



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

RoHS & Halogen Free & REACH Compliance.

SPECIFICATION FOR APPROVAL

Customer : 超利維

Customer P/N:

Drawing No : IE1-8A0308

Quantity : X Pcs. Date : 2018/10/25

Chilisin P/N : MHCHL201610E-R47M-Q8

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

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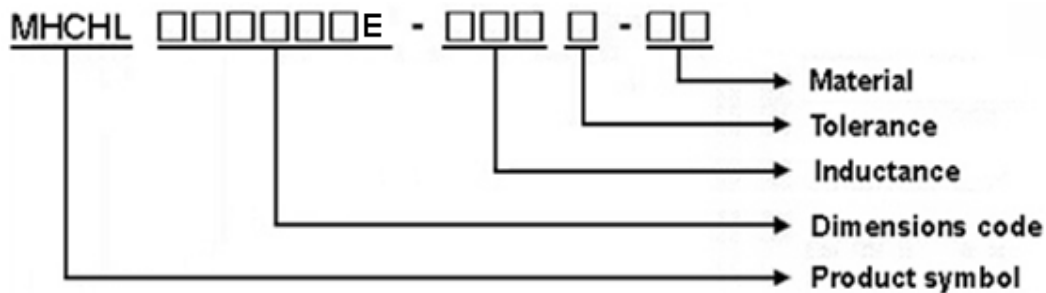
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| | | |
|-----------------------------|-------------------------------|-----------------------------------|
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|-----------------------------|-------------------------------|-----------------------------------|

MHCHL201610E Series Specification

1 Scope: This specification applies to Molding power inductors

2 Part Numbering:



3 Rating:

Operating Temperature: - 4 0 °C ~ 1 2 5 °C(Including self - temperature rise)

Storage Temperature: - 4 0 °C ~ 1 2 5 °C(after PCB)

- 5 °C ~ 3 5 °C, Humidity 4 5 % ~ 8 5 %(before PCB)

4 Marking:

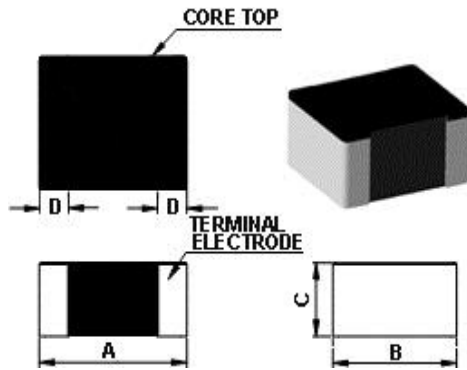


5 Standard Testing Condition

| | Unless otherwise specified | In case of doubt |
|-------------|----------------------------------|------------------|
| Temperature | Ordinary Temperature(15 to 35°C) | 20 to 30°C |
| Humidity | Ordinary Humidity(25 to 85% RH) | 50 to 80 %RH |

MHCHL201610E Series Specification

6 Configuration and Dimensions:



Dimensions in mm

| TYPE | MHCHL201610E |
|------|--------------|
| A | 2.0±0.2 |
| B | 1.6±0.2 |
| C | 1.0 max |
| D | 0.5±0.3 |

7 Electrical Characteristics:

| Part No. | Inductance (uH) | Tolerance (±%) | Test Freq. | I _{rms} (A) Max.(Typ) | I _{sat} (A) Max.(Typ) | RDC(mΩ) Max.(Typ) |
|----------------------|-----------------|----------------|------------|--------------------------------|--------------------------------|-------------------|
| MHCHL201610E-R47M-Q8 | 0.47 | 20 | 2MHz,0.2V | 4.0(4.3) | 4.8(5.0) | 26(22) |

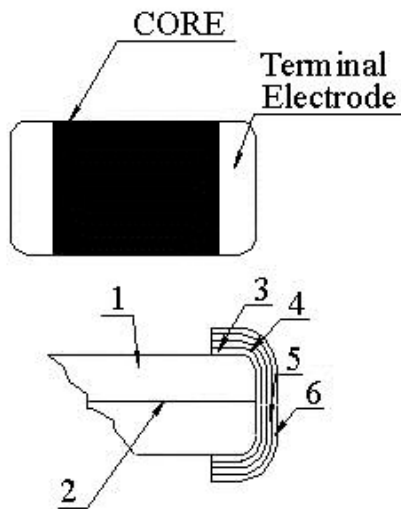
NOTE:

