ISO9001 & ISO14001 & TS16949 **CHILISIN ELECTRONICS CORP.**

Lead-Free & RoHs Compliance!!

# SPECIFICATION FOR APPROVAL

**CUSTOMER :**

**CUSTOMER P/N :**

**OUR DWG No :**

**QUANTITY :** **0** **Pcs.** **DATE :** **2013/06/15**

**ITEM :** **MHCC12050-1R5M-R7**

| SPECIFICATION ACCEPTED BY: | |
|---|---|
| COMPONENT ENGINEER | |
| ELECTRICAL ENGINEER | |
| MECHANICAL ENGINEER | |
| APPROVED | |
| REJECTED | |


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| DRAWN BY | CHECKED BY | APPROVED BY |
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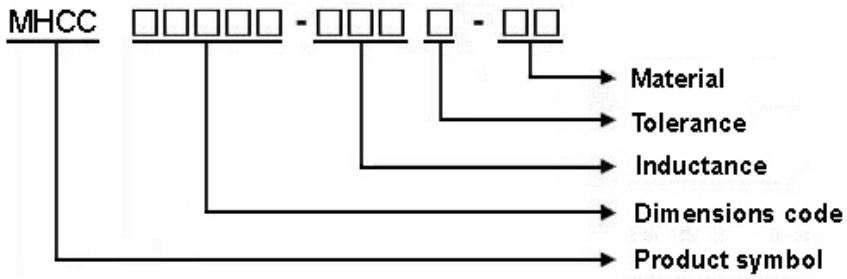
ISO9001 & ISO14001 & TS16949 CHILISIN ELECTRONICS CORP.

# MHCC12050 Series Specification

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

## 2 Part Numbering: Product Identification

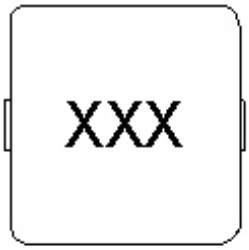



## 3 Rating:

Operating Temperature: －55℃～125℃**(Including self - temperature rise)**

Storage Temperature: Under 25℃ ,Humidity < 75% RH

## 4 Marking:




**Ex : MHCC12050-1R5M-R7**

**Marking : 1R5**

**Marking color : Black**

## 5 Standard Testing Condition

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

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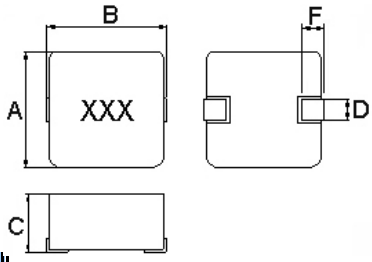
# MHCC12050 Series Specification

## 6 Configuration and Dimensions:




Dimensions in mm

| TYPE | MHCC12050 |
|---|---|
| A | 12.6±0.2 |
| B | 13.8 Max. |
| C | 5.0 Max. |
| D | 3.7 Typ. |
| F | 2.7±0.7 |

FIG1

Dimensions in mm

| TYPE | MHCC12050 |
|---|---|
| A | 12.6±0.2 |
| B | 13.8 Max. |
| C | 5.0 Max. |
| D | 2.5±0.5 |
| F | 2.7±0.7 |

FIG2

Dimensions in mm

| TYPE | MHCC12050 |
|---|---|
| A | 12.6±0.2 |
| B | 13.8 Max. |
| C | 5.0 Max. |
| D | 3.0±0.5 |
| F | 2.7±0.7 |

FIG3

## 7 ELECTRICAL CHARACTERISTICS :

| Part No. | Inductance (uH ) | Test Freq. | Irms (A)Typ. | Isat (A)Typ. | RDC (mΩ)Max. | Tolerance (±%) | Marking | FIG |
|---|---|---|---|---|---|---|---|---|
| MHCC12050-R47M-R7 | 0.47 | 100kHz,0.5V | 37 | 46 | 1.2 | 20 | R47 | 3 |
| MHCC12050-1R0M-R7 | 1 | 100kHz,0.5V | 29 | 37 | 2.5 | 20 | 1R0 | 1 |
| MHCC12050-1R5M-R7 | 1.5 | 100kHz,0.5V | 28 | 28 | 3 | 20 | 1R5 | 3 |
| MHCC12050-4R7M-R7 | 4.7 | 100kHz,0.5V | 11 | 16 | 11.5 | 20 | 4R7 | 2 |
| MHCC12050-6R8M-R7 | 6.8 | 100kHz,0.5V | 9 | 14 | 22 | 20 | 6R8 | 1 |
| MHCC12050-100M-R7 | 10 | 100kHz,0.5V | 7 | 13 | 35 | 20 | 100 | 1 |

