



## SPECIFICATION FOR APPROVAL

产品规格承认书

**Unibody Inductor**

一体成型功率电感

CUSTOMER.

MODEL NO.

**MQ1350-R68M**

CUSTOMER'S PART NO.

LILE NO.

DATE.

**2020-3-2**

REVISION.

**A/0**

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



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CUSTOMER

MODEL NO.

MQ1350-R68M

REVISION

A/0

FILE NO.

PART NO.

DATE

2020-3-2

## REVISIONS

REW

PROJECT CHANGE

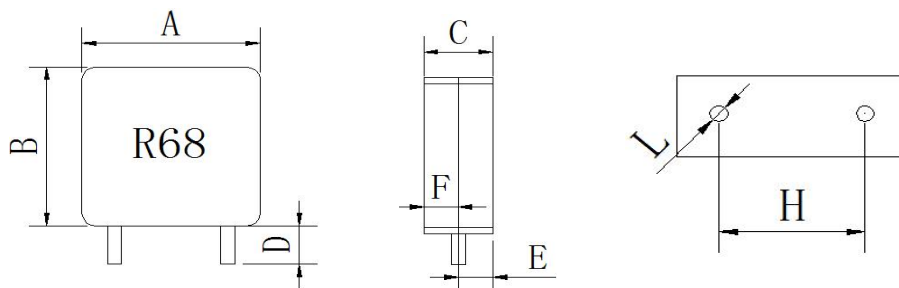
DESCRIPTION

Date

|          |  |           |             |          |          |
|----------|--|-----------|-------------|----------|----------|
| CUSTOMER |  | MODEL NO. | MQ1350-R68M | REVISION | A/0      |
| FILE NO. |  | PART NO.  |             | DATE     | 2020-3-2 |

## 1.PRODUCT DIMENSION

UNIT:mm



|   |           |
|---|-----------|
| A | 12.6±0.5  |
| B | 12.6±0.5  |
| C | 5.0 Max   |
| D | 2.0±0.5   |
| E | 2.5REF    |
| F | 2.5REF    |
| H | 8.0±0.3   |
| L | 1.05±0.10 |
|   |           |
|   |           |
|   |           |

## 2.ELECTRICAL REQUIREMENTS

| PARAMETER | SPECIFICATION     | CONDITION   | TEST INSTRUMENTS    |
|-----------|-------------------|-------------|---------------------|
| L(uH)     | 0.68μH±20%        | 100KHz/1.0V | MICROTEST 6377      |
| DCR(mΩ)   | 2.5mΩMAX          | At 25℃      | TH2512A             |
| I sat(A)  | 50.0A TYP L0A*70% | 100KHz/1.0V | MICROTEST 6377+6220 |
| I rms(A)  | 31.0A 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 R68 on top of the body.

|          |  |           |             |          |          |
|----------|--|-----------|-------------|----------|----------|
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## 5.PRODUCT IDENTIFICATION

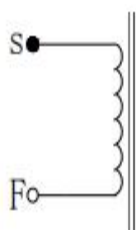
XX XXXX - XXX X X

① ② ③ ④ ⑤

①、Product Symbol ②、Dimensions ③、 Inductance

④、Tolerance: M±20%, N±30%. ⑤、Material

## 6.ELECTRICAL SCHEMATICS



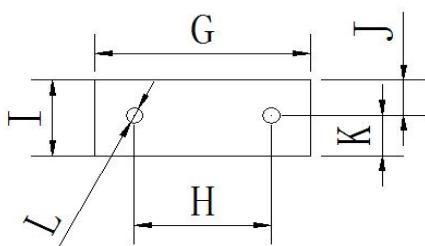
## 7.APPLICATION

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

## 8.FEATURES

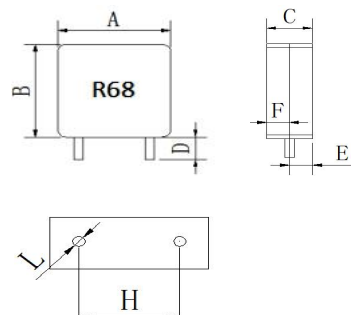
- (1)ROHS compliant.
- (2)Super low resistance,ultra high current rating.
- (3)high performance(I sat)realized by metal dust core.
- (4)Frequency Range:up to 1MHZ.

