



承 认 书

SPECIFICATION FOR APPROVAL

客户名称：

Customer

品 名：色码电感器

Part name Axial color code inductor

规 格：LGA 0510-XXX X X XX E

Product SPEC

版 本 号：V1.4

Version

日 期：2017/09/18

Date

| 客户 Customer | | | 制造 Manufacturer | | |
|-----------------|---------------|----------------|--------------------|---------------|----------------|
| 确认 Approval | | | 确认 Approval | | |
| 检验 Inspector | 审核 Checker | 批准 Approver | 拟制 Designer | 审核 Checker | 批准 Approver |
| | | | 夏少平 | 贺义勇 | 张惠霞 |



1、订货代码 HOW TO ORDER

举例 For example

| | | | | | | | |
|-----|------|---|-----|---|---|----|---|
| LGA | 0510 | — | 102 | K | P | 52 | E |
| ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ |
| A | B | | C | D | E | F | G |

A:

| 产 品 类 别 Product type | |
|-------------------------|--------------------------------------|
| LGA | 轴向色码电感器 Axial color code inductor |

| 尺 寸 Dimensions (mm) | | |
|------------------------|---------------------|---------------------|
| 类型 Type | 外径 D _{max} | 体长 L _{max} |
| 0510 | 5.0 | 10.5 |

C:

| 标称电感量 Inductance (μH) |
|---|
| 前两位数字为有效数字, 后一位数字表示零的个数。 The first two digits are significant, and the third digit is number of zeros. *例如 For example: 100=10 μH 101=100 μH 5R6=5.6 μH R22=0.22 μH |

D:

| 感量偏差 Tolerance | |
|-------------------|-------|
| J | ±5.0% |
| K | ±10% |
| M | ±20% |

E:

| 包装方式 Packaging style | | |
|-------------------------|---|------------------------------|
| 编带 Tape & reel | P | 盒带包装 Ammo |
| | T | 卷带包装 Reel |
| 散包装 Bulk | F | 直脚轴向 Axial |
| | L | 直脚成型 Straight lead formed |

F:

| 引脚形式 Lead configuration | | |
|----------------------------|----|---------------------------|
| 编带 Tape & reel | 26 | 编带内距: 26mm Tape width: |
| | 52 | 编带内距: 52mm Tape width: |

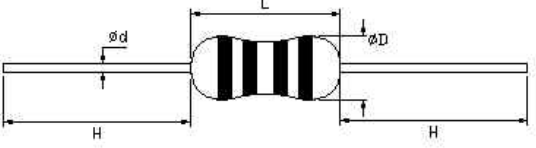
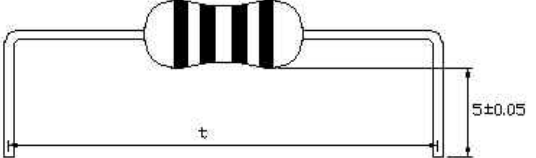
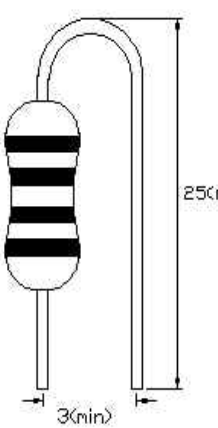
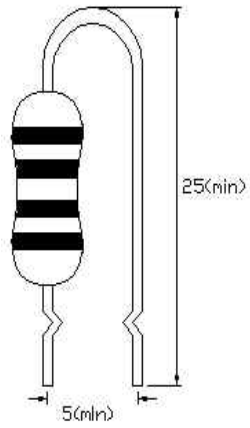
G:

| 备注 Remark | |
|--------------|----------------------|
| E | 无铅 Lead Free |
| 空格 Blank | 含铅 Lead Contained |



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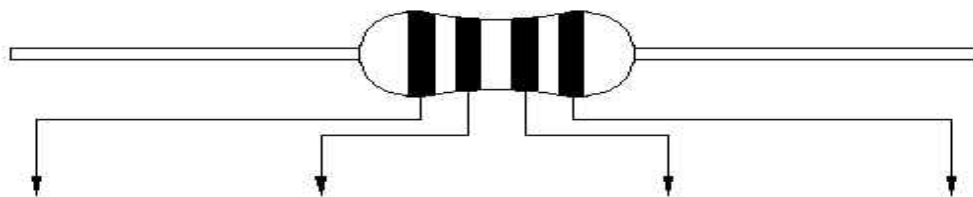
2、外形尺寸 EXTERNAL DIMENSIONS

| 类型 Type | 尺寸 Body size (mm) | | | | |  |
|------------|----------------------|----------|---|--------------------|----------|--|
| | $\phi D \leq$ | $L \leq$ | $t = t_0 \pm 0.6$ | ϕd | $H \geq$ | |
| LGA0510 | 5.0 | 10.5 | $t_0 = 12.5;$ 15.0; 17.5; 20.0 | 0.60 ± 0.05 | 20 |  直脚成型 (L type)  弯脚成型 (V type)  弯脚 K 型 (VK type) |

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3、色码标记代号 MARKING



| | 标称电感量 Nominal inductance (μ H) | | | 感量偏差 Tolerance |
|-------------|---|------------------------------------|------------------------------------|------------------------------------|
| | 第一色环 1 st color zone | 第二色环 2 nd color zone | 第三色环 3 rd color zone | 第四色环 4 th color zone |
| | 第一数字 1 st digit | 第二数字 2 nd digit | 第三数字 3 rd digit | |
| 黑 Black | 0 | 0 | $\times 10^0$ (1) | M: $\pm 20\%$ |
| 棕 Brown | 1 | 1 | $\times 10^1$ (10) | |
| 红 Red | 2 | 2 | $\times 10^2$ (100) | |
| 橙 Orange | 3 | 3 | $\times 10^3$ (1000) | |
| 黄 Yellow | 4 | 4 | $\times 10^4$ (10000) | |
| 绿 Green | 5 | 5 | $\times 10^5$ (100000) | |
| 蓝 Blue | 6 | 6 | | |
| 紫 Purple | 7 | 7 | | |
| 灰 Gray | 8 | 8 | | |
| 白 White | 9 | 9 | | |
| 金 Gold | / | / | $\times 10^{-1}$ (0.1) | J: $\pm 5\%$ |
| 银 Silver | / | / | $\times 10^{-2}$ (0.01) | K: $\pm 10\%$ |

*例如 e.g. :

标称电感量及偏差为 22 μ H, $\pm 5\%$ 的电感器其色码为: 红+红+黑+金;

If nominal inductance & tolerance is 22 μ H, $\pm 5\%$, respectively red+red+black+gold should be marked;

标称电感量及偏差为 1.0 μ H, $\pm 10\%$ 的电感器其色码为: 棕+黑+金+银;

If nominal inductance & tolerance is 1.0 μ H, $\pm 10\%$, respectively brown+black+gold+silver should be marked;

标称电感量及偏差为 0.22 μ H, $\pm 20\%$ 的电感器其色码为: 红+红+银+黑。

If nominal inductance & tolerance is 0.22 μ H, $\pm 20\%$, respectively red+red+silver+black should be marked.

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4. 电性能参数及测试条件 ELECTRICAL CHARACTERISTICS & TEST CONDITIONS

