

## 製品規格書

## SPECIFICATION FOR APPROVAL



|                |                                       |                         |                             |
|----------------|---------------------------------------|-------------------------|-----------------------------|
| 產品編碼<br>P/N    | PSTMAA5040-2R2MB                      | 測試設備<br>TEST INSTRUMENT | Zentech-3305 / Zentech502BC |
| 產品系列<br>Series | 扁平线一体成型电感<br>SMD T-CORE Molding power | 測試頻率<br>TEST FREQUENCY  | 1MHZ / 1.0V                 |

客戶名稱

Customer

客戶編碼

Customer P/N

產品系列

Series

扁平线一体成型电感

SMD T-CORE Molding power Inductor

產品編碼

Supply P/N

PSTMAA5040-2R2MB

發版號

Version

A2.0

承認日期

Endorsement Date

2025-3-3

備註

Note

譜羅德電子科技（深圳）有限公司

PuLuoDe Electronic Technology (Shenzhen) Co. LTD

製作

APPROVED

Ben

審查

CHECKED

Yuki

確認

PREPARED

Peter

\* 煩請貴司在正式订单下达前确认回签本承诺书，否则敝司默认贵司认可本承诺书内的参数与条款，并以此参数生产交货

Please confirm and sign this acknowledgement letter before placing the formal order, otherwise PROD will acquiesce that your company recognizes the parameters and terms in this acknowledgement letter, and will produce and deliver according to these parameters.

客戶承認

Customer Approval

客戶簽章



|                |                                       |                         |                             |
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| Version | REVISION ITEM | BEFORE REVISION | AFTER REVISION | DATE     |
|---------|---------------|-----------------|----------------|----------|
| A2.0    | First Version |                 |                | 2025-3-3 |
|         |               |                 |                |          |
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## 電氣特性

A2.0

## ELECTRICAL CHARACTERISTICS

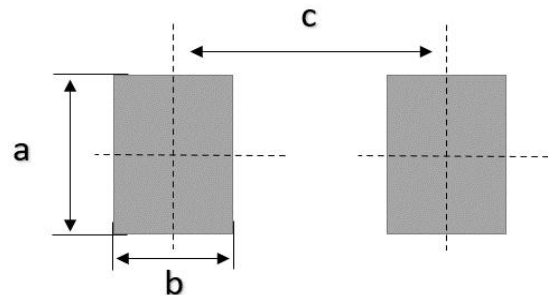
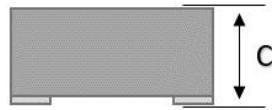
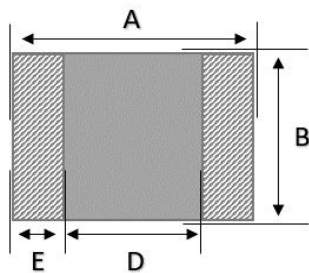


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## 封裝尺寸

Dimension

(mm)



| 系列     | 封裝尺寸<br>Dimension |         |         |         |         | 焊盤尺寸<br>Land Pattern |      |      |
|--------|-------------------|---------|---------|---------|---------|----------------------|------|------|
| Series | A                 | B       | C       | D       | E       | a                    | b    | c    |
| 5040   | 5.2±0.3           | 5.0±0.2 | 4.0Max. | 2.0 Typ | 1.6±0.2 | 5.3                  | 1.95 | 3.55 |

## 編碼解釋

Code interpretation

|               |             |            |           |          |
|---------------|-------------|------------|-----------|----------|
| <b>PSTMAA</b> | <b>5040</b> | <b>XXX</b> | <b>M</b>  | <b>B</b> |
| 类别码           | 尺寸系列        | 系列码        | 公差        | 颜色       |
| Category code | Dimension   | Inductance | Tolerance | Color    |

## 電氣參數

Electrical Characteristics

| 產品編碼<br>P/N      | @ 25 °C Ambient Temperture |           |      |      |                |                |
|------------------|----------------------------|-----------|------|------|----------------|----------------|
|                  | 感值                         | 精度        | DCR  |      | 溫升電流<br>(IRMS) | 飽和電流<br>(ISAT) |
|                  | Inductance                 | Tolerance | mΩ   |      | A Typ          | A Typ          |
|                  | μH                         | ±         | Typ  | Max  | ΔT≈40℃         | L0 drop≈30%    |
| PSTMAA5040-2R2MB | 2.20                       | 20%       | 20.5 | 25.5 | 11.0           | 12.0           |

