



SPECIFICATION FOR APPROVAL

产品规格承认书

SMD POWER INDUCTOR

功率电感

CUSTOMER.

MODEL NO.

MSA54-470M

CUSTOMER'S PART NO.

LILE NO.

DATE.

2019.4.26

REVISION.

A/0

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



IATF16949 / ISO9001 / ISO14000

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|----------|--|-----------|------------|----------|-----------|
| CUSTOMER | | MODEL NO. | MSA54-470M | REVISION | A/0 |
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| | | | |
|---------------------|---|---------|--|
| 1.PRODUCT DIMENSION | | UNIT:mm | |
| | A | 5.8±0.3 | |
| | B | 5.2±0.3 | |
| | C | 4.5±0.3 | |
| | | | |
| | | | |
| | | | |
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| | | | |
| | | | |

| 2.ELECTRICAL REQUIREMENTS | | | |
|---------------------------|---------------|-------------|---------------------|
| PARAMETER | SPECIFICATION | CONDITION | TEST INSTRUMENTS |
| L(uH) | 47±20% | 100KHz/1.0V | MICROTEST 6377 |
| DCR(mΩ) | 408MAX | At 25℃ | TH2512A |
| I sat(A) | 1.4A TYP 30% | 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 10%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 470 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

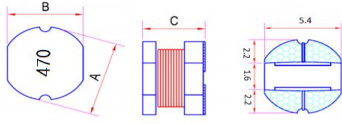
- (1)Low profile,high current power supplies.
- (2)Battery powered devices.
- (3)DC/DC converters in distributed power systems.
- (5)DC/DC converters for field programmable gate array.

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

| | | |
|--|---|--|
| | H | |
| | S | |
| | M | |
| | | |
| | | |
| | | |

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| SORT | | ITEM | A | B | C | | | | | |
| PRODUCT & DIMENSION | SPEC | 5.8±0.3 | 5.2±0.3 | 4.5±0.3 | | | | | | |
| | 1 | 5.83 | 5.23 | 4.52 | | | | | | |
| | 2 | 5.82 | 5.22 | 4.54 | | | | | | |
| | 3 | 5.83 | 5.24 | 4.52 | | | | | | |
| | 4 | 5.81 | 5.23 | 4.53 | | | | | | |
| | 5 | 5.82 | 5.22 | 4.52 | | | | | | |
| | X | 5.82 | 5.23 | 4.53 | | | | | | |
| | R | 0.02 | 0.02 | 0.02 | | | | | | |
| ELECTRICAL & REQUIREMENTS | ITEM | L(uH) | DCR (mΩ) | I sat(A) | | | SHAPE: | | | |
| | SPEC | 47±20% | 408MAX | 1.4A TYP 30% | | |  | | | |
| | 1 | 50.30 | 341.00 | 43.00 | | | | | | |
| | 2 | 50.21 | 340.00 | 42.00 | | | | | | |
| | 3 | 50.30 | 345.00 | 43.00 | | | | | | |
| | 4 | 50.20 | 342.00 | 42.00 | | | | | | |
| | 5 | 49.20 | 342.00 | 43.00 | | | | | | |
| | X | 50.04 | 342.00 | 42.60 | | | | | | |
| | R | 1.10 | 5.00 | 1.00 | | | | | | |

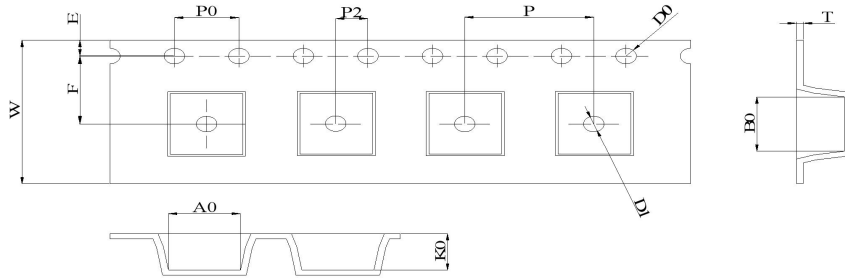
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| 3 | | | | | |
| 项目Item | 规格与需求 Specification and Requirement | 测试方法Test Method | | | |
| 可焊性 Solder ability test | 沾锡面积不得小于95%上锡面 Terminals area must have 95% min solder coverage | 上锡升温曲线Solder heat proof: (1) 预热: 160±10℃持续90s Preheating: 160±10℃ for 90 seconds (2) 恒温时段: 245±5℃持续2±0.5s Retention time: 245±5℃ for 2±0.5 seconds | | | |
| 振动测试 Vibration test | 感值变化: 不超过±5% 且无破裂等机械损伤产生 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 (2) 振动时间 Vibration time: 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 (3) 振幅 Amplitude: 1.5 mm Max | | | |
| 冲击测试 Shock test | 感值变化: 不超过±5% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1) 最大振幅 Peak value: 100G (2) 脉冲波长 Duration of pulse: 11ms (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 Thermal shock | 感值变化: 不超过±5% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1)重复以上100个循环Repeat 100 cycle as follow (-55±2℃,30±3分钟) 室温5分钟 (-55±2℃,30±3 minutes) Room temperature,5 minutes (+125±2℃,30±3分钟) 室温5分钟 (+125±2℃,30±3 minutes) Room temperature,5 minutes (2)恢复: 测试于标准条件下恢复48+4/-0小时 (参考注释1) Recovery:48+4/-0 hours of recovery under the standard condition after the test. (see Note1) | | | |
| 耐高温测试 High temperature life test | 感值变化: 不超过±5% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1)环境条件: 85±2℃ Environment condition : 85±2℃ 应用电流: 额定电流 Applied current: Rated current (2)持续时间: 1000+4/-0 小时 (参考注释1) Duration:1000+4/-0 hours (see Note1) | | | |
| 耐湿测试 Humidity Resistance | 感值变化: 不超过±5% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1)环境条件: 60±2℃ Environment condition : 60±2℃ 湿度: 90~95% Humidity:90~95% 应用电流: 额定电流 Applied current: Rated current (2)持续时间: 1000+4/-0 小时 (参考注释1) 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% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1)存储温度 Store temperature -55±2℃下存放 1000+4/-0 小时 -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% 且无破裂等机械损伤产生 Inductance change: Within±5% Without mechanical damage such as break | (1)存储温度 Store temperature +125±2℃下存放 1000+4/-0 小时 +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



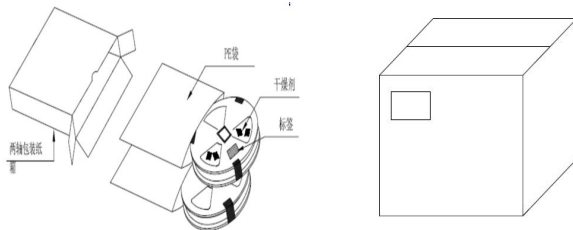
| W | A0 | B0 | K0 | P | F | E | D0 | P0 | T |
|----------------|--------------|--------------|--------------|--------------|-------------|---------------|---------------|--------------|---------------|
| 12.00 ±0.30 | 5.4 ±0.10 | 6.0 ±0.10 | 4.8 ±0.10 | 8.0 ±0.10 | 5.5 ±0.1 | 1.75 ±0.10 | 1.50 ±0.10 | 4.0 ±0.10 | 0.35 ±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 | 17.5max |
| W1 | 12.5max |

12.1.3 外箱尺寸 Carton dimensions



| 项目 | 数量 (PCS) |
|-----|----------|
| 1卷轴 | 1500 |
| 1内箱 | 6000 |
| 1外箱 | 18000 |

| | | | | | |
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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.