



## SPECIFICATION FOR APPROVAL

产品规格承认书

Unibody Inductor

一体成型功率电感

CUSTOMER.

MODEL NO.

MS1050-6R8M

CUSTOMER'S PART NO.

LILE NO.

DATE.

2020-1-16

REVISION.

A/0

| CUSTOMER APPROVE |          |             |
|------------------|----------|-------------|
|                  |          |             |
| DATE:            |          |             |
| DRAWING          |          |             |
| DRAWN BY         | CHECK BY | APPROVAL BY |
|                  |          |             |
| DATE:            |          |             |



IATF16949 / ISO9001 / ISO14000

深圳市迈翔科技有限公司

SHENZHEN MOTTO TECHNOLOGY Co., Ltd

香港瑞德科技有限公司 黄冈市迈翔电子有限公司

Motto Technology park, niu e ling village no#214 xintian,nghua Town,  
Guanlan Street, Longhua District, Shenzhen

TEL: +86 0755-8948751~2 89487610 Fax: +86 0755-61624574

[Http://www.coilmx.com](http://www.coilmx.com) E-mail: [sales@mottotech.com](mailto:sales@mottotech.com)

CUSTOMER

MODEL NO.

MS1050-6R8M

REVISION

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FILE NO.

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## REVISIONS

REW

PROJECT CHANGE

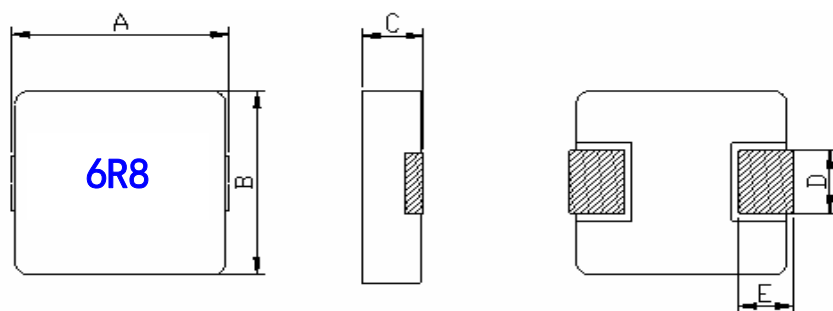
DESCRIPTION

Date

|          |  |           |             |          |           |
|----------|--|-----------|-------------|----------|-----------|
| CUSTOMER |  | MODEL NO. | MS1050-6R8M | REVISION | A/0       |
| FILE NO. |  | PART NO.  |             | DATE     | 2020-1-16 |

## 1.PRODUCT DIMENSION

UNIT:mm



|   |            |
|---|------------|
| A | 11.15±0.35 |
| B | 10.0±0.3   |
| C | 5.0 Max    |
| D | 3.0±0.5    |
| E | 2.0±0.5    |
|   |            |
|   |            |
|   |            |
|   |            |
|   |            |

## 2.ELECTRICAL REQUIREMENTS

| PARAMETER | SPECIFICATION     | CONDITION   | TEST INSTRUMENTS    |
|-----------|-------------------|-------------|---------------------|
| L(uH)     | 6.8μH±20%         | 100KHz/1.0V | MICROTEST 6377      |
| DCR(mΩ)   | 18.5mΩ MAX        | At 25℃      | TH2512A             |
| I sat(A)  | 14.0A TYP L0A*70% | 100KHz/1.0V | MICROTEST 6377+6220 |
| I rms(A)  | 8.5A TYP ΔT≤40℃   | 100KHz/1.0V | MICROTEST 6377+6220 |
|           |                   |             |                     |

## 3.CHARACTERISTICS

- (1). All test data is based on 25℃ ambient.
- (2). DC current(A)that will cause an approximate ΔT40℃
- (3). DC current(A)that will cause L0 to drop approximately 30%Typ
- (4). Operating temperature range: -55℃~+125℃
- (5).The part temperature (ambient + temp rise)should not exceed 125℃ under worst case operating conditions. circuit design, component.PWB trace size and thickness,airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the den application

## 4.SPECIAL REQUEST

- (1)Lettering 6R8 on top of the body.

|          |  |           |             |          |           |
|----------|--|-----------|-------------|----------|-----------|
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| FILE NO. |  | PART NO.  |             | DATE     | 2020-1-16 |

## 5.PRODUCT IDENTIFICATION

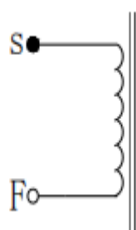
XX XXXX - XXX X X

① ② ③ ④ ⑤

①、 Product Symbol ②、 Dimensions ③、 Inductance

④、 Tolerance: M±20%, N±30%. ⑤、 Material

## 6.ELECTRICAL SCHEMATICS



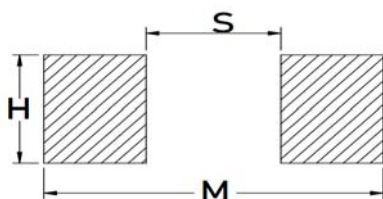
## 7.APPLICATION

- (1)Low profile,high current power supplies.
- (2)Battery powered devices.
- (3)DC/DC converters in distributed power systems.
- (4)DC/DC converters for field programmable gate array.

