±X, ±Y, ±Z方向各3次 (总计18次) 3 times in each of 3(±X, ±Y, ±Z) axes. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															
耐振动试验 Vibration test AEC-Q200 Test No.14	<ul style="list-style-type: none"> 扫描频率: 10~2000~10Hz/分 Sweep frequency: 10 ~ 2000Hz(10Hz to 2000Hz to 10Hz in a period of one minute) 振幅: 1.5mm Amplitud: 1.5mm X, Y, Z方向各4Hr (总计12Hr) 4Hr in each of 3(X, Y, Z) axes. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test. 															

试验项目/Test item	试验条件/Test condition	规格/Specification
耐焊接热试验 Resistance to Soldering Heat <p style="text-align: right;">AEC-Q200 Test No.15</p>	<ul style="list-style-type: none"> 回流焊方法 Reflow soldering method 预热 / Preheat: > 183°C 90~120sec. 峰值温度 / Peak temperature.: 250(±5)°C 30±5sec. 基板厚度: 0.8mm PCB thickness:0.8mm 3次 / 3times 常温常湿中放置一小时后测量 <p>The specimen shall be stored at standard atmospheric conditions for 1 h in prior to the measurement.</p>	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test.
静电试验 ESD <p style="text-align: right;">AEC-Q200 Test No.17</p>	<ul style="list-style-type: none"> 在两电极以及本体上各施加3次 3 times in each of terminals and top side of component. 接触放电: ±0.5kV Direct contact discharge: ±0.5kV 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test.
可焊性试验 Solderability <p style="text-align: right;">AEC-Q200 Test No.18</p>	<ul style="list-style-type: none"> 电极在室温下涂上焊剂后根据下述条件将试验样品整体浸入焊锡槽中。 Electrode shall be immersed in flux at room temperature and then shall be immersed in solder bath after preheat 焊锡温度: 245±5°C Solder temperature:245±5°C 浸锡时间: 5±0.5sec. Dip time:5±0.5sec. 	<ul style="list-style-type: none"> 电极面 90%以上覆盖新的焊料。 New solder shall cover 90% minimum of the surface immersed.
电气特性 Electrical Characterizatic <p style="text-align: right;">AEC-Q200 Test No.19</p>	<ul style="list-style-type: none"> 在-55 ~ +165°C之间测量。 To be measured in the range of -55°C to 165°C. 确认试验的批次、样品数量要求、最大值、最小值和平均值。在最大和最小得试验环境温度下进行测量。 Parametrically test per lot and sample size requirements, summary to show Min, Max, Mean and Standard deviation at roomas well as Min and Max operating temperatures. 	<ul style="list-style-type: none"> 根据规格书 According to specification
基板弯曲试验 Bending test <p style="text-align: right;">AEC-Q200 Test No.21</p>	<ul style="list-style-type: none"> 弯曲量:2mm / Bent depth:2mm 加压速度:0.5mm/s / Speed:0.5mm/s 基板尺寸:40×100mm / PCB size:40×100mm 基板厚度:1.6mm / PCB thickness:1.6mm 保持时间:60秒 / Test time:60sec. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test.
附着力强度试验 Adhesion strength <p style="text-align: right;">AEC-Q200 Test No.22</p>	<ul style="list-style-type: none"> 施压时间: 60±1秒 / Test time:60±1sec. 推力:18N / Pressure:18N 移除负载后进行测量 Measure after removing pressure. 	<ul style="list-style-type: none"> L变化率: ±10%以内(以初期L值为基准) ΔL/L: within ± 10%(Change from an initial value) 试验后的外观无异常 No abnormal appearance after the test.