- ◎ 規格參數基於環境溫度25℃取得  
All test Data is referenced to 25℃ ambient
- ◎ 電感工作環境溫度：-40℃ ~ 125℃  
Operating temperature range -40 °C to +125 °C
- ◎ 加載溫升電流（I<sub>rms</sub>）會使電感溫度上升大約 40℃（電感初始溫度+上升溫度=電感最終溫度）  
Typical I<sub>rms</sub> would cause an approximately ΔT of 40℃
- ◎ 加載飽和電流（ISAT）會使感量下降大約30%  
Typical ISAT would cause L<sub>0</sub> to drop approximately 30%.
- ◎ 額定電流取值溫升電流與飽和電流二者最小值  
The rated current is determined by the minimum value between IRMS and ISAT
- ◎ 務必考慮最終的產品設計，元器件佈局，線路板走線，以及使用環境過程中，電感最終溫度不得超過125℃  
The operating temperature of inductance do not exceed 125℃
- ◎ 使用電感時，請查閱第7頁注意事項  
The announcements is on page 7

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譜羅德電子科技（深圳）有限公司  
PuLuoDe Electronic Technology (Shenzhen) Co. LTD

深圳市寶安區石岩三聯工業區B棟311

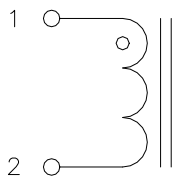
更多规格请访问谱罗德官方网站下载或者扫描二维码通过微信小程序获取

<http://www.prodtech.cn/>


|                |                                       |                         |                             |
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## 電路結構

## Connections



◎ 電感內置一組線圈

Inductor Contents ONE (1) Set(s) of Coil

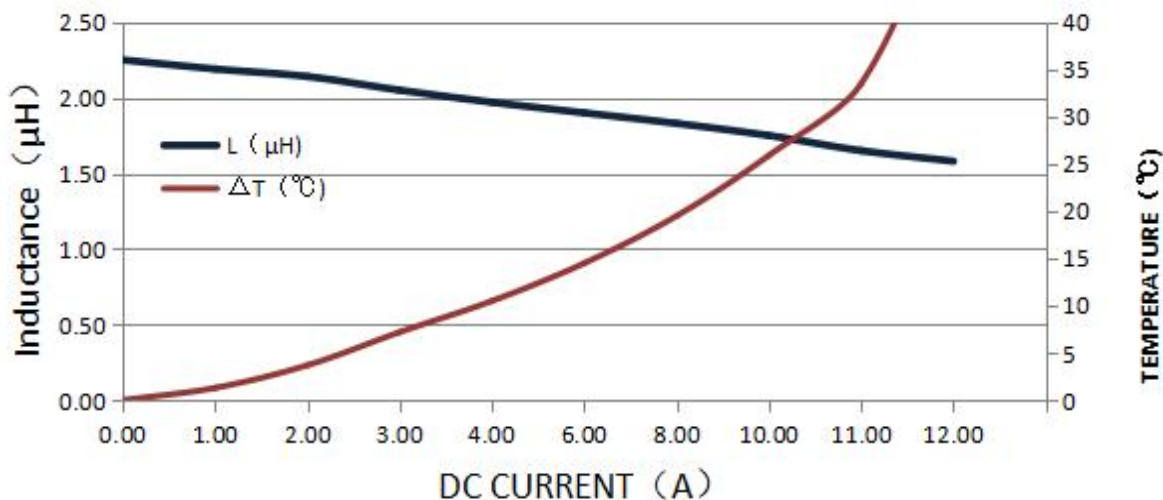
## 实物图示

## Picture



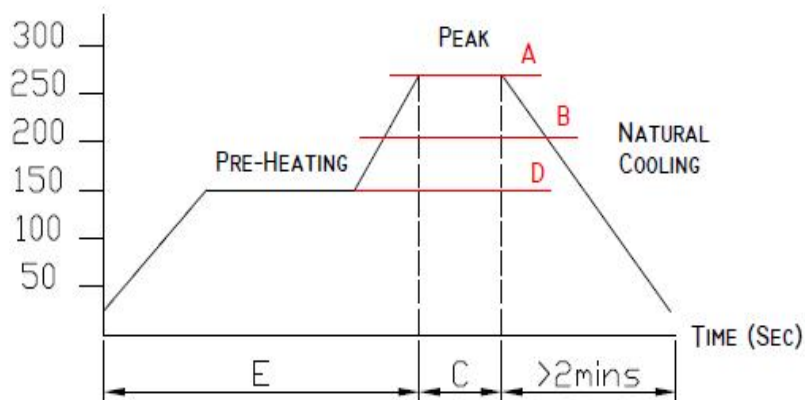
## 特性曲線

## Performance Curves



## 焊接溫度（推荐）

## Recommended Soldering Temperature Graph



|   |            |
|---|------------|
| A | 260℃       |
| B | 230℃       |
| C | 10 Sec     |
| D | 150℃       |
| E | 60~240 Sec |



|                |                                       |                         |                             |
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## 機械可靠性測試