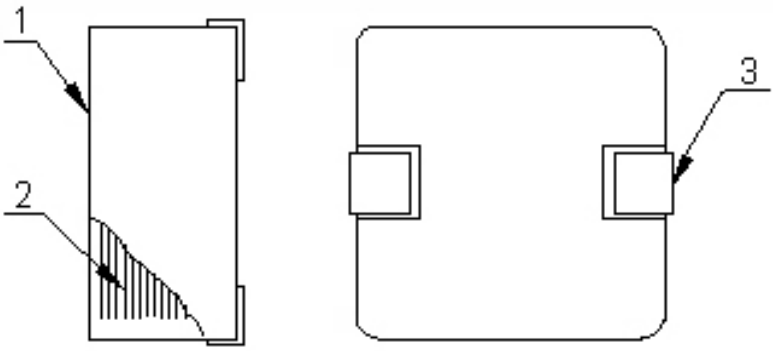
**NOTE:**

1. **Irms** DC current (A) that will cause an approximate ΔT of 40°C.
2. **Isat** DC current (A) that will cause Lo to drop approximately 30%
3. Operating Temperature Range －５５℃～１２５℃(Including self - temperature rise)
4. The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design 125°C under worst case operating conditions. component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

# MHCC12050 Series Specification

## 8 MHCC12050 Series

### 8.1 Construction:




### 8.2 Material List:

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

# MHCC12050 Series Specification

## 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<br>Inductance:within±10% of initial value | Test device shall be soldered on the substrate<br>Oscillation Frequency: 10 to 55 to 10Hz for 1min<br>Amplitude: 1.5mm<br>Time: 2hrs for each axis (X, Y & Z), total 6hrs |
| 1-1-2 | Resistance to Soldering Heat | Appearance: No damage | Pre-heating: 150℃, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5<br>Solder Temperature: 260±5℃<br>Immersion Time: 10±1sec |
| 1-1-3 | Solder ability | The electrodes shall be at least 95% covered with new solder coating | Pre-heating: 150℃, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5<br>Solder Temperature: 245±5℃<br>Immersion Time: 4±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

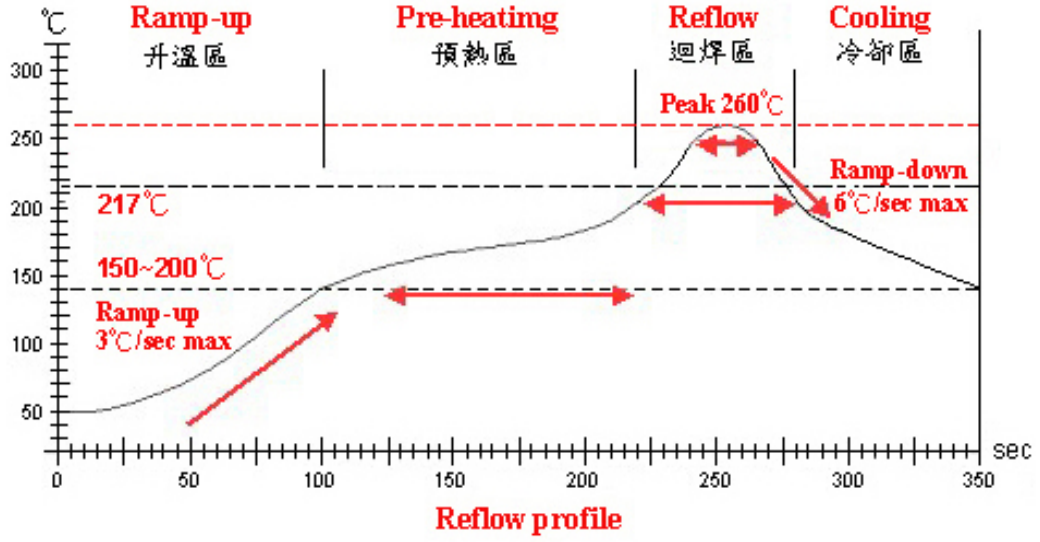
| No | Item | Specification | Test Method |
|---|---|---|---|
| 1-2-1 | Temperature Shock | Appearance: No damage<br>Inductance:within±10% of initial value | 10 cycles (Air to Air) 1 cycles shall consist of:<br>30 minutes exposure to –55 ℃<br>30 minutes exposure to 125 ℃<br>15 seconds maximum transition between temperatures |
| 1-2-2 | Temperature Cycle | | One cycle: |

| Step | Temperature (℃) | Time (min) |
|---|---|---|
| 1 | -55±3 | 30 |
| 2 | 25±2 | 3 |
| 3 | 125±3 | 30 |
| 4 | 25±2 | 3 |

