



**SPECIFICATION FOR APPROVAL**

产品规格承认书

**Unibody Inductor**

一体成型功率电感

CUSTOMER.

\_\_\_\_\_

MODEL NO.

**MS1770-220M**

\_\_\_\_\_

CUSTOMER'S PART NO.

\_\_\_\_\_

LILE NO.

\_\_\_\_\_

DATE.

**2019-10-8**

\_\_\_\_\_

REVISION.

**A/0**

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<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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CUSTOMER		MODEL NO.	MS1770-220M	REVISION	A/0
FILE NO.		PART NO.		DATE	2019-10-8

<b>1.PRODUCT DIMENSION</b>		<b>UNIT:mm</b>	
	A	18.7MAX	
	B	17.3MAX	
	C	7.0 Max	
	D	12.0±0.5	
	E	2.5±0.5	

<b>2.ELECTRICAL REQUIREMENTS</b>			
PARAMETER	SPECIFICATION	CONDITION	TEST INSTRUMENTS
L(uH)	22.0μH±20%	100KHz/1.0V	MICROTEST 6377
DCR(mΩ)	24mΩMAX	At 25°C	TH2512A
I sat(A)	12A TYP L0A*70%	100KHz/1.0V	MICROTEST 6377+6220
I rms(A)	10A TYP ΔT≤40°C	100KHz/1.0V	MICROTEST 6377+6220

**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 220 on top of the body.

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**5.PRODUCT IDENTIFICATION**

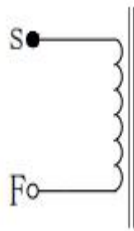
XX XXXX - XXX X X

①      ②      ③      ④      ⑤

①、 Product Symbol    ②、 Dimensions    ③、 Inductance

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

**6.ELECTRICAL SCHEMATICS**



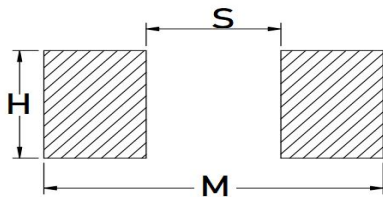
**7.APPLICATION**

- (1)Low profile,high current power supplies.
- (2)Battery powered devices.
- (3)DC/DC converters in distributed power systems.
- (4)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.

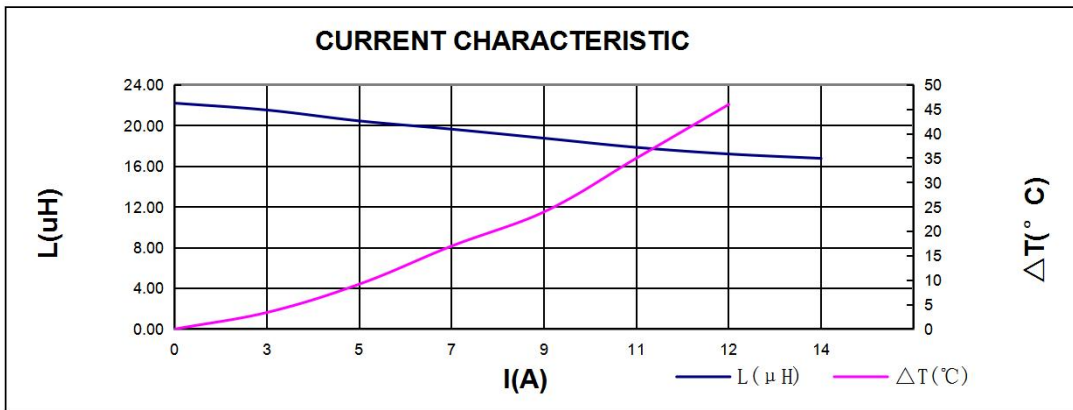
**9.RECOMMENDED PCB LAYOUT**



<b>H</b>	<b>12.8</b>
<b>S</b>	<b>10</b>
<b>M</b>	<b>18.7</b>

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SORT	ITEM	A	B	C	D	E	
PRODUCT & DIMENSION	SPEC	18.7MAX	17.3MAX	7.0 Max	12.0±0.5	2.5±0.5	
	1	18.39	17.06	6.95	11.80	2.53	
	2	18.40	17.05	6.92	11.81	2.50	
	3	18.40	17.09	6.89	11.82	2.52	
	4	18.40	17.03	6.91	11.80	2.51	
	5	18.38	17.08	6.92	11.80	2.50	
	X	18.39	17.06	6.92	11.81	2.51	
	R	0.02	0.06	0.06	0.02	0.03	