LGA0510 型电感器电性能参数及测试条件

LGA0510 TYPE INDUCTORS ELECTRICAL CHARACTERISTICS & TEST CONDITIONS

| LGA0510 类型 Type | 电感量 Inductance (μ H) | 误差 Tolerance | Q (min) | 直流电阻 RDC (Ω) max | 测试频率 Test frequency (MHz) | 自谐频率 SRF (MHz) min | 额定电流 Rated current I _{DC} (mA) max |
|-----------------------------|---------------------------------|-----------------|------------|---------------------------------|---------------------------------|--------------------------|---|
| LGA0510-330 | 33 | : $\pm 20\%$ | 30 | 1.03 | 2.52 | 6.3 | 370 |
| LGA0510-470 | 47 | | 30 | 1.22 | | 6.3 | 340 |
| LGA0510-101 | 100 | | 30 | 1.80 | 0.796 | 4.8 | 275 |
| LGA0510-221 | 220 | | 50 | 5.10 | | 3.0 | 155 |
| LGA0510-331 | 330 | | 50 | 6.40 | | 2.6 | 137 |
| LGA0510-471 | 470 | | 60 | 7.70 | | 1.9 | 126 |
| LGA0510-561 | 560 | | 50 | 8.50 | | 1.8 | 120 |
| LGA0510-681 | 680 | | 55 | 9.00 | | 1.5 | 113 |
| LGA0510-821 | 820 | | 45 | 10.5 | | 1.2 | 105 |
| LGA0510-102 | 1000 | K: $\pm 10\%$ | 45 | 14.0 | 0.252 | 1.0 | 100 |
| LGA0510-122 | 1200 | | 40 | 16.9 | | 0.95 | 95 |
| LGA0510-152 | 1500 | | 40 | 21.6 | | 0.90 | 90 |
| LGA0510-182 | 1800 | | 40 | 24.0 | | 0.85 | 85 |
| LGA0510-202 | 2000 | | 40 | 30.0 | | 0.82 | 82 |
| LGA0510-222 | 2200 | | 40 | 34.7 | | 0.80 | 80 |
| LGA0510-272 | 2700 | J: $\pm 5\%$ | 40 | 40.0 | | 0.75 | 75 |
| LGA0510-302 | 3000 | | 40 | 50.0 | | 0.72 | 70 |
| LGA0510-332 | 3300 | | 40 | 59.5 | | 0.70 | 62 |
| LGA0510-392 | 3900 | | 40 | 66.0 | | 0.65 | 59 |
| LGA0510-472 | 4700 | | 40 | 74.0 | | 0.60 | 55 |
| LGA0510-562 | 5600 | | 30 | 80.0 | | 0.50 | 40 |
| LGA0510-682 | 6800 | | 30 | 85.0 | | 0.45 | 35 |
| LGA0510-822 | 8200 | | 30 | 95.0 | | 0.40 | 30 |
| LGA0510-103 | 10000 | | 20 | 105.0 | 0.0796 | 0.35 | 25 |
| 测试仪器 Test equipment | HP4285A (HP4286A, HP4287A) | | | HP4338B | | HM9461 | HP42841A |
| 环境温度 Ambient temperature | 18~25℃ | | | | | | |
| 环境湿度 Ambient humidity | 45%~75% | | | | | | |

特殊要求的产品可以根据客户要求生产 The products can be customized according to customer requirement.



