CUSTOMER: _____ DATE: _____

APPROVAL SPECIFICATION

PRODUCT NAME:	SMD power inductor
YOUR PART NO.:	
OUR PART NO.:	MPIM252010GR33M-LF
VERSION:	V2.0

RECEPTION THE SPECIFICATION HAS BEEN ACCEPTED. DATE: **COMPANY:**		
CFMD	CHKD	RCVD

MANUFACTURING NAME

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Charles	王玉生	刘维

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Component SPEC Version Record

Rev.	Effective Date	Changed Contents	Change Reasons	Approved By
1.0	May. 23.2012	New released	/	Charles
2.0	Sep. 15.2014	Change the Electrical Characteristics	The Electrical Characteristics improved	Charles

1. Scope

This specification applies to the MPIM252010 series of SMD power inductor.

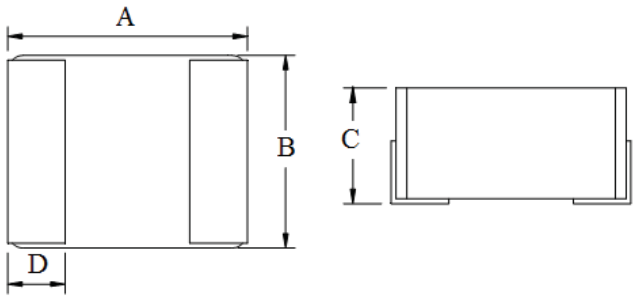
2. Product Identification

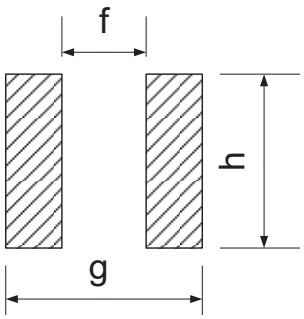
MPIM	252010	G	R33	M	LF
①	②	③	④	⑤	⑥

① Product Symbol (F type SMD power inductor)
② Product dimensions (2.5×2.0×1.0mm)
③ Special process code
④ Inductance Value： (R33: 0.33uH;1R0: 1.0uH;100:10uH)
⑤ Induc tance Tolerance：(M: ±20% ; N: ±30%)
⑥ Lead free product.

3. Appearance, Dimensions and Material

3.1 Appearance and dimensions

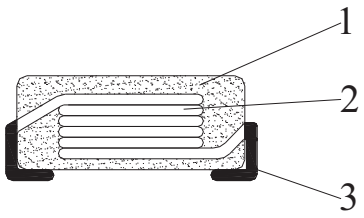




Recommended Land Pattern

Dimensions in mm							
Model	A	B	C	D	f	g	h
MPIM252010	2.50±0.20	2.00±0.20	1.00Max.	0.60±0.20	1.20 Typ.	2.80 Typ.	2.00 Typ.

3.2 Material List



No.	Item	Material
1	Core	Mixed Alloy Material
2	Wire	Enameled Copper Wire
3	Terminal	Tin Covered Copper

4.Testing Conditions

Unless otherwise specified
Temperature : Ordinary Temperature (5 to 35℃)
Humidity : Ordinary Humidity (25 to 85% RH)
Atmospheric Pressure : 86 to 106 kPa

In case of doubt
Temperature : 20±2℃
Humidity : 60 to 75% RH
Atmospheric Pressure : 86 to 106 kPa

5. Electrical Characteristics And Test Instruments

Microgate Part No.	Customer Part No.	Inductance (uH)	DCR(Ω)		Isat[•1] (A)		Irms[•2] (A)	
			Max.	Typ.	Max.	Typ.	Max.	Typ.
MPIM252010GR33M-LF		0.33±20%	0.019	0.015	7.50	7.90	5.00	5.40