## Mechanical Reliability

| 測試項目                   | 測試條件                                                                                               | 測試手法                                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Solderability<br>引腳可焊性 | The surface of terminal/pin tested shall be covered with new solder by 95%<br>產品引腳焊錫面=>上錫面積涵蓋95%以上 | Solder heat proof:<br>Preheating: 180 ±10℃ 90 seconds<br>Soldering: 255 ±5℃ for 3 ±1 sec                                |
| Shock<br>落下衝擊測試        | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內                        | Drop down with 981m/s <sup>2</sup> (100G) shock<br>Attitude upon a rubber block method shock testing machinem, 3 tests. |
| Vibration<br>振動測試      | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內                        | Vibration frequency:<br>10Hz to 55Hz to 10Hz 60 seconds cycle<br>Vibration time: 2 hours                                |

## 老化測試

## ENDURANCE RELIABILITY

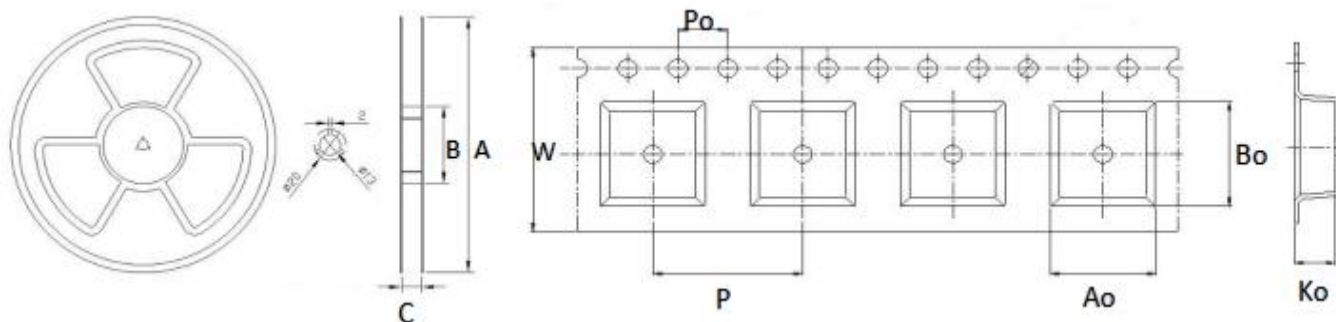
| 測試項目                         | 測試條件                                                                        | 測試手法                                                                                           |
|------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Thermal Shock<br>冷熱循環測試      | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內 | -25℃, (30 mins) -> room temp. (5 mins) -> 125℃, (30 mins) -> room temp. (5 mins)<br>100 cycles |
| Heat Resistance<br>耐溫測試      | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內 | Apply IDC current @ 85℃ ambient<br>Duration: 1000 hrs                                          |
| Humidity Resistance<br>耐濕測試  | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內 | Apply IDC current @ 60℃ ambient<br>Humidity: 90~95%<br>Duration: 1000 hrs                      |
| Low Temp. Storing<br>低溫儲藏測試  | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內 | Storing Temp.<br>-25 ±2 ℃ for total 1,000 +4/-0 hours                                          |
| High Temp. Storing<br>高溫儲藏測試 | Inductance change within ± 5% Without mechanical damage<br>外觀無異常，電感值變化在5%以內 | Storing Temp.<br>125 ±2 ℃ for total 1,000 +4/-0 hours                                          |

|                |                                       |                         |                             |
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載帶卷盤尺寸 : (mm)

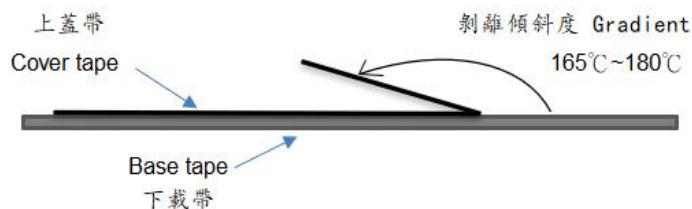
Packing Dimension

| 系列<br>Series | A   | B   | C    | W  | P | Po | Ao     | Bo      | Ko      |
|--------------|-----|-----|------|----|---|----|--------|---------|---------|
| 5040         | 330 | 100 | 12.5 | 12 | 8 | 4  | 5.2Typ | 5.4 Typ | 4.3 Typ |

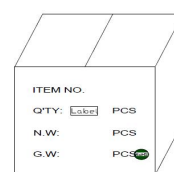
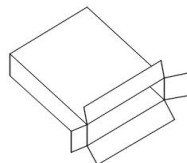
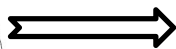
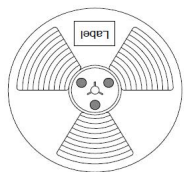