5. 可靠性试验项目及要求: ITEM AND REQUIREMENT OF RELIABILITY TEST

| 项目 Item | 性能要求 Specification | 试验条件及方法 Test methods and remarks |
|--|--|---|
| 1 工作温度范围 Operating temperature range | -25~+85℃ | |
| 2 储存温度范围 Storage temperature range | -40~+85℃ | |
| 3 外观和外形尺寸 Appearance & dimensions | 符合产品规范和公差要求 Conformity to the product specification | 目测, 精度不低于 0.02 mm 的游标卡尺测量 Eyeball; vernier calliper with precision no lower than 0.02mm |
| 4 L 值、Q 值 Inductance、Q | 在规定的允许范围内 Within the specified tolerance | 电感量和 Q 值在规定的测试频率下, 用 HP4285A 进行测试。 Condition: at specified test frequency. Test equipment: HP4285A |
| 5 直流电阻 DC resistance | 在规定的允许范围内 Within the specified tolerance | 测试仪器: HP4338B Test equipment: HP4338B |
| 6 自谐振频率 Self-resonance frequency | 在规定的允许范围内 Within the specified tolerance | 测试仪器: 射频/阻抗材料分析仪 HP4291A Test equipment: HP4291A |
| 7 额定电流 Rated current | 在规定的允许范围内 Within the specified tolerance | 电感值变化 10%、温升 20℃ 以内的最大直流电流。 The maximum DC value having inductance within 10% and temperature increase within 20℃ by the application of DC bias. |
| 8 引出端强度 Terminal strength | 外观无可见损伤、引线不断 There shall be no evidence of damage during the test and the lead no breakage. | 拉力: 沿轴向施加 2kgf, 持续时间: 5s Pull: adding 2kgf down axial Duration: 5s 弯折循环: 在靠近端子末端将引线弯折 90 度后还原持续 5s, 再向反方向重复一次为一个循环。重复 2 次 Bucking cycle: buck lead 90° at the end of closing terminal and then reset keeping 5s, redoing one time at the counter is one cycle. Repeat two times. |
| 9 耐焊接热 Resistance to soldering heat | $\Delta L/L \leq \pm 5\%$ $\Delta Q/Q \leq \pm 20\%$ | 焊锡温度: 270±5℃ 浸锡时间: 10±1s 恢复时间: 1~2 小时 Tin review: 270±5℃ Duration: 10±1s Recovery: 1~2hours |
| 10 可焊性 Solder ability | 引线的表面圆周覆盖率不小于 95% Leads shall be at least 95% areas covered with a new solder coating. | 焊锡温度: 250±5℃ 浸锡时间: 2±0.5s Tin review: 250±5℃ Duration: 2±0.5s |
| 11 标记耐溶剂性 Resistance to solvent | 标志无可见损伤 There shall be no evidence of damage | 溶剂温度: 25±5℃ Solvent temperature: 25±5℃ 将棉球和样品浸在溶剂中 1min, 在样品有标志部位用棉球擦 3 次。 There shall be put the cotton ball and sample steep in dissolvent 1min, at sample's notation area brush 10 times, repeat 3 times |
| 12 介质耐压 Dielectric Withstanding Voltage | 无弧光、击穿或损伤。 There shall be no arc, breakdown or damage. | 在外封和引线间施加直流电压 500V, 持续 60 秒。 Apply 500VDC between outer coating and terminal for 60sec. |
| 13 绝缘电阻 Insulation resistance | $IR \geq 100M\Omega$ | 在外封和引线间施加直流电压 500V, 持续 60 秒。 Apply 500VDC between outer coating and terminal for 60sec. |
| 14 温度特性 Temperature characteristic | $\Delta L/L \leq \pm 5\%$ $\Delta Q/Q \leq \pm 20\%$ | 以 20℃ 电感量为基准, 在 -25℃—+85℃ 测量电感量 Measurement shall be made at an ambient temp of -25℃—+85℃ reference inductance shall be measured at 20℃. |
| 15 高温试验 High temperature life test | $\Delta L/L \leq \pm 10\%$ $\Delta Q/Q \leq \pm 30\%$ | 温度: 85±2℃, 试验时间: 96 小时 Test temperature: 85±2℃, Time: 96hours |

备注: 1、如无特别指定时, 电性能测试应在常温、常湿中恢复 1~2 小时, 然后立即测试。

2、若测试结果有争议时, 仲裁试验结果用标准大气条件为: 温度: 25±1℃, 相对湿度 48%~52%, 气压: 86~106kPa。

Note: 1. In the event of no special requirement, the measurement shall be conducted immediately after a recovery of 1~2 hours under the standard condition.

2. In the event of any dispute, the standard condition for arbitration shall be as follows: 25±1℃ of temperature, 48%~52% RH and 86~106kPa air pressure.

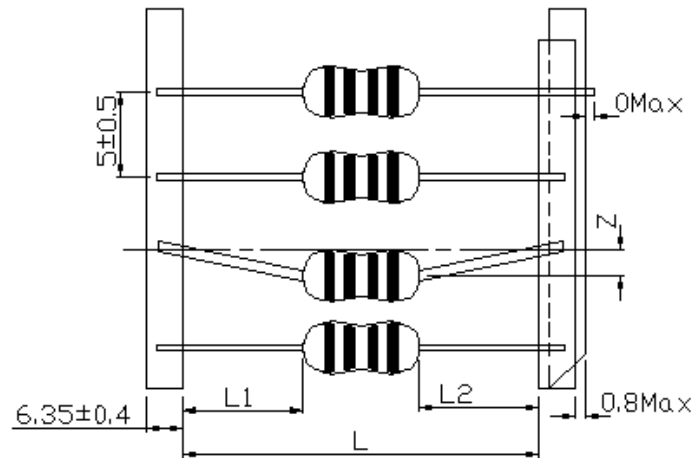
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7. 包装方式 PACKAGING STYLE