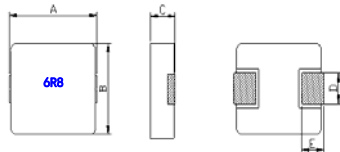
## 8.FEATURES

- (1)ROHS compliant.
- (2)Super low resistance,ultra high current rating.
- (3)high performance(I sat)realized by metal dust core.
- (4)Frequency Range:up to 1MHZ.

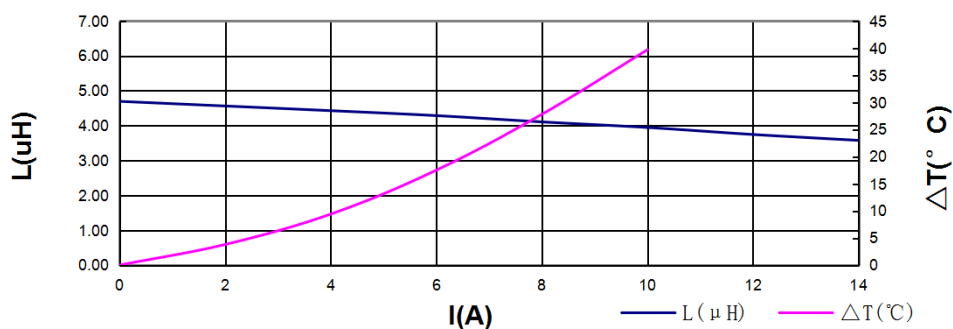
## 9.RECOMMENDED PCB LAYOUT



|   |      |
|---|------|
| H | 4.95 |
| S | 5.4  |
| M | 13.6 |

|                           |      |            |            |                      |         |                    |                                                                                       |           |  |
|---------------------------|------|------------|------------|----------------------|---------|--------------------|---------------------------------------------------------------------------------------|-----------|--|
| CUSTOMER                  |      | MODEL NO.  |            | MS1050-6R8M          |         | REVISION           |                                                                                       | A/0       |  |
| FILE NO.                  |      | PART NO.   |            |                      |         | DATE               |                                                                                       | 2020-1-16 |  |
| SORT                      | ITEM | A          | B          | C                    | D       | E                  |                                                                                       |           |  |
| PRODUCT & DIMENSION       | SPEC | 11.15±0.35 | 10.0±0.3   | 5.0 Max              | 3.0±0.5 | 2.0±0.5            |                                                                                       |           |  |
|                           | 1    | 10.76      | 10.03      | 4.92                 | 2.98    | 2.08               |                                                                                       |           |  |
|                           | 2    | 10.78      | 10.03      | 4.89                 | 2.98    | 2.06               |                                                                                       |           |  |
|                           | 3    | 10.76      | 10.04      | 4.89                 | 2.98    | 2.10               |                                                                                       |           |  |
|                           | 4    | 10.76      | 10.03      | 4.92                 | 2.97    | 2.08               |                                                                                       |           |  |
|                           | 5    | 10.74      | 10.04      | 4.89                 | 2.98    | 2.07               |                                                                                       |           |  |
|                           | X    | 10.76      | 10.03      | 4.90                 | 2.98    | 2.08               |                                                                                       |           |  |
|                           | R    | 0.04       | 0.01       | 0.03                 | 0.01    | 0.04               |                                                                                       |           |  |
| ELECTRICAL & REQUIREMENTS | ITEM | L(μH)      | DCR (mΩ)   | I sat(A)             | DC BIAS | I <sub>rms</sub>   | SHAPE:                                                                                |           |  |
|                           | SPEC | 6.8μH±20%  | 18.5mΩ MAX | 14.0A TYP<br>L0A*70% |         | 8.5A TYP<br>ΔT≤40℃ |  |           |  |
|                           | 1    | 6.830      | 15.86      | 5.180                | -24.2%  | OK                 |                                                                                       |           |  |
|                           | 2    | 6.810      | 15.82      | 5.160                | -24.2%  | OK                 |                                                                                       |           |  |
|                           | 3    | 6.840      | 15.87      | 5.170                | -24.4%  | OK                 |                                                                                       |           |  |
|                           | 4    | 6.850      | 15.83      | 5.180                | -24.4%  | OK                 |                                                                                       |           |  |
|                           | 5    | 6.830      | 15.84      | 5.170                | -24.3%  | OK                 |                                                                                       |           |  |
|                           | X    | 6.83       | 15.84      | 5.17                 | -24.3%  |                    |                                                                                       |           |  |
|                           | R    | 0.04       | 0.05       | 0.02                 | 0.3%    |                    |                                                                                       |           |  |

