



**SPECIFICATION FOR APPROVAL**

产品规格承认书

**Unibody Inductor**

一体成型功率电感

CUSTOMER.

\_\_\_\_\_

MODEL NO.

**MS0420-R33M**

\_\_\_\_\_

CUSTOMER'S PART NO.

\_\_\_\_\_

LILE NO.

\_\_\_\_\_

DATE.

**2019-6-18**

\_\_\_\_\_

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

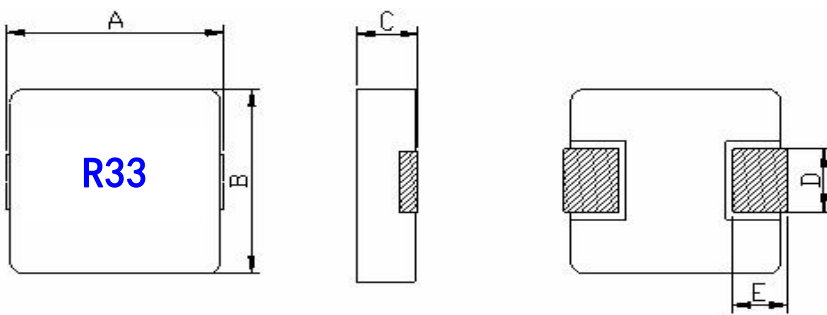
[Http://www.coilmx.com](http://www.coilmx.com) E-mail: [sales@mottotech.com](mailto:sales@mottotech.com)

|          |  |           |             |          |           |
|----------|--|-----------|-------------|----------|-----------|
| CUSTOMER |  | MODEL NO. | MS0420-R33M | REVISION | A/0       |
| FILE NO. |  | PART NO.  |             | DATE     | 2019-6-18 |

REVISIONS

| REW | PROJECT CHANGE | DESCRIPTION | Date |
|-----|----------------|-------------|------|
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |
|     |                |             |      |

|                 |  |                  |                    |                 |                  |
|-----------------|--|------------------|--------------------|-----------------|------------------|
| <b>CUSTOMER</b> |  | <b>MODEL NO.</b> | <b>MS0420-R33M</b> | <b>REVISION</b> | <b>A/0</b>       |
| <b>FILE NO.</b> |  | <b>PART NO.</b>  |                    | <b>DATE</b>     | <b>2019-6-18</b> |

|  |          |                 |  |
|--|----------|-----------------|--|
| <b>1.PRODUCT DIMENSION</b>   |          | <b>UNIT:mm</b>  |  |
|  | <b>A</b> | <b>4.4±0.35</b> |  |
|  | <b>B</b> | <b>4.2±0.25</b> |  |
|  | <b>C</b> | <b>2.0 Max</b>  |  |
|  | <b>D</b> | <b>1.5±0.3</b>  |  |
|  | <b>E</b> | <b>0.8±0.3</b>  |  |
|  |          |                 |  |
|  |          |                 |  |
|  |          |                 |  |
|  |          |                 |  |
|  |          |                 |  |

|                                  |                        |                    |                            |
|----------------------------------|------------------------|--------------------|----------------------------|
| <b>2.ELECTRICAL REQUIREMENTS</b> |                        |                    |                            |
| <b>PARAMETER</b>                 | <b>SPECIFICATION</b>   | <b>CONDITION</b>   | <b>TEST INSTRUMENTS</b>    |
| <b>L(uH)</b>                     | <b>0.33µH±20%</b>      | <b>100KHz/1.0V</b> | <b>MICROTEST 6377</b>      |
| <b>DCR(mΩ)</b>                   | <b>12mΩMAX</b>         | <b>At 25°C</b>     | <b>TH2512A</b>             |
| <b>I sat(A)</b>                  | <b>12A TYP L0A*70%</b> | <b>100KHz/1.0V</b> | <b>MICROTEST 6377+6220</b> |
| <b>I rms(A)</b>                  | <b>9A TYP ΔT≤40°C</b>  | <b>100KHz/1.0V</b> | <b>MICROTEST 6377+6220</b> |
|                                  |                        |                    |                            |

**3.CHARACTERISTICS**

(1). All test data is based on 25°C ambient.

(2). DC current(A)that will cause an approximate ΔT40°C

(3). DC current(A)that will cause L0 to drop approximately 30%Typ

(4). Operating temperature range: -55°C~+125°C

(5).The part temperature (ambient + temp rise)should not exceed 125°C 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 **R33** on top of the body.

|                 |  |                  |                    |                 |                  |
|-----------------|--|------------------|--------------------|-----------------|------------------|
| <b>CUSTOMER</b> |  | <b>MODEL NO.</b> | <b>MS0420-R33M</b> | <b>REVISION</b> | <b>A/0</b>       |
| <b>FILE NO.</b> |  | <b>PART NO.</b>  |                    | <b>DATE</b>     | <b>2019-6-18</b> |

**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**



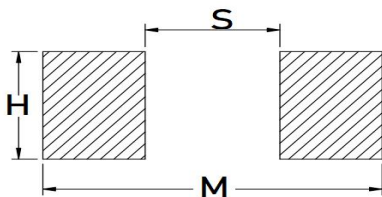
**7.APPLICATION**

- (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.

