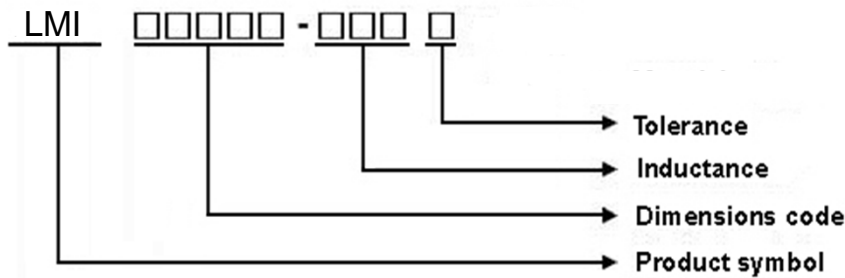


1 Scope: This specification applies to Large current and Low Loss SMD Power INDUCTOR

2 Part Numbering: Product Identification

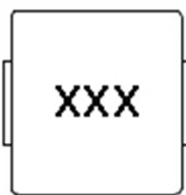


3 Rating:

Operating Temperature: $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature: Under 25°C , **Humidity < 75% RH**

4 Marking:



Ex : LMI05020-1R0M

Marking : 1R0

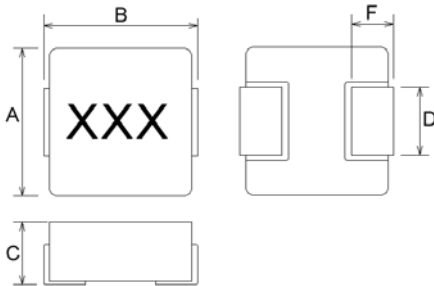
Marking color : Black

5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20±2°C
Humidity	Ordinary Humidity(25 to 85% RH)	60 to 70 % RH

6 Configuration and Dimensions:

Shape and Dimensions



Dimensions in mm

TYPE	A	B Max	C Max	D	F
05020	5.4±0.35	5.7±0.2	2.0	2.0±0.3	1.5±0.3

7 ELECTRICAL CHARACTERISTICS :

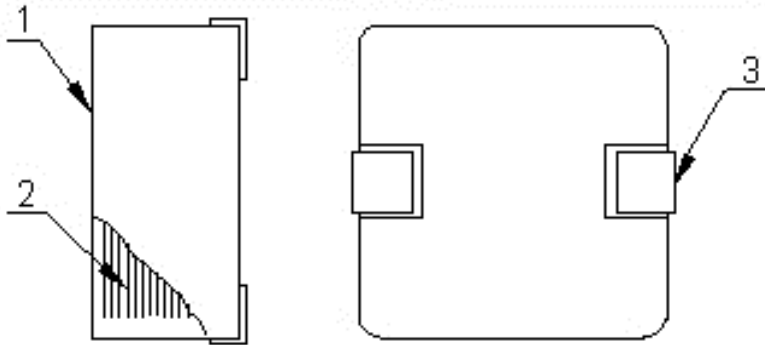
Part No.	Inductance (uH)	Test Freq.	I _{rms} (A)Typ.	I _{sat} (A)Typ.	RDC (mΩ)Max.	Tolerance (±%)	Marking
LMI05020-1R0M	1	100kHz,0.5V	6	7	30(27typ)	20	1R0
LMI05020-1R5M	1.5	100kHz,0.5V	5.5	6.5	35(30typ)	20	1R5
LMI05020-2R2M	2.2	100kHz,0.5V	4	6	45(40typ)	20	2R2
LMI05020-3R3M	3.3	100kHz,0.5V	3.5	5.5	60(55typ)	20	3R3
LMI05020-4R7M	4.7	100kHz,0.5V	3	5	90(75typ)	20	4R7
LMI05020-5R6M	5.6	100kHz,0.5V	2.8	4.5	120(100typ)	20	5R6
LMI05020-6R8M	6.8	100kHz,0.5V	2.8	4.5	125(115typ)	20	6R8
LMI05020-100M	10	100kHz,0.5V	2.3	4	180(163typ)	20	100

NOTE:

1. **I_{rms}** DC current (A) that will cause an approximate ΔT of 40°C.
2. **I_{sat}** DC current (A) that will cause L_o to drop approximately 30%
3. Operating Temperature Range – 5 5 °C ~ 1 2 5 °C (Including self - temperature rise)
4. The part temperature (ambient + temp rise) should not exceed 125°C under worst case of Circuit design 125°C under worst case operating conditions. component placement, PWB and thickness, airflow and other cooling provisions all affect the part temperature. Part te should be verified in the end application.

8 LMI05020 Series

8.1 Construction:



8.2 Material List:

ITEM	PART	DESCRIPTION
1	CORE	Alloy powder
2	WIRE	Copper wire
3	TERMINAL	TERMINAL COPPER

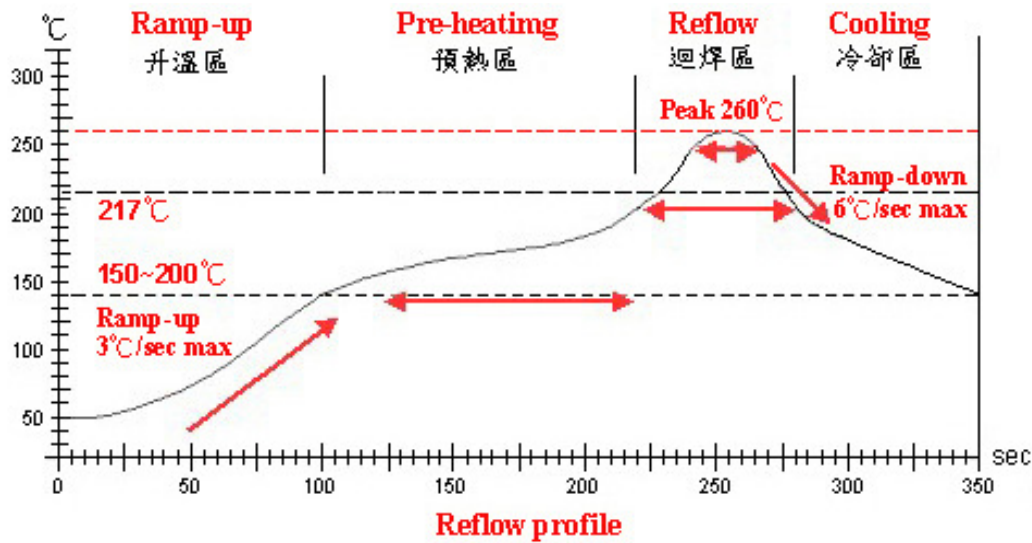
9 Reliability Of Large Current and Low Loss SMD Power Inductor

1-1.Mechanical Performance

No	Item	Specification	Test Method
1-1-1	Vibration	Appearance: No damage Inductance: within $\pm 10\%$ of initial value	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
1-1-2	Resistance to Soldering Heat	Appearance: No damage	Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 260 \pm 5°C Immersion Time: 10 \pm 1sec
1-1-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 245 \pm 5°C Immersion Time: 4 \pm 1sec
1-1-4	Resistance to solvent	There must be no change in appearance or obliteration of marking.	Inductors must withstand 6 minutes of alcohol or water.

1-2.Environmental Performance

No	Item	Specification	Test Method															
1-2-1	Temperature Shock	Appearance: No damage Inductance: within $\pm 10\%$ of initial value	10 cycles (Air to Air) 1 cycles shall consist of: 30 minutes exposure to -55 °C 30 minutes exposure to 125 °C 15 seconds maximum transition between temperatures															
1-2-2	Temperature Cycle		One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55\pm3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25\pm2</td> <td>3</td> </tr> <tr> <td>3</td> <td>125\pm3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25\pm2</td> <td>3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Time (min)	1	-55 \pm 3	30	2	25 \pm 2	3	3	125 \pm 3	30	4	25 \pm 2	3
Step	Temperature (°C)	Time (min)																
1	-55 \pm 3	30																
2	25 \pm 2	3																
3	125 \pm 3	30																
4	25 \pm 2	3																
1-2-3	Humidity Resistance		Total: 100cycles Measured after exposure in the room condition for 24hrs Temperature: 40 \pm 2°C Relative Humidity: 90 ~ 95% Time: 1000hrs Measured after exposure in the room condition for 24hrs															
1-2-4	Heat Life		Temperature: 85 \pm 3°C Relative Humidity: 20% Applied Current: Rated Current Time: 1000hrs Measured after exposure in the room condition for 24hrs															
1-2-5	Cold Resistance		Temperature: -55 \pm 3°C Relative Humidity: 0% Time: 1000hrs Measured after exposure in the room condition for 24hrs															



Lead-Free(LF) 標準溫度分析範圍

Refer to J-STD-020C

管制項目 Item.	升温區 Ramp-up	預熱區 Pre-heating	迴焊區 Reflow	Peak Temp	冷卻區 Cooling
溫度範圍 Temp. scope	R.T. ~ 150°C	150°C ~ 200°C	217°C	260±5°C	Peak Temp. ~ 150°C
標準時間 Time spec.	—	60 ~ 180 sec	60 ~ 150sec	20 ~ 40 sec	—
實際時間 Time result	—	75 ~ 100 sec	90 ~ 120sec	20 ~ 35 sec	—

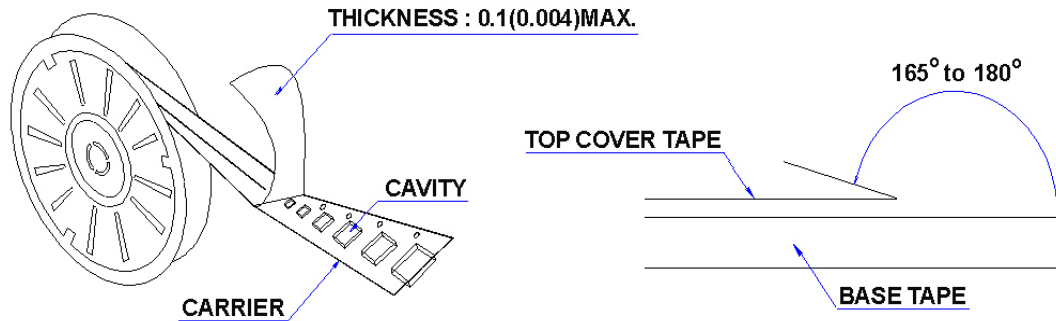
NOTE :

1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

10 PACKAGING

11.1 Packaging -Cover tape

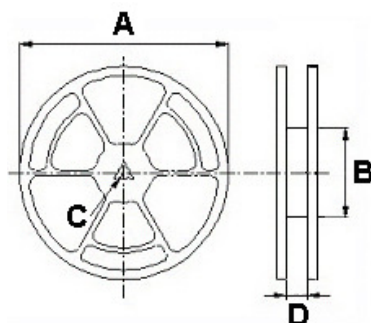
The force for tearing off cover tape is 10 to 130 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	BULK	PCS/REEL
05020	✓	1000

10.3 Reel Dimensions

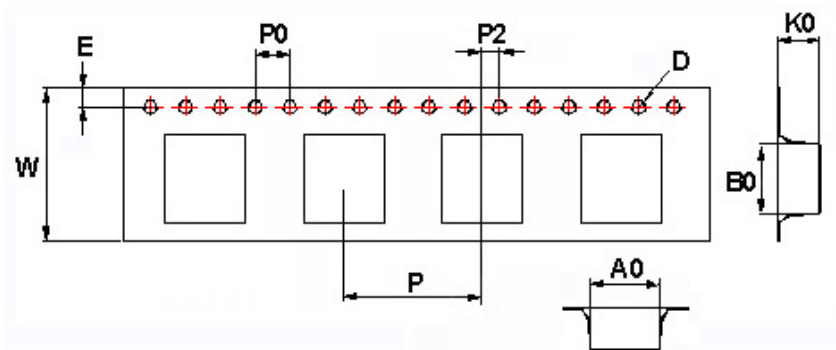


Reel Dimensions : mm

TYPE	A	B	C	D
05020	330	100	13	17.4

11 PACKAGING

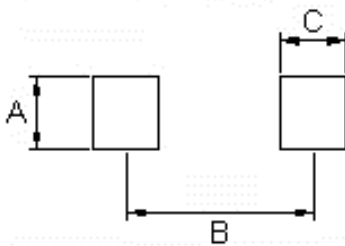
11.4 Tape Dimensions in mm



TYPE	A0	B0	K0	D	E	W	P	P0	P2
05020	5.9	6.2	2.4	1.55	1.75	16	12	4	2

12 Recommended Pattern

PAD LAYOUT



Dimensions in mm

TYPE	A(in/mm)	B(in/mm)	C(in/mm)
05020	0.098/2.5	0.161/4.1	0.075/1.9

13 Note:

1. Please make sure that your product is has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock nor drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)

14 Curve:

LMI05020-2R2M