CURRENT CHARACTERISTIC



|        |       |       |       |       |       |       |       |       |       |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| I(A)   | 0     | 2     | 4     | 6     | 8     | 10    | 12    | 14    | 16    |
| L(μH)  | 4.695 | 4.562 | 4.428 | 4.286 | 4.106 | 3.946 | 3.745 | 3.576 | 3.373 |
| ΔT(°C) | 0     | 3.8   | 9.4   | 17.5  | 27.8  | 39.7  |       |       |       |

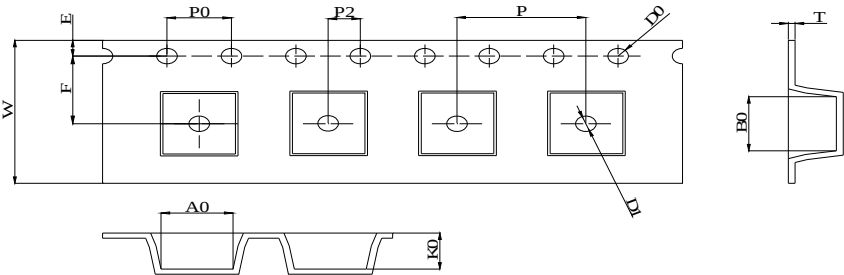
| CUSTOMER                            |                                                                                                     | MODEL NO.                                                                                                                                                                                                                                                                                                                                      | MS1050-6R8M | REVISION | A/0       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|-----------|
| FILE NO.                            |                                                                                                     | PART NO.                                                                                                                                                                                                                                                                                                                                       |             | DATE     | 2020-1-16 |
| 11.可靠性Reliability                   |                                                                                                     |                                                                                                                                                                                                                                                                                                                                                |             |          |           |
| 项目Item                              | 规格与需求<br>Specification and Requirement                                                              | 测试方法Test Method                                                                                                                                                                                                                                                                                                                                |             |          |           |
| 可焊性<br>Solder ability test          | 沾锡面积不得小于95%上锡面<br>Terminals area must have 95% min solder coverage                                  | 上锡升温曲线Solder heat proof:<br>(1) 预热: 160±10℃持续90s<br>Preheating: 160±10℃ for 90 seconds<br>(2) 恒温时段: 245±5℃持续2±0.5s<br>Retention time: 245±5℃ for 2±0.5 seconds                                                                                                                                                                                 |             |          |           |
| 振动测试<br>Vibration test              | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1) 振动频率(10Hz 55Hz 10Hz)60s为一个周期 Vibration frequency: (10Hz to 55Hz to 10Hz) in 60 seconds as a period<br>(2) 振动时间 Vibration time:<br>三维正交坐标系每个方向振动(周期)循环2小时 Period cycled for 2 hours in each of 3 mutual perpendicular directions<br>(3) 振幅 Amplitude: 1.5 mm Max                                                                            |             |          |           |
| 冲击测试<br>Shock test                  | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1) 最大振幅 Peak value: 100G<br>(2) 脉冲波长 Duration of pulse: 11ms<br>(3) 三维正交坐标系每个方向正负方向冲击3次 Times in each positive and negative direction of 3 mutual perpendicular directions                                                                                                                                                                    |             |          |           |
| 冷热冲击<br>Thermal shock               | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1)重复以上100个循环Repeat 100 cycle as follow<br>(-55±2℃,30±3分钟) 室温5分钟<br>(-55±2℃,30±3 minutes)<br>Room temperature,5 minutes<br>(+125±2℃,30±3分钟) 室温5分钟<br>(+125±2℃,30±3 minutes)<br>Room temperature,5 minutes<br>(2)恢复: 测试于标准条件下恢复48+4/-0小时 (参考注释1)<br>Recovery:48+4/-0 hours of recovery under the standard condition after the test. (see Note1) |             |          |           |
| 耐高温测试<br>High temperature life test | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1)环境条件: 85±2℃<br>Environment condition : 85±2℃<br>应用电流: 额定电流<br>Applied current: Rated current<br>(2)持续时间: 1000+4/-0 小时 (参考注释1)<br>Duration:1000+4/-0 hours (see Note1)                                                                                                                                                                       |             |          |           |
| 耐湿测试<br>Humidity Resistance         | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1)环境条件: 60±2℃<br>Environment condition : 60±2℃<br>湿度: 90~95%<br>Humidity:90~95%<br>应用电流: 额定电流<br>Applied current: Rated current<br>(2)持续时间: 1000+4/-0 小时 (参考注释1)<br>Duration:1000+4/-0 hours (see Note1)                                                                                                                                      |             |          |           |
| 低温存放测试Low temperature life test     | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1)存储温度 Store temperature<br>-55±2℃下存放 1000+4/-0 小时<br>-55±2℃for total 1000+4/-0 hours                                                                                                                                                                                                                                                         |             |          |           |
| 高温存放测试High temperature life test    | 感值变化: 不超过±5%<br>且无破裂等机械损伤产生<br>Inductance change: Within±5% Without mechanical damage such as break | (1)存储温度 Store temperature<br>+125±2℃下存放 1000+4/-0 小时<br>+125±2℃for total 1000+4/-0 hours                                                                                                                                                                                                                                                       |             |          |           |

|          |  |           |             |          |           |
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12、包装 Packaging

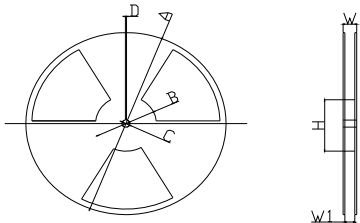
12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



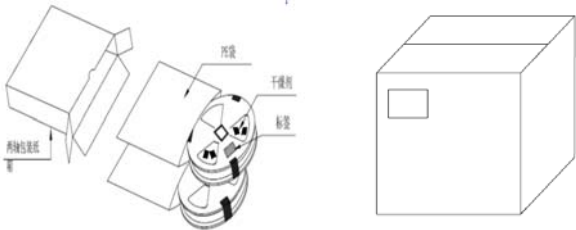
| W              | A0            | B0            | K0           | P             | F            | E             | D0            | P0           | T             |
|----------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|
| 24.00<br>±0.30 | 10.6<br>±0.10 | 11.8<br>±0.10 | 5.5<br>±0.10 | 16.0<br>±0.10 | 11.5<br>±0.1 | 1.75<br>±0.10 | 1.50<br>±0.10 | 4.0<br>±0.10 | 0.35<br>±0.05 |

12.1.2 卷轴尺寸 Reel dimensions



| 项目 | 尺寸(mm)      |
|----|-------------|
| A  | 330.0 ± 2.0 |
| B  | 100.0 ± 1.0 |
| C  | 13.0 ± 1.0  |
| D  | 1.9 ± 0.4   |
| W  | 30.4 Max    |
| W1 | 24.4 ± 1.0  |

12.1.3 外箱尺寸 Carton dimensions



| 项目  | 数量(PCS) |
|-----|---------|
| 1卷轴 | 500     |
| 1内箱 | 1000    |
| 1外箱 | 3000    |

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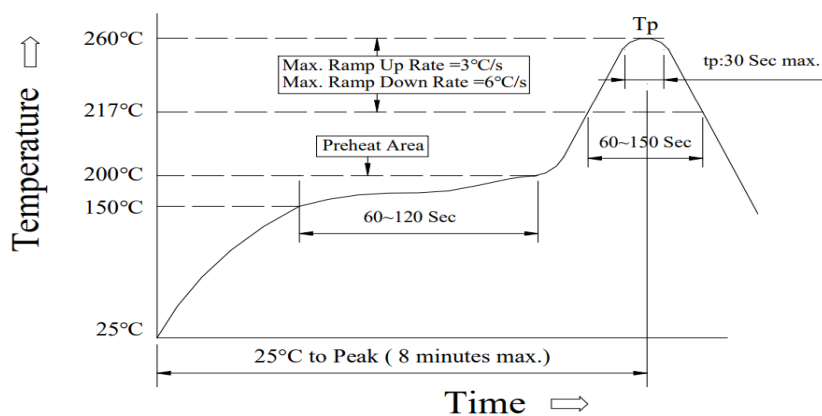
DATE

2020-1-16

## Reflow curve

## ※ Reflow Profile

## Power Choke Coil Type



## 1. Reflow Soldering Method

|                               |                |                       |
|-------------------------------|----------------|-----------------------|
| Reflow Soldering              | Tp:255~260°C   | Max.30 seconds ( tp ) |
|                               | 217°C          | 60~150 seconds        |
| Pre-Heat                      | 150 ~ 200°C    | 60~120 seconds        |
| Time 25°C to peak temperature | 8 minutes max. |                       |

## 2. Soldering iron method : 350±5°C Max.3 seconds.