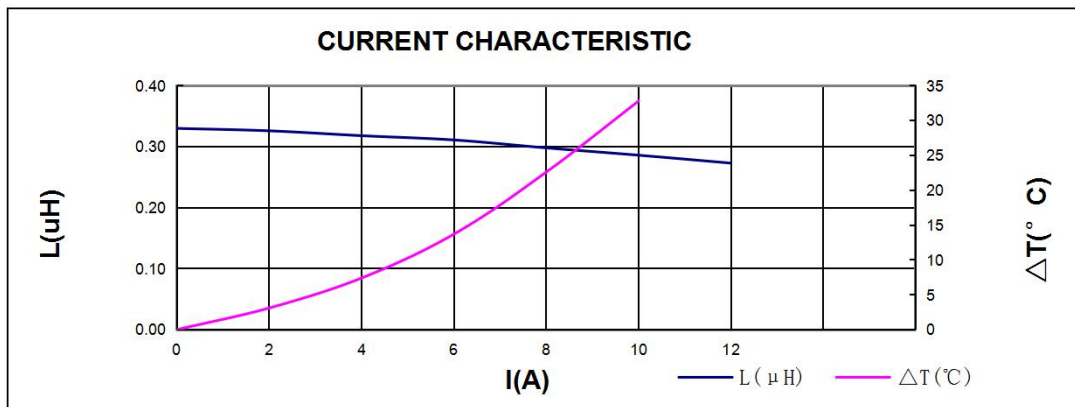
**9.RECOMMENDED PCB LAYOUT**



|          |            |
|----------|------------|
| <b>H</b> | <b>2.5</b> |
| <b>S</b> | <b>2.2</b> |
| <b>M</b> | <b>5.2</b> |
|          |            |
|          |            |
|          |            |

|                     |      |           |             |         |          |           |  |
|---------------------|------|-----------|-------------|---------|----------|-----------|--|
| CUSTOMER            |      | MODEL NO. | MS0420-R33M |         | REVISION | A/0       |  |
| FILE NO.            |      | PART NO.  |             |         | DATE     | 2019-6-18 |  |
| SORT                | ITEM | A         | B           | C       | D        | E         |  |
| PRODUCT & DIMENSION | SPEC | 4.4±0.35  | 4.2±0.25    | 2.0 Max | 1.5±0.3  | 0.8±0.3   |  |
|                     | 1    | 4.62      | 4.22        | 1.91    | 1.49     | 0.90      |  |
|                     | 2    | 4.60      | 4.22        | 1.87    | 1.48     | 0.90      |  |
|                     | 3    | 4.59      | 4.21        | 1.89    | 1.50     | 0.91      |  |
|                     | 4    | 4.63      | 4.21        | 1.88    | 1.48     | 0.90      |  |
|                     | 5    | 4.46      | 4.22        | 1.87    | 1.49     | 0.90      |  |
|                     | X    | 4.58      | 4.22        | 1.88    | 1.49     | 0.90      |  |
|                     | R    | 0.17      | 0.01        | 0.04    | 0.02     | 0.01      |  |

|                           |      |            |          |                    |         |                   |        |
|---------------------------|------|------------|----------|--------------------|---------|-------------------|--------|
| ELECTRICAL & REQUIREMENTS | ITEM | L(μH)      | DCR (mΩ) | I sat(A)           | DC BIAS | Irms              | SHAPE: |
|                           | SPEC | 0.33μH±20% | 12mΩMAX  | 12A TYP<br>LOA*70% |         | 9A TYP ΔT<br>≤40℃ |        |
|                           | 1    | 0.340      | 8.75     | 0.260              | -23.5%  | OK                |        |
|                           | 2    | 0.350      | 8.77     | 0.270              | -22.9%  | OK                |        |
|                           | 3    | 0.310      | 8.56     | 0.240              | -22.6%  | OK                |        |
|                           | 4    | 0.340      | 8.76     | 0.260              | -23.5%  | OK                |        |
|                           | 5    | 0.330      | 8.73     | 0.260              | -21.2%  | OK                |        |
|                           | X    | 0.33       | 8.71     | 0.26               | -22.7%  |                   |        |
|                           | R    | 0.04       | 0.21     | 0.03               | 2.3%    |                   |        |



|        |       |       |       |       |       |       |       |  |  |
|--------|-------|-------|-------|-------|-------|-------|-------|--|--|
| I(A)   | 0     | 2     | 4     | 6     | 8     | 10    | 12    |  |  |
| L(μH)  | 0.330 | 0.326 | 0.318 | 0.311 | 0.298 | 0.286 | 0.273 |  |  |
| ΔT(°C) | 0     | 3.1   | 7.4   | 13.7  | 22.6  | 32.8  |       |  |  |

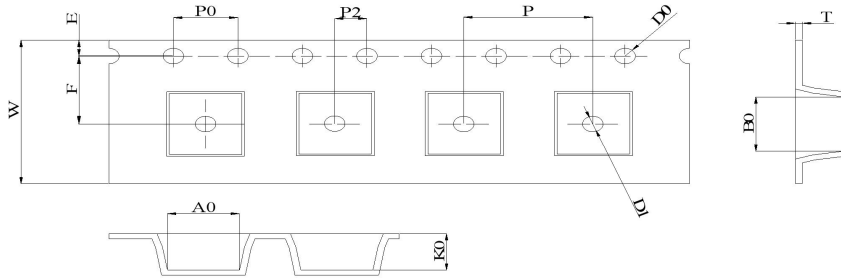
|                                      |   |  |             |          |           |
|--------------------------------------|---|--|-------------|----------|-----------|
| CUSTOMER                             |   | MODEL NO.  | MS0420-R33M | REVISION | A/0       |
| FILE NO.                             |   | PART NO.   |             | DATE     | 2019-6-18 |
| <b>11.可靠性Reliability</b>             |   |  |             |          |           |
| 项目Item                               | 规格与需求<br>Specification and Requirement  | 测试方法Test Method  |             |          |           |
| 可焊性<br>Solderability 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<br>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<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)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   |             |          |           |

|          |  |           |             |          |           |
|----------|--|-----------|-------------|----------|-----------|
| CUSTOMER |  | MODEL NO. | MS0420-R33M | REVISION | A/0       |
| FILE NO. |  | PART NO.  |             | DATE     | 2019-6-18 |

12、包装 Packaging

12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



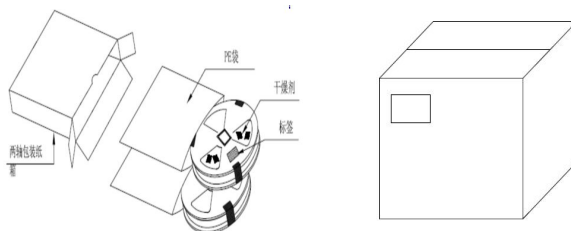
| W           | A0           | B0            | K0           | P          | F           | E             | D0            | P0           | T             |
|-------------|--------------|---------------|--------------|------------|-------------|---------------|---------------|--------------|---------------|
| 12<br>±0.30 | 4.5<br>±0.10 | 4.85<br>±0.10 | 2.2<br>±0.10 | 8<br>±0.10 | 5.5<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

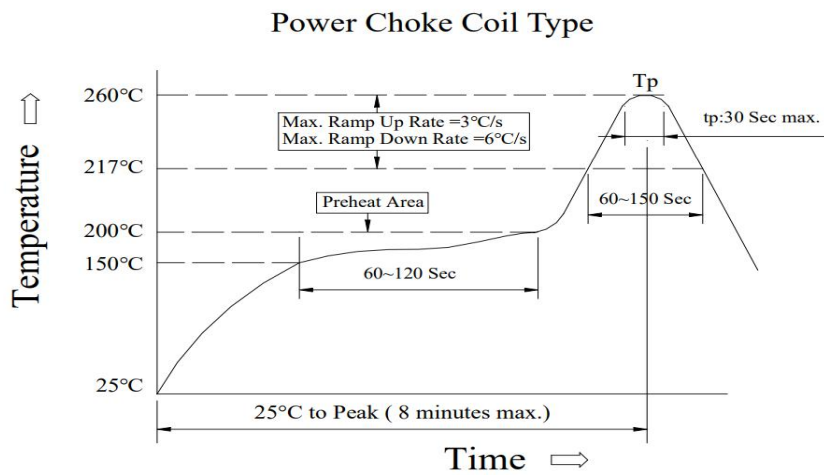


| 项目  | 数量 (PCS) |
|-----|----------|
| 1卷轴 | 3000     |
| 1内箱 | 12000    |
| 1外箱 | 36000    |

|          |  |           |             |          |           |
|----------|--|-----------|-------------|----------|-----------|
| CUSTOMER |  | MODEL NO. | MS0420-R33M | REVISION | A/0       |
| FILE NO. |  | PART NO.  |             | DATE     | 2019-6-18 |

Reflow curve

※ Reflow Profile



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.