對上蓋帶施加力：20g~120g內即可與下載帶剝離

Tape Peeling off force: 20g~120g



Package Quantity

卷盤  
MPQ內盒  
Middle box外箱  
Outer box

| 系列<br>Series | 卷盤<br>MPQ | 內盒<br>Middle box | 外箱<br>Outer box |
|--------------|-----------|------------------|-----------------|
| 5040         | 2000pcs   | 6000pcs          | 18000pcs        |

© 實際出貨過程，依據客戶需求狀況的不同，包裝數量會有變化，最終的包裝數量請參照實際出貨包裝

In the actual delivery process, the package quantity will change according to the different customer demands. Please refer to the actual shipment quantity for the final package quantity



## 注意事项

使用本产品时，请注意以下事项

- ◎ 产品保存期限为12个月，保存条件：温度5~40℃，湿度10~75%RH以内，超过保存期限可能会使元器件电极发生氧化，存储标准可参照：IEC\_61760-2-2021  
This components storage life is 12 months, Storage Temperature: TEMP.5~40℃; RH10%~75%. Please use this components within the warranty period. refer standard to: IEC\_61760-2-2021
- ◎ 请勿在极端环境下使用和保存（高盐，强酸，强碱，强辐射等）。  
Do not use this component in special environments, such as high salt content, strong acid, strong alkali, strong corrosion and other special environments.
- ◎ 元器件焊接前,请进行预热,预热与焊接温度之间温差建议控制在150℃以内;焊接标准参考：EN61760-1:2006  
Please preheat the product before welding; it is recommended to control the preheating temperature and welding temperature within 150℃. refer standard to: EN61760-1:2006
- ◎ 元器件焊接后需重新拆卸焊接修正时，请遵循规格书规定的条件范围；过高的加热温度以及反复的拆卸可能会导致元器件失效。  
When repairing this component, the temperature used for disassembly should not exceed the datasheet limit and do not disassemble it frequently to prevent damage to the component.
- ◎ 请勿用清洗剂、丙酮等腐蚀性液体接触该元器件，这可能会侵蚀元器件本体以至于失效。  
Do not use acetone or other corrosive liquids to contact this component or it will cause it to fail.
- ◎ 元器件焊接到线路板后，请注意不可因线路板整体变形或局部变形而施加给电感剩余应力，这可能会导致元器件脱落、破损失效。  
When this component is soldered to the circuit board, you need to pay attention to the stress applied to it by the PCB, which may cause it to fall off or damaged fail.
- ◎ 元器件通电后温度会随电流的增大而上升，设计时请务必考虑留有余量。  
Self heating (Rated Current or Irms) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- ◎ 过高的静电会损坏该元器件，请注意静电防护。  
Too high static electricity will cause permanent damage to the product, please pay attention to electrostatic protection.
- ◎ 本元器件作为磁性产品，设计时请务必考虑周边元器件与本产品可能产生的耦合效应影响。  
This magnetic component needs to be considered for coupling effects in the application.
- ◎ 谱罗德并不能完全掌握或熟悉客户的特定应用以及要求，贵司有责任和义务验证此元器件以及元器件规格书中的描述是否满足于贵司的设计要求；需要指出是：即使按照现有的技术标准操作，该元器件依然有几率在典型寿命结束前发生故障，谱罗德强烈建议贵司对于该元器件在一些典型的严苛应用中，例如安规产品，工业产品、医疗产品、车载产品、航空/航天等产品应用，对于该元器件可能存在的失效情况做适当的冗余设计，以此避免该元器件在失效时造成严重后果；特别提醒：对于特定的应用对象谱罗德强烈要求贵司同谱罗德取得书面的许可，否则谱罗德不予承担元器件失效带来的任何责任，特定对象包括且不限于：车用，航空航天，安规产品，军用以及贵司对元器件有严苛要求的产品。

PROD cannot fully understand and be familiar with customers' specific applications and requirements. Your company has the responsibility and obligation to verify whether the components and the description in the component specification meet your design requirements. Special reminder: Even if operated in accordance with existing technical standards, this component still has a chance of failure before the end of its typical life. PROD strongly recommends that your company make appropriate redundant designs for possible failure situations of this component in some typical harsh applications, such as safety products, industrial products, medical products, automotive products, aviation/aerospace products, etc., so as to avoid serious consequences when the component fails.

**PROD Requirements:** For specific application item, PROD strongly requires your (or company) to obtain written permission from PROD, otherwise PROD will not bear any responsibility for component failure. Specific item list include but are not limited to: automotive, aerospace, safety products, military and products that your company has strict requirements on components.

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