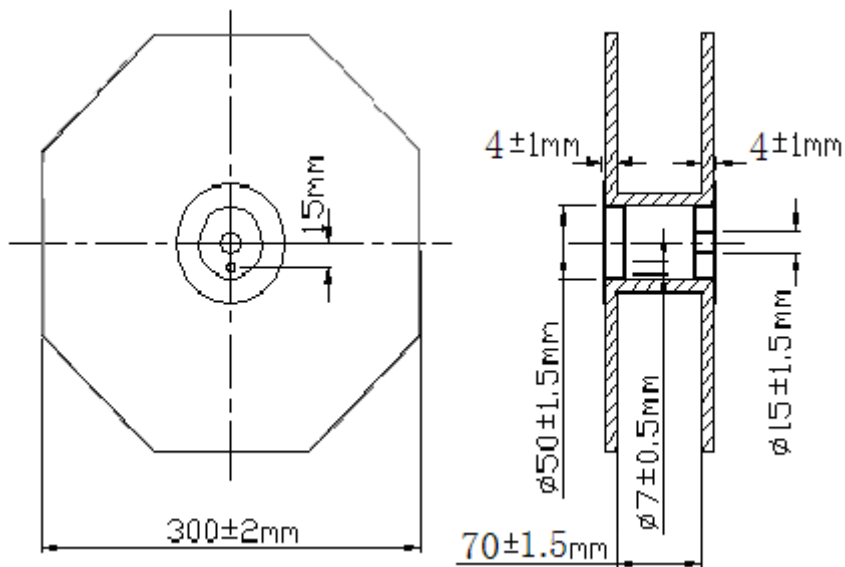
● 编带尺寸 Taping dimensions

单位 UNIT: mm



| 编带方式 Tape style | L | Z | L1-L2 |
|-----------------------|--------------------|---------|---------|
| 编带内距:26 Tape width | 26 ± 1.0 | 0.8 Max | 1.0 Max |
| 编带内距:52 Tape width | $52^{+2.0}_{-1.0}$ | 1.2 Max | |

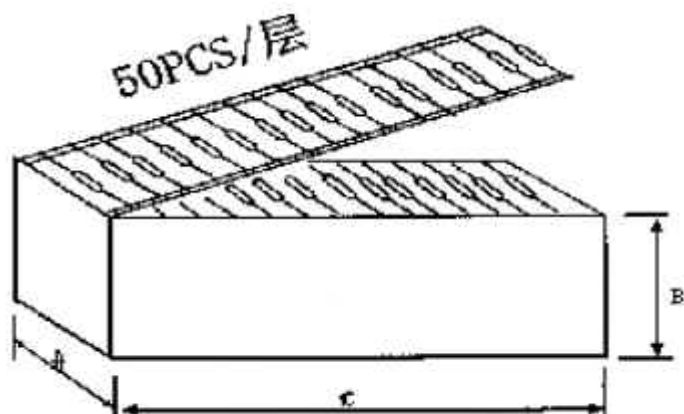
● 卷带包装尺寸 Tape & reel packaging dimensions



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● 盒带包装尺寸 Ammo packaging dimensions



● 包装盒尺寸 Dimensions of box

单位 UNIT: mm

| 编带类型 Tape type | 尺寸 Dimensions (±5mm) | | |
|-------------------|-------------------------|-----|-----|
| | A | B | C |
| 52 | 75 | 85 | 256 |
| 26 | 50 | 110 | 256 |

● 包装数量 Packaging quantity

| 包装方式 Packaging style | 盒带包装 Ammo | 卷带包装 Tape & reel | 散包装 Bulk |
|-------------------------|--------------|---------------------|-------------|
| 包装数量 Quantity | 1000 | 2500 | 1000 |

可根据用户需求包装

Packaging according to customer' s requirement

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