ELECTRICAL & REQUIREMENTS	ITEM	L(μH)	DCR (mΩ)	I sat(A)	DC BIAS	I <sub>rms</sub>	SHAPE:
	SPEC	22.0μH±20%	24mΩMAX	12A TYP L0A*70%		10A TYP Δ T≤40℃	
	1	22.240	19.580	16.480	-25.9%	OK	
	2	23.410	19.810	17.510	-25.2%	OK	
	3	21.640	19.790	16.960	-21.6%	OK	
	4	21.780	19.660	16.960	-22.1%	OK	
	5	21.200	19.750	16.750	-21.0%	OK	
	X	22.05	19.72	16.93	-23.2%		
	R	2.21	0.23	1.03	4.9%		



I(A)	0	3	5	7	9	11	12	14	
L(μH)	22.210	21.53	20.46	19.65	18.76	17.86	17.21	16.78	
ΔT(°C)	0	3.4	9.2	17	24	35	46		

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**11.可靠性Reliability**

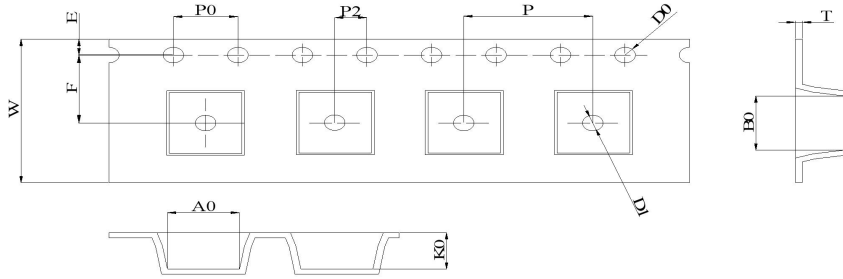
项目Item	规格与需求 Specification and Requirement	测试方法Test Method
可焊性 Solder ability test	沾锡面积不得小于95%上锡面 Terminals area must have 95% min solder coverage	上锡升温曲线Solder heat proof: (1) 预热: 160±10℃持续90s Preheating: 160±10℃ for 90 seconds (2) 恒温时段: 245±5℃持续2±0.5s Retention time: 245±5℃ for 2±0.5 seconds
振动测试 Vibration 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

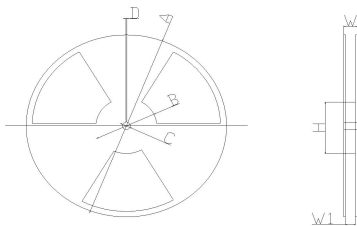
12.1、尺寸 Dimensions

12.1.1 包装料带尺寸 Tape packaging dimensions



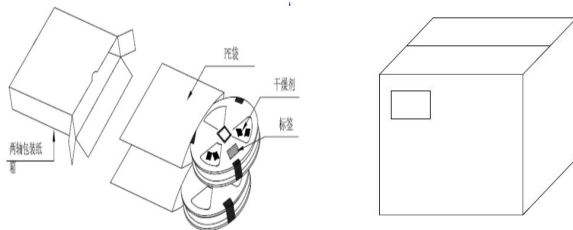
W	A0	B0	K0	P	F	E	D0	P0	T
32 ±0.30	17 ±0.15	17 ±0.15	7.4 ±0.10	23 ±0.10	14.25 ±0.1	1.75 ±0.10	1.50 ±0.10	4.0 ±0.10	0.35 ±0.05

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	35.0 Max
W1	33.0 ± 1.0

12.1.3 外箱尺寸 Carton dimensions



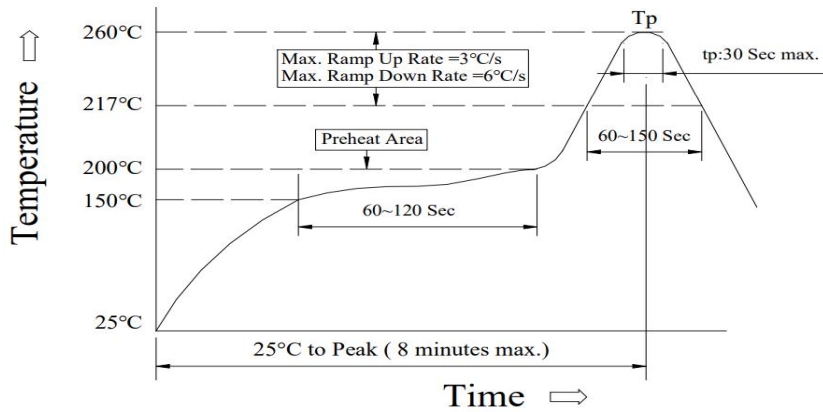
项目	数量 (PCS)
1 卷轴	300
1 内箱	900
1 外箱	4500

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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.**