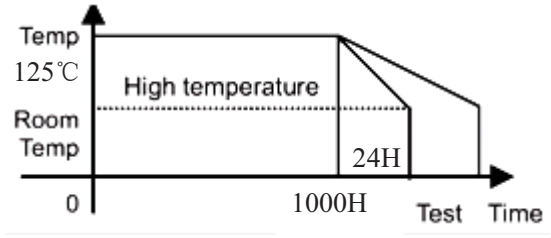
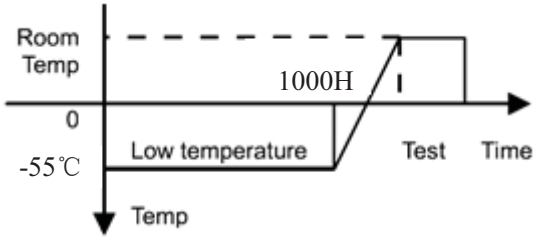
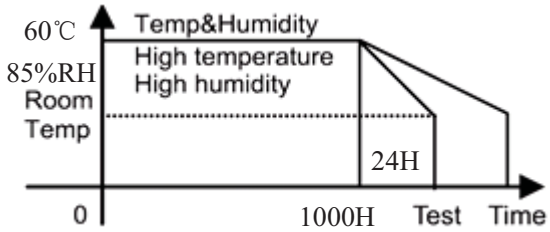
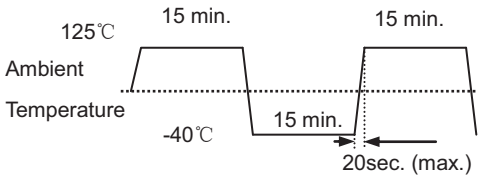
Test instruments and remarks

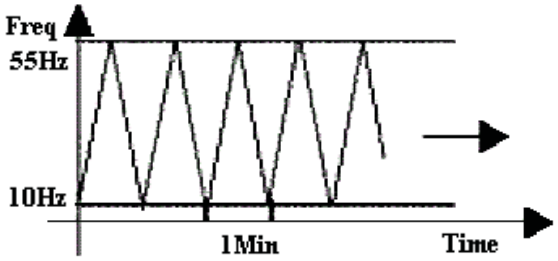
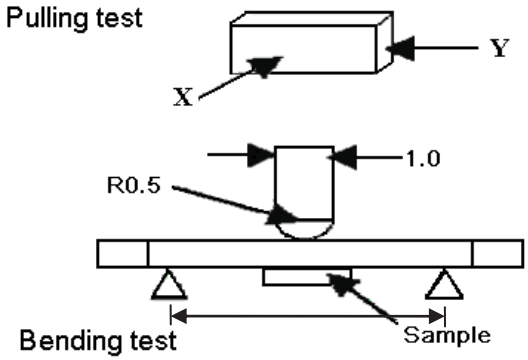
* CHROMA 3302 meter for L adn DCR/CHROMA 3302 and 1320 meter for IDC;
* L test condition: 1MHz &1V at 20℃ambient;
* Rated current: Isat or Irms, whichever is smaller:
  - [•1]:Isat: direct current at which the inductance drops approximate 30% from its value without current.
  - [•2]:Irms: direct current when the temperature of the product rise (△ T =40°C) from 20°C ambient.

6. Condition of work

Operating temperature range: -40℃ ～+125℃.(Including self-heating)

7. Reliability and Test Condition

Item	Required Characteristics	Test Method/Condition
High temperature resistance	1. No case deformation or change in appearance. 2. |ΔL|/L≤10%	Temperature: 125±2℃ Time : 1000 hours Measurement at 24±4 hours after test conclusion. 
Low temperature resistance		Temperature : -55±2℃ Time : 1000 hours Measurement at 24±4 hours after test conclusion. 
Humidity test		1. Exposure : Temperature: 85℃, Humidity :85% RH Time : 1000 hours. 2. Tested while the specimens are still in the chamber. 3. Measurement at 24±4 hours after test conclusion. 
Thermal shock test	1. No case deformation or change in appearance. 2. |ΔL|/L≤10%	First -40℃ for T time, last 125℃ T time as 1 cycle. Go through 1000 cycles. 

