



**SPECIFICATION FOR APPROVAL**

产品规格承认书

**Unibody Inductor**

一体成型功率电感

CUSTOMER.

\_\_\_\_\_

MODEL NO.

**MS0650-2R2M**

\_\_\_\_\_

CUSTOMER'S PART NO.

\_\_\_\_\_

LILE NO.

\_\_\_\_\_

DATE.

**2019-3-27**

\_\_\_\_\_

REVISION.

**A/0**

\_\_\_\_\_

<b>CUSTOMER APPROVE</b>		
<b>DATE:</b>		
<b>DRAWING</b>		
<b>DRAWN BY</b>	<b>CHECK BY</b>	<b>APPROVAL BY</b>
<b>DATE:</b>		



IATF16949 / ISO9001 / ISO14000

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**SHENZHEN MOTTO TECHNOLOGY Co., Ltd**

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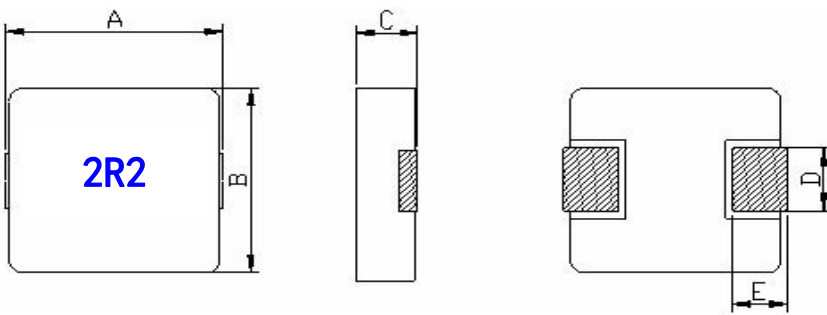
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CUSTOMER		MODEL NO.	MS0650-2R2M	REVISION	A/0
FILE NO.		PART NO.		DATE	2019-3-27

REVISIONS

REW	PROJECT CHANGE	DESCRIPTION	Date

CUSTOMER		MODEL NO.	MS0650-2R2M	REVISION	A/0
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<p><b>1.PRODUCT DIMENSION</b></p> 	UNIT:mm	
	A	7.15±0.35
	B	6.6±0.2
	C	5.0 Max
	D	3.0±0.5
	E	1.7±0.3

<b>2.ELECTRICAL REQUIREMENTS</b>			
PARAMETER	SPECIFICATION	CONDITION	TEST INSTRUMENTS
L(uH)	2.2μH±20%	100KHz/1.0V	MICROTEST 6377
DCR(mΩ)	12.5mΩMAX	At 25℃	TH2512A
I sat(A)	10.0A TYP L0A*70%	100KHz/1.0V	MICROTEST 6377+6220
I rms(A)	9.5A 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 2R2 on top of the body.

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**5.PRODUCT IDENTIFICATION**

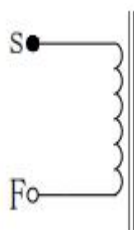
XX XXXX - XXX X X

①      ②      ③      ④      ⑤

①、 Product Symbol    ②、 Dimensions    ③、 Inductance

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

**6.ELECTRICAL SCHEMATICS**



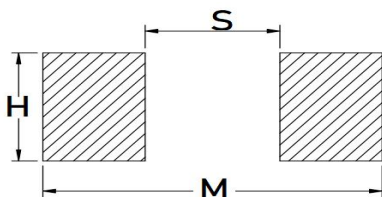
**7.APPLICATION**

- (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.

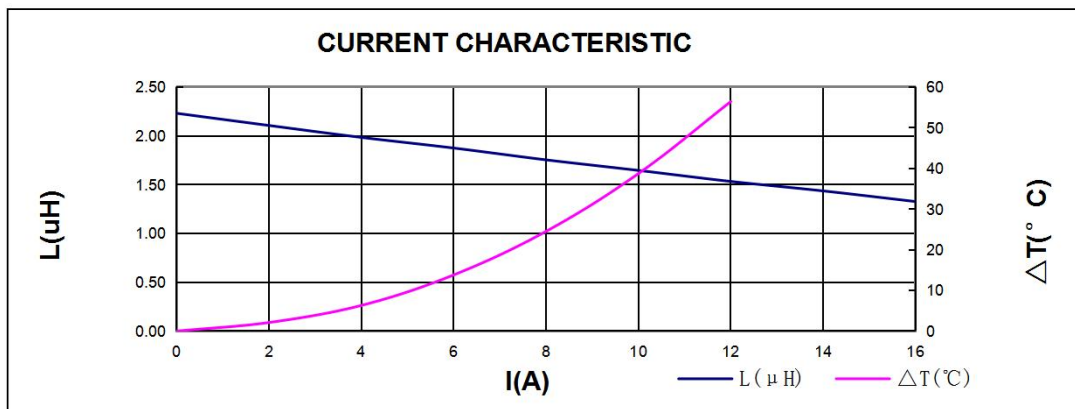
**9.RECOMMENDED PCB LAYOUT**



H	3.5
S	3.7
M	8.4

CUSTOMER			MODEL NO.	MS0650-2R2M		REVISION	A/0	
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SORT	ITEM	A	B	C	D	E		
PRODUCT & DIMENSION	SPEC	7.15±0.35	6.6±0.2	5.0 Max	3.0±0.5	1.7±0.3		
	1	7.18	6.65	4.87	2.92	1.74		
	2	7.22	6.65	4.92	2.93	1.75		
	3	7.21	6.64	4.88	2.92	1.74		
	4	7.20	6.65	4.91	2.92	1.74		
	5	7.19	6.64	4.92	2.92	1.75		
	X	7.20	6.65	4.90	2.92	1.74		
	R	0.04	0.01	0.05	0.01	0.01		

ELECTRICAL & REQUIREMENTS	ITEM	L(μH)	DCR (mΩ)	I sat(A)	DC BIAS	Irms	SHAPE:	
	SPEC	2.2μH±20%	12.5mΩ MAX	10.0A TYP L0A*70%		9.5A TYP ΔT≤40℃		
	1	2.230	8.650	1.645	-26.2%	OK		
	2	2.240	8.680	1.646	-26.5%	OK		
	3	2.180	8.830	1.642	-24.7%	OK		
	4	2.250	8.640	1.675	-25.6%	OK		
	5	2.110	8.650	1.642	-22.2%	OK		
	X	2.20	8.69	1.65	-25.0%			
	R	0.14	0.19	0.03	4.3%			



I(A)	0	2	4	6	8	10	12	14	16
L(μH)	2.230	2.105	1.983	1.874	1.753	1.645	1.532	1.435	1.326
ΔT(°C)	0	2.1	6.3	13.8	24.5	38.7	56.4		

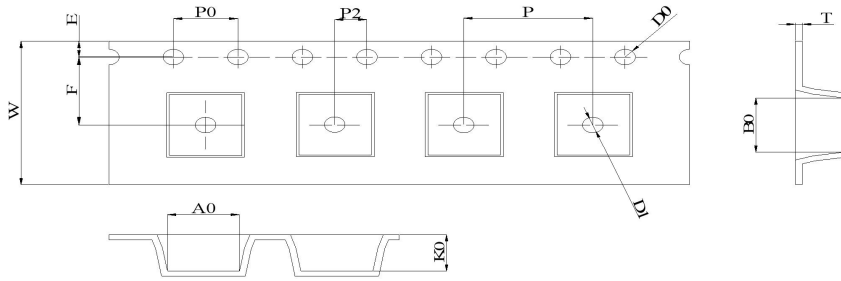
CUSTOMER		MODEL NO.	MS0650-2R2M	REVISION	A/0
FILE NO.		PART NO.		DATE	2019-3-27
<b>11.可靠性Reliability</b>					
项目Item	规格与需求 Specification and Requirement	测试方法Test Method			
可焊性 Solderability test	沾锡面积不得小于95%上锡面 Terminals area must have 95% min solder coverage	上锡升温曲线Solder heat proof: (1) 预热: 160±10℃持续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

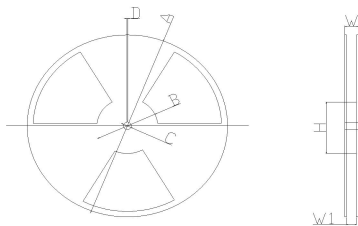
12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



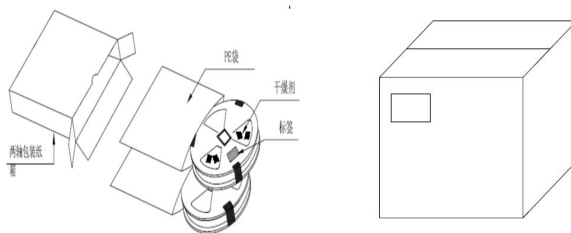
W	A0	B0	K0	P	F	E	D0	P0	T
16.00 ±0.30	7.05 ±0.10	7.2 ±0.10	5.3 ±0.10	12 ±0.10	11.5 ±0.1	1.75 ±0.10	1.50 ±0.10	4.0 ±0.10	0.35 ±0.05

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	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	1000
1内箱	3000
1外箱	9000

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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.



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