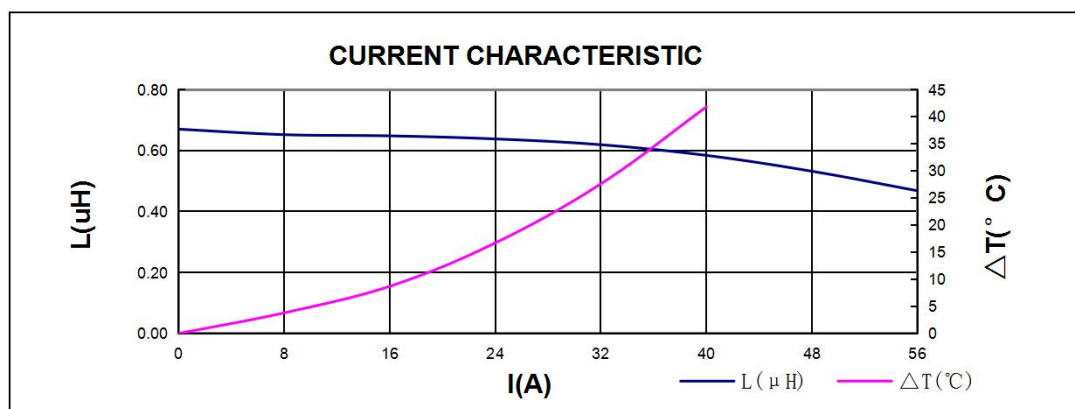
## 9.RECOMMENDED PCB LAYOUT



|   |      |
|---|------|
| G | 13.5 |
| H | 8.0  |
| I | 5.0  |
| J | 2.8  |
| K | 2.8  |
| L | 1.5  |

|                     |      |           |          |             |         |          |        |          |           |
|---------------------|------|-----------|----------|-------------|---------|----------|--------|----------|-----------|
| CUSTOMER            |      | MODEL NO. |          | MQ1350-R68M |         | REVISION |        | A/0      |           |
| FILE NO.            |      | PART NO.  |          |             |         | DATE     |        | 2020-3-2 |           |
| SORT                | ITEM | A         | B        | C           | D       | E        | F      | H        | L         |
| PRODUCT & DIMENSION | SPEC | 12.6±0.5  | 12.6±0.5 | 5.0 Max     | 2.0±0.5 | 2.5REF   | 2.5REF | 8.0±0.3  | 1.05±0.10 |
|                     | 1    | 12.70     | 12.69    | 4.87        | 2.08    | 2.41     | 2.43   | 8.08     | 1.08      |
|                     | 2    | 12.71     | 12.70    | 4.90        | 2.02    | 2.42     | 2.44   | 8.09     | 1.08      |
|                     | 3    | 12.70     | 12.69    | 4.91        | 2.01    | 2.42     | 2.41   | 8.08     | 1.09      |
|                     | 4    | 12.70     | 12.70    | 4.89        | 2.06    | 2.45     | 2.42   | 8.08     | 1.08      |
|                     | 5    | 12.69     | 12.70    | 4.91        | 2.02    | 2.44     | 2.43   | 8.11     | 1.08      |
|                     | X    | 12.70     | 12.70    | 4.90        | 2.04    | 2.43     | 2.43   | 8.09     | 1.08      |
|                     | R    | 0.02      | 0.01     | 0.04        | 0.07    | 0.04     | 0.03   | 0.03     | 0.01      |

|                           |      |            |          |                      |         |                     |                                                                                      |  |  |  |
|---------------------------|------|------------|----------|----------------------|---------|---------------------|--------------------------------------------------------------------------------------|--|--|--|
| ELECTRICAL & REQUIREMENTS | ITEM | L(μH)      | DCR (mΩ) | I sat(A)             | DC BIAS | I <sub>rms</sub>    | SHAPE:                                                                               |  |  |  |
|                           | SPEC | 0.68μH±20% | 2.5mΩMAX | 50.0A TYP<br>L0A*70% |         | 31.0A TYP<br>ΔT≤40℃ |  |  |  |  |
|                           | 1    | 0.650      | 1.56     | 0.480                | -26.2%  | OK                  |                                                                                      |  |  |  |
|                           | 2    | 0.640      | 1.53     | 0.470                | -26.6%  | OK                  |                                                                                      |  |  |  |
|                           | 3    | 0.660      | 1.55     | 0.490                | -25.8%  | OK                  |                                                                                      |  |  |  |
|                           | 4    | 0.670      | 1.58     | 0.490                | -26.9%  | OK                  |                                                                                      |  |  |  |
|                           | 5    | 0.670      | 1.57     | 0.500                | -25.4%  | OK                  |                                                                                      |  |  |  |
|                           | X    | 0.66       | 1.56     | 0.49                 | -26.1%  |                     |                                                                                      |  |  |  |
|                           | R    | 0.03       | 0.05     | 0.03                 | 1.5%    |                     |                                                                                      |  |  |  |