1. Operating temperature range - 40°C ~ 125°C (Including self-temperature rise)
2. I_{sat} for Inductance drop 30% from its value without current.
3. I_{rms} for a 40°C temperature rise from 25°C ambient.
4. Rated current: I_{sat} or I_{rms}, whichever is smaller
5. All test data is referenced to 25°C ambient
6. Absolute maximum voltage 20VDC

MHCHL201610E Series Specification

8 MHCHL201610E Series

8.1 Construction:



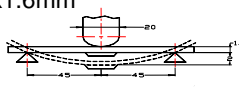
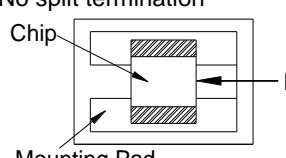
8.2 Material List:

| NO | Part | Description |
|----|------------------|--------------|
| 1 | Core | Metal Powder |
| 2 | Wire | Copper wire |
| 3 | Sputter/Plating | Cu |
| 4 | Silver Electrode | Ag |
| 5 | Plating | Ni |
| 6 | Plating | Sn |

MHCHL201610E Series Specification

9 Reliability Of Molding power inductors

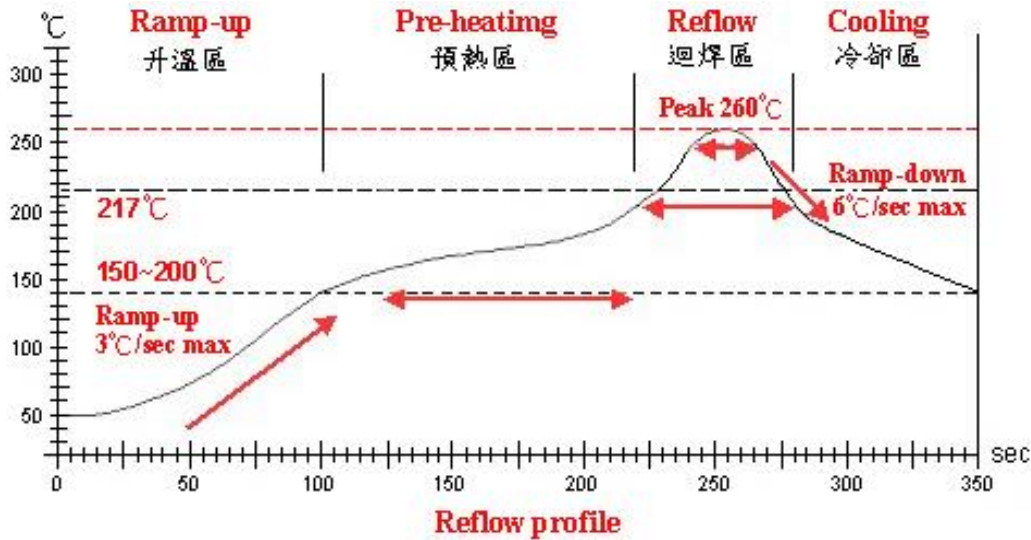
1-1. Mechanical Performance

| No | Item | Specification | Test Method |
|-------|------------------------------|---|--|
| 1-1-1 | Flexure Strength | The forces applied on the right conditions must not damage the terminal electrode and the metal body | Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 30sec  |
| 1-1-2 | Vibration | Appearance: No damage (for microscope of CASTOR MZ-45 20X) Inductance change shall be within $\pm 20\%$ | 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 |
| 1-1-3 | Resistance to Soldering Heat | Appearance: No damage More than 75% of the terminal electrode should be covered with solder. Inductance: within $\pm 20\%$ of initial value | Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 260 \pm 5°C Immersion Time: 10 \pm 1sec |
| 1-1-4 | 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(Pb-Free) Solder Temperature: 245 \pm 5°C Immersion Time: 4 \pm 1sec |
| 1-1-5 | Terminal Strength Test | No split termination  Chip Mounting Pad | Test device shall be soldered on the substrate, then apply a force in the direction of the arrow. Force : 5N Keeping Time: 10 \pm 1sec |

1-2. Environmental Performance

| No | Item | Specification | Test Method | | | | | | | | | | | | | | | |
|-------|-----------------------------|---|---|------|------------------|------------|---|-------------|----|---|------------|---|---|-------------|----|---|------------|---|
| 1-2-1 | Temperature Cycle | Appearance: No damage Inductance: within $\pm 20\%$ of initial value | One cycle: <table border="1" style="width: 100%;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40\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> Total: 100cycles Measured after exposure in the room condition for 24hrs | Step | Temperature (°C) | Time (min) | 1 | -40 \pm 3 | 30 | 2 | 25 \pm 2 | 3 | 3 | 125 \pm 3 | 30 | 4 | 25 \pm 2 | 3 |
| Step | Temperature (°C) | Time (min) | | | | | | | | | | | | | | | | |
| 1 | -40 \pm 3 | 30 | | | | | | | | | | | | | | | | |
| 2 | 25 \pm 2 | 3 | | | | | | | | | | | | | | | | |
| 3 | 125 \pm 3 | 30 | | | | | | | | | | | | | | | | |
| 4 | 25 \pm 2 | 3 | | | | | | | | | | | | | | | | |
| 1-2-2 | Humidity Resistance | | Temperature: 60 \pm 2°C Relative Humidity: 90 ~ 95% / Time: 500hrs Measured after exposure in the room condition for 24hrs | | | | | | | | | | | | | | | |
| 1-2-3 | High Temperature Resistance | | Temperature: 85 \pm 3°C Relative Humidity: 0% / Time: 500hrs Measured after exposure in the room condition for 24hrs | | | | | | | | | | | | | | | |
| 1-2-4 | Low Temperature Resistance | | Temperature: -40 \pm 3°C Relative Humidity: 0% / Time: 500hrs Measured after exposure in the room condition for 24hrs | | | | | | | | | | | | | | | |

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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 :

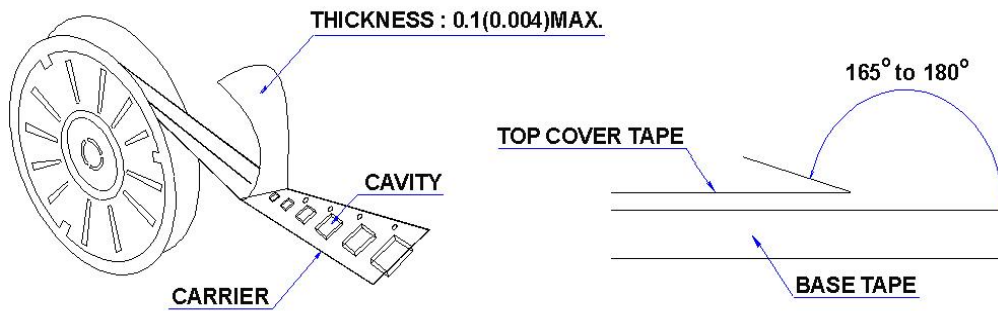
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

MHCHL201610E Series Specification

10 Packaging:

10.1 Packaging -Cover Tape

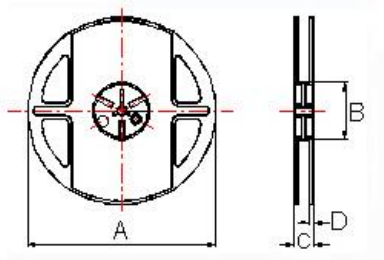
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

| TYPE | PCS/REEL |
|--------------|----------|
| MHCHL201610E | 3000 |

10.3 Reel Dimensions



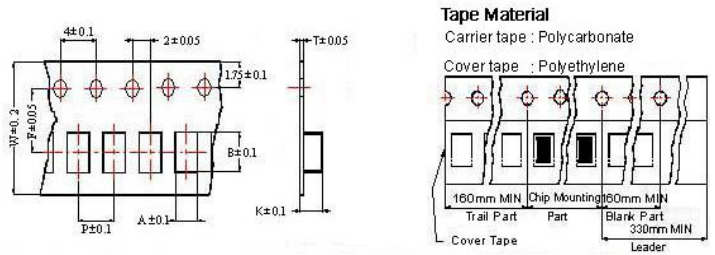
Dimensions in mm

| TYPE | A | B | C | D |
|--------------|-----|----|----|-----|
| MHCHL201610E | 178 | 60 | 12 | 1.5 |

MHCHL201610E Series Specification

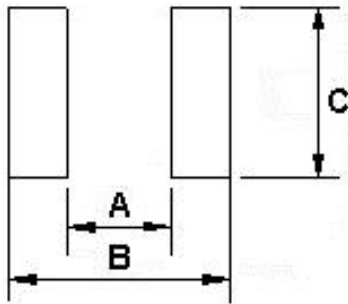
10 Packaging:

10.4 Tape Dimensions in mm



| TYPE | A | B | T | W | P | F | K |
|--------------|-----|------|------|---|---|-----|------|
| MHCHL201610E | 1.8 | 2.20 | 0.22 | 8 | 4 | 3.5 | 1.15 |

11 Recommended Land Pattern:



Dimensions in mm

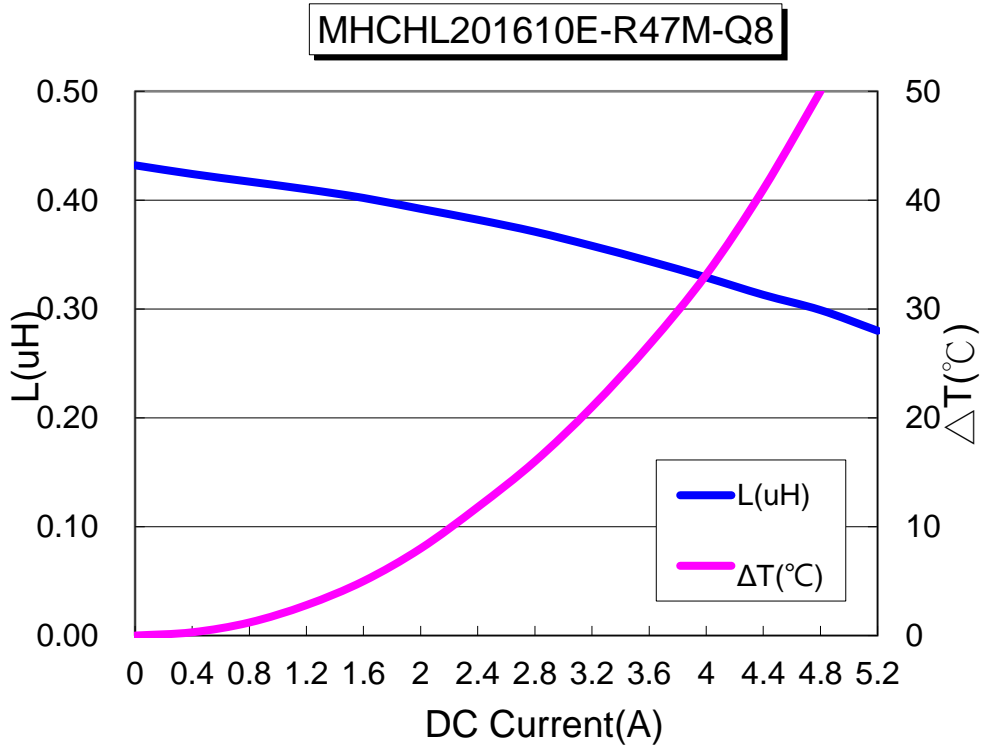
| TYPE | A | B | C |
|--------------|-----|-----|-----|
| MHCHL201610E | 0.7 | 2.3 | 1.8 |

12 Note:

- Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Do not knock nor drop.
- 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.
- Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)
- After manufacturing process, there might be slight irregular shape on the edge of the products, and it's a normal phenomenon that can be neglectable.
- The moisture sensitivity level (MSL) of products is classified as level 1.

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13 Graph:



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[MLZ1608M150WTD25](#) [MLZ1608M3R3WTD25](#) [MLZ1608M3R3WT000](#) [MLZ1608M150WT000](#) [MLZ1608A1R5WT000](#)

[MLZ1608N1R5LT000](#) [B82432C1333K000](#) [PCMB053T-1R0MS](#) [PCMB053T-1R5MS](#) [PCMB104T-1R5MS](#) [CR32NP-100KC](#) [CR32NP-](#)

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[62892NL](#) [PE-92100NL](#) [PG0434.801NLT](#) [PG0936.113NLT](#) [PM06-2N7](#) [PM06-39NJ](#) [HC2LP-R47-R](#) [HC2-R47-R](#) [HC3-2R2-R](#) [HC8-1R2-R](#)