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

RoHS & Halogen Free & REACH Compliance.

SPECIFICATION FOR APPROVAL

Customer：

Customer P/N:

Drawing No：

Quantity： **X** **Pcs.** **Date：** **2015/01/28**