|        |       |       |       |       |       |       |       |       |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| I(A)   | 0     | 8     | 16    | 24    | 32    | 40    | 48    | 56    |
| L(μH)  | 0.670 | 0.652 | 0.648 | 0.638 | 0.619 | 0.584 | 0.532 | 0.468 |
| ΔT(°C) | 0     | 3.8   | 8.7   | 16.7  | 27.6  | 41.8  |       |       |

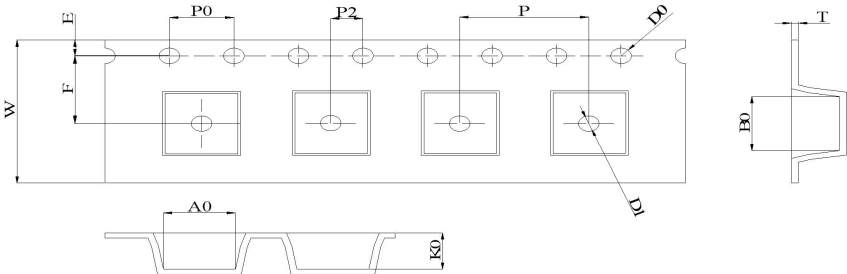
|                                     |                                                                                                     |           |                                                                                                                                                                                                                                                                                                                                                |          |          |
|-------------------------------------|-----------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|
| CUSTOMER                            |                                                                                                     | MODEL NO. | MQ1350-R68M                                                                                                                                                                                                                                                                                                                                    | REVISION | A/0      |
| FILE NO.                            |                                                                                                     | PART NO.  |                                                                                                                                                                                                                                                                                                                                                | DATE     | 2020-3-2 |
| 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

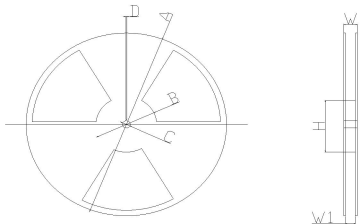
12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



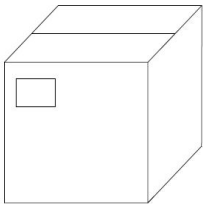
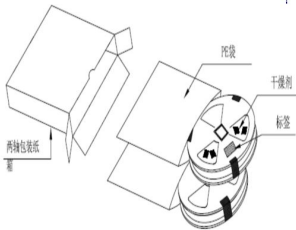
| W              | A0            | B0            | K0           | P             | F            | E             | D0            | P0           | T             |
|----------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|
| 24.00<br>±0.30 | 12.8<br>±0.10 | 12.8<br>±0.10 | 5.3<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     |

CUSTOMER

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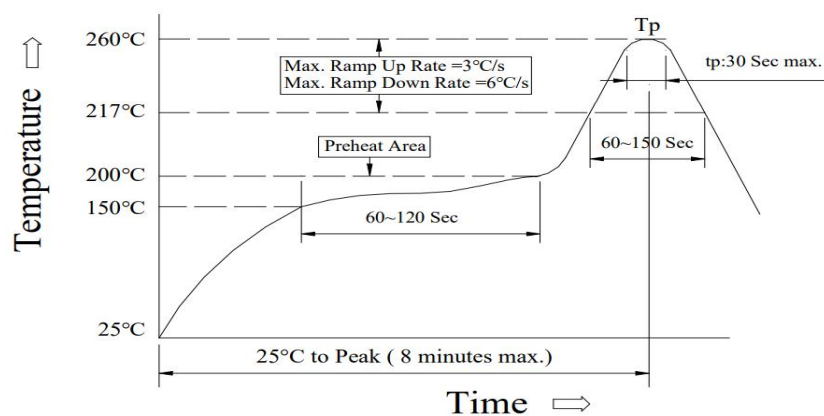
DATE

2020-3-2

## 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.