Item	Required Characteristics	Test Method/Condition
Solderability test	Terminal area must have 95% min. solder coverage.	Dip pads in flux then dip in solder pot at 245±5℃ for 5±0.1 second. Solder: :Sn96.5%、Ag3%、Cu0.5% Flux: rosin flux.
Heat endurance of reflow soldering	1. No case deformation or change in appearance. 2. |Δ L|/L≤10%	Refer to the next page reflow curve Go through 3 times. The peak temperature: 260±5℃
Vibration test		Apply frequency 10~55Hz. 1.5mm amplitude in each of perpendicular direction for 2 hours in each 3 mutually perpendicular directions.(total 6 hours) 
Drop test		Packaged & drop down from 1m with 981m/s2(100G) attitude in 1 angle 1 ridges & 2surfaces orientations.
Terminal strength push test	Pulling test: Define: Solder the products on testing PCB using eutectic solder. Then apply a force in the direction of the arrow. 17.64N force. Keep time ≥10s Bending test: Soldering the products on PCB, after the pulling test and bending test, terminal should not pull off.	Bend the testing PCB at middle point, the deflection shall be 2mm. Pressurizing Speed: 0.5mm/sec, Keep time: 60±1s, 
Loading Under Humidity Heat	1. No case deformation or change in appearance. 2. |Δ L|/L≤10%	1. Exposure：Temperature:60±2℃, Humidity：93±3% RH Time : 1000 hours. Apply rated current 2. Tested while the specimens are still in the chamber. 3. Measurement at 24±4 hours after test conclusion.
Loading at High Temperature	1. No case deformation or change in appearance. 2. |Δ L|/L≤10%	1. Temperature: 85±2℃ 2. Time : 1000 hours 3. Apply rated current4. 4. Measurement at 24±4 hours after test conclusion

8. Recommended Soldering Conditions

Product can be applied to flow and reflow soldering.

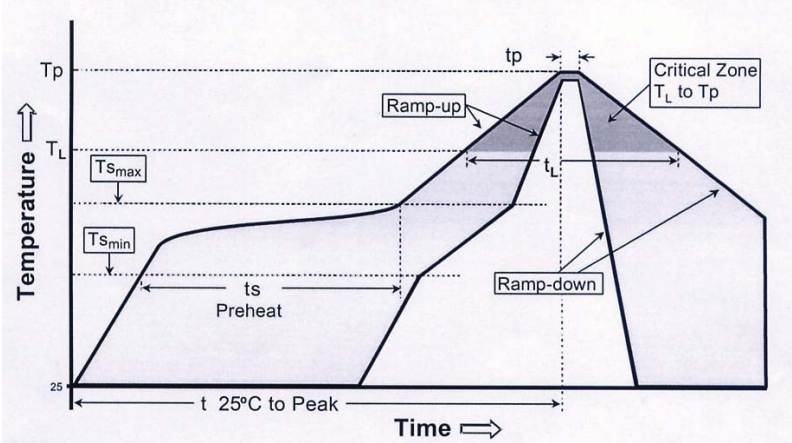
⑴Flux, Solder

① Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).

② Use Sn solder.

⑵Reflow soldering conditions

Reflow curve



Profile Feature		Lead-Free Assembly
Average Ramp-Up Rate (Ts max. to Tp)		3℃ C/second max.
Preheat	– Temperature Min (Ts min.) – Temperature Max (Ts max.) – Time (ts min to ts max.)	150 ℃ 200 ℃ 60-180 seconds
Time maintained above	– Temperature (TL) – Time (tL)	217 ℃ 60-150 seconds
Peak/Classification Temperature (Tp) Peak/Classification Time (Tp)		260 ℃ 10 seconds
Time within 5 °C of actual Peak Temperature (Tp)		20-40 seconds
Ramp-Down Rate		6°C/second max.
Time 25 °C to Peak Temperature		8 minutes max.

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

⑶ The method on Re-work with using the iron:

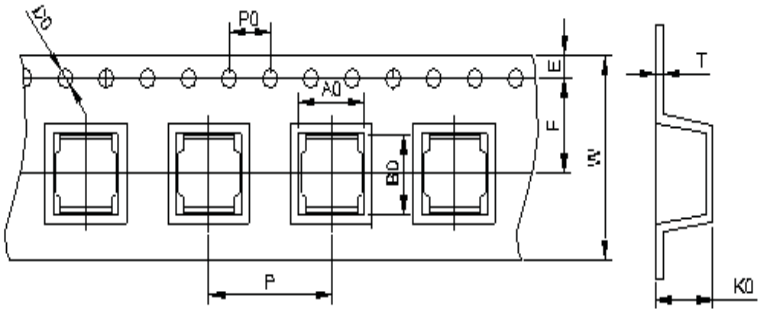
The following conditions must be strictly followed when using a soldering iron

Pre-heating	150℃, 1 minute
Tip temperature	350℃ max
Soldering iron output	80w max
End of soldering iron	φ1mm max
Soldering time	3 seconds max

Product once removes from the circuit board may not be used again.

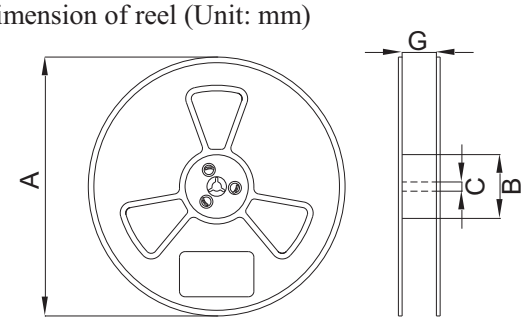
9. Package Information

9.1 Dimension of tape (Unit: mm)



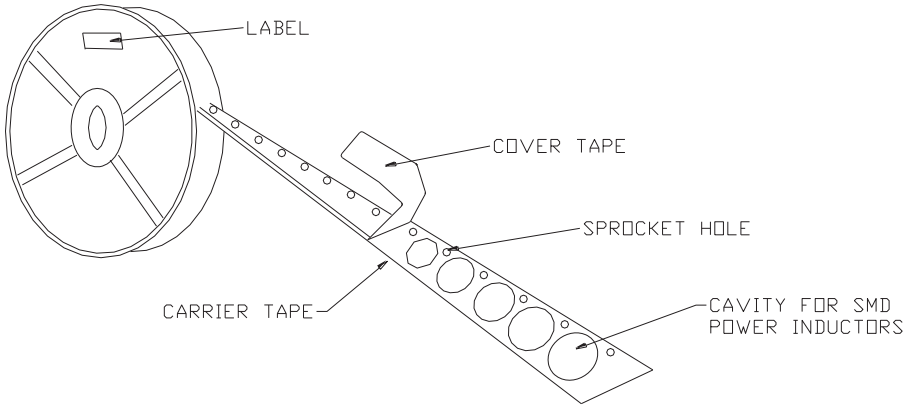
W	A0	B0	K0	E	F	P	P0	D0	T
8.0±0.3	2.40±0.10	2.80±0.10	1.20±0.1	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.1	1.5+0.1/-0.0	0.18±0.03

9.2 Dimension of reel (Unit: mm)



Symbol	Dimension
A	178±2
B	58±2
C	13.5±0.2
G	9.0±1.5

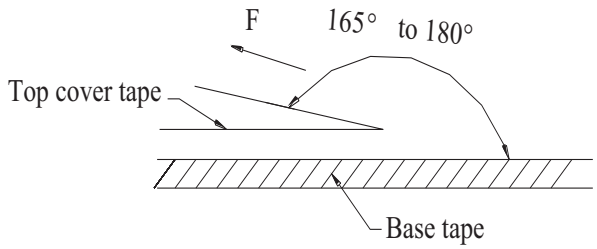
9.3 Taping figure and drawing direction



9.4 Packaging quantities: 2000PCS/Reel.

9.5 Peeling strength of cover tape:

The peel force of top cover tape shall be between 0.10N to 1.0N



Room Temp. (℃)	Room Humidity (%)	Room aim (hpa)	Peel Speed Mm/min
5-35	45-85	860-1060	300

10.Products Storage

(1) Storage period

Products which inspected in MICROGATE over 12 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solderability should be checked if this period is exceeded.

(2) Storage conditions

Products should be storage in the warehouse on the following conditions:

Temperature: -10 ~+ 40℃

Humidity : Less than 80% relative and humidity

No rapid change on temperature and humidity

(3) Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solderability.

(4) Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

(5) Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.

(6) Products should be storage under the airtight packaged condition.