Total: 100cycles
Measured after exposure in the room condition for 24hrs

| | | |
|---|---|---|
| 1-2-3 | Humidity Resistance | Temperature: 40±2℃<br>Relative Humidity: 90 ~ 95%<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |
| 1-2-4 | Heat Life | Temperature: 85±3℃<br>Relative Humidity: 20%<br>Applied Current: Rated Current<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |
| 1-2-5 | Cold Resistance | Temperature: -55±3℃<br>Relative Humidity: 0%<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |

# MHCC12050 Series Specification




Reflow profile

Lead-Free(LF) 標準溫度分析範圍 Refer to J-STD-020C

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

NOTE :

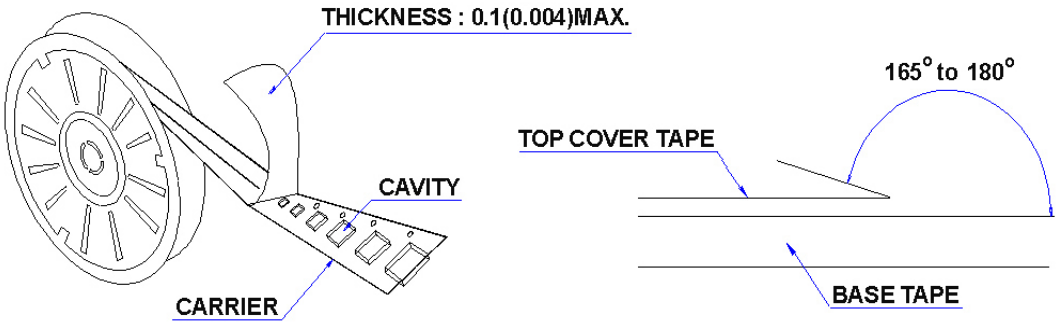
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

# MHCC12050 Series Specification

## 11 PACKAGING

### 11.1 Packaging -Cover tape

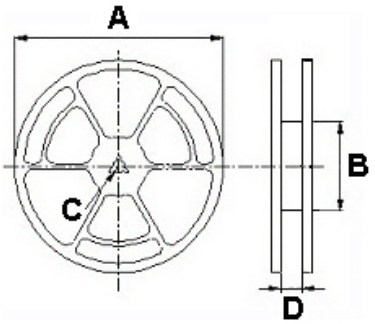
The force for tearing off cover tape is 10 to 130 grams in the arrow direction.




### 11.2 Packaging Quantity

| TYPE | BULK | PCS/REEL |
|---|---|---|
| MHCC12050 | ✓ | 500 |

### 11.3 Reel Dimensions



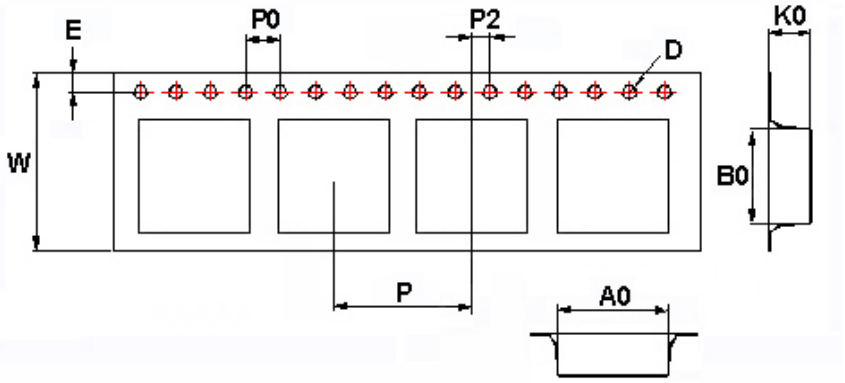

Reel Dimensions : mm

| TYPE | A | B | C | D |
|---|---|---|---|---|
| MHCC12050 | 330 | 100 | 13 | 24.4 |

# MHCC12050 Series Specification

## 11 PACKAGING

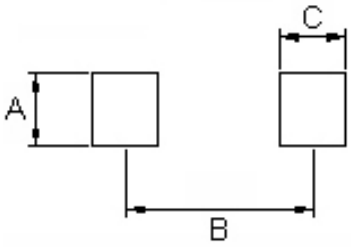
### 11.4 Tape Dimensions in mm




| TYPE | A0 | B0 | K0 | D | E | W | P | P0 | P2 |
|---|---|---|---|---|---|---|---|---|---|
| MHCC12050 | 13 | 14 | 5.25 | 1.55 | 1.75 | 24 | 16 | 4 | 2 |

## 12 Recommended Pattern

PAD LAYOUT




Dimensions in mm

| TYPE | A(in/mm) | B(in/mm) | C(in/mm) |
|---|---|---|---|
| MHCC12050 | 0.197/5.0 | 0.413/10.5 | 0.157/4.0 |

## 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)

# MHCC12050 Series Specification

## 14 Curve: