



**SPECIFICATION FOR APPROVAL**

产品规格承认书

**Unibody Inductor**

一体成型功率电感

CUSTOMER.

\_\_\_\_\_

MODEL NO.

**MS1335-3R3M**

\_\_\_\_\_

CUSTOMER'S PART NO.

\_\_\_\_\_

LILE NO.

\_\_\_\_\_

DATE.

**2019-5-27**

\_\_\_\_\_

REVISION.

**A/0**

\_\_\_\_\_

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



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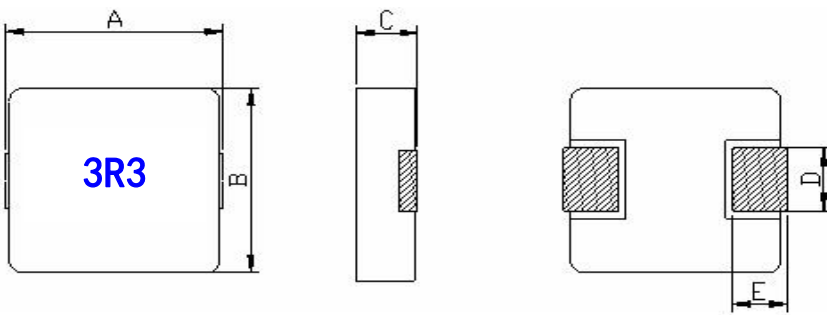
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<b>CUSTOMER</b>		<b>MODEL NO.</b>	<b>MS1335-3R3M</b>	<b>REVISION</b>	<b>A/0</b>
<b>FILE NO.</b>		<b>PART NO.</b>		<b>DATE</b>	<b>2019-5-27</b>

<b>1.PRODUCT DIMENSION</b>  	<b>UNIT:mm</b>	
	<b>A</b>	<b>13.65±0.35</b>
	<b>B</b>	<b>12.6±0.2</b>
	<b>C</b>	<b>3.5 Max</b>
	<b>D</b>	<b>3.8±0.5</b>
	<b>E</b>	<b>2.5±0.5</b>

<b>2.ELECTRICAL REQUIREMENTS</b>			
<b>PARAMETER</b>	<b>SPECIFICATION</b>	<b>CONDITION</b>	<b>TEST INSTRUMENTS</b>
<b>L(uH)</b>	<b>3.3μH±20%</b>	<b>100KHz/1.0V</b>	<b>MICROTEST 6377</b>
<b>DCR(mΩ)</b>	<b>12mΩMAX</b>	<b>At 25℃</b>	<b>TH2512A</b>
<b>I sat(A)</b>	<b>15.0A TYP L0A*70%</b>	<b>100KHz/1.0V</b>	<b>MICROTEST 6377+6220</b>
<b>I rms(A)</b>	<b>11.0A TYP ΔT≤40℃</b>	<b>100KHz/1.0V</b>	<b>MICROTEST 6377+6220</b>

**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 **3R3** on top of the body.

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<b>FILE NO.</b>		<b>PART NO.</b>		<b>DATE</b>	<b>2019-5-27</b>

**5.PRODUCT IDENTIFICATION**

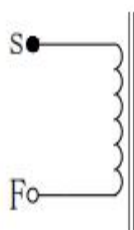
XX XXXX - XXX X X

①      ②      ③      ④      ⑤

①、 Product Symbol    ②、 Dimensions    ③、 Inductance

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

**6.ELECTRICAL SCHEMATICS**



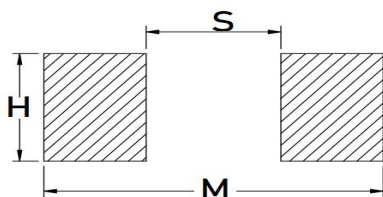
**7.APPLICATION**

- (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.

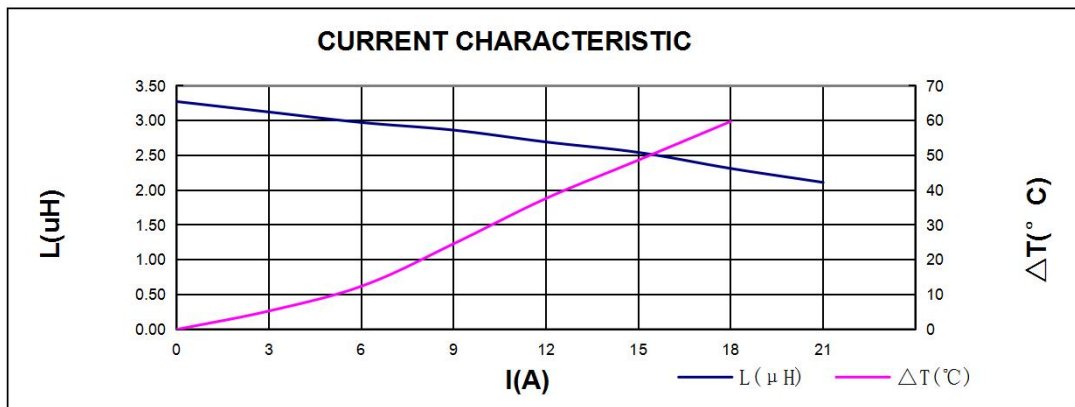
**9.RECOMMENDED PCB LAYOUT**



<b>H</b>	<b>5</b>
<b>S</b>	<b>8</b>
<b>M</b>	<b>14.5</b>

CUSTOMER		MODEL NO.	MS1335-3R3M		REVISION	A/0	
FILE NO.		PART NO.			DATE	2019-5-27	
SORT	ITEM	A	B	C	D	E	
PRODUCT & DIMENSION	SPEC	13.65±0.35	12.6±0.2	3.5 Max	3.8±0.5	2.5±0.5	
	1	13.46	12.64	3.29	3.84	2.53	
	2	13.46	12.64	3.25	3.82	2.50	
	3	13.45	12.63	3.27	3.83	2.52	
	4	13.43	12.64	3.24	3.82	2.51	
	5	13.46	12.64	3.30	3.83	2.50	
	X	13.45	12.64	3.27	3.83	2.51	
	R	0.03	0.01	0.06	0.02	0.03	

ELECTRICAL & REQUIREMENTS	ITEM	L(μH)	DCR (mΩ)	I sat(A)	DC BIAS	Irms	SHAPE:
	SPEC	3.3μH±20%	12mΩMAX	15.0A TYP L0A*70%		11.0A TYP ΔT≤40℃	
	1	3.270	9.80	2.500	-23.5%	OK	
	2	3.270	9.78	2.470	-24.5%	OK	
	3	3.320	9.85	2.500	-24.7%	OK	
	4	3.390	9.84	2.600	-23.3%	OK	
	5	3.300	9.81	2.530	-23.3%	OK	
	X	3.31	9.82	2.52	-23.9%		
	R	0.12	0.07	0.13	1.4%		



I(A)	0	3	6	9	12	15	18	21	
L(μH)	3.270	3.12	2.97	2.86	2.69	2.54	2.31	2.11	
ΔT(°C)	0	5.3	12.4	24.6	37.6	48.6	59.7		

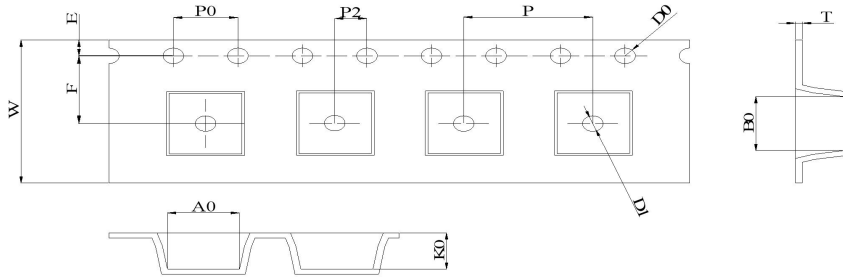
CUSTOMER		MODEL NO.	MS1335-3R3M	REVISION	A/0
FILE NO.		PART NO.		DATE	2019-5-27
<b>11.可靠性Reliability</b>					
项目Item	规格与需求 Specification and Requirement	测试方法Test Method			
可焊性 Solder ability test	沾锡面积不得小于95%上锡面 Terminals area must have 95% min solder coverage	上锡升温曲线Solder heat proof: (1) 预热: 160±10℃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

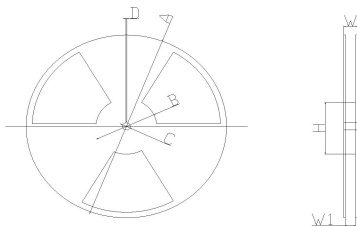
12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



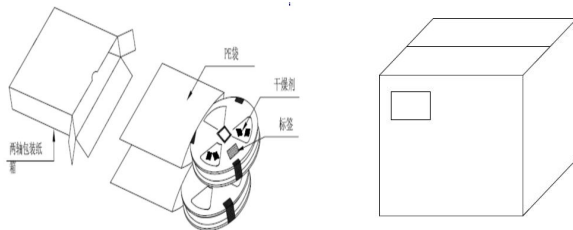
W	A0	B0	K0	P	F	E	D0	P0	T
24 ±0.30	13 ±0.15	13.9 ±0.15	3.8 ±0.10	16 ±0.10	11.5 ±0.1	1.75 ±0.10	1.50 ±0.10	4.0 ±0.10	0.35 ±0.05

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



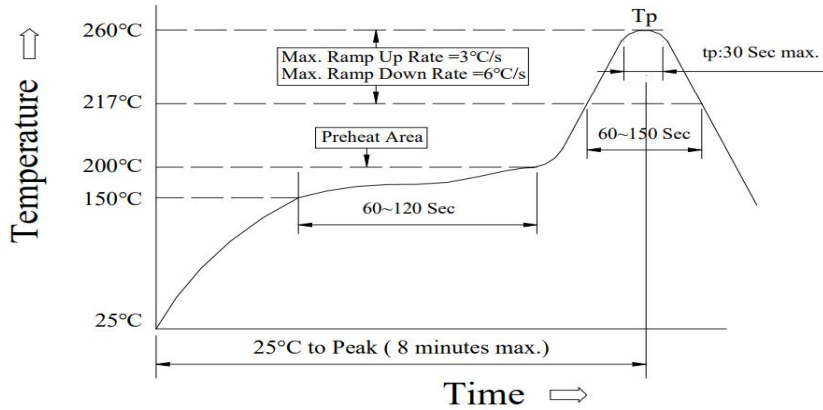
项目	数量 (PCS)
1 卷轴	500
1 内箱	1000
1 外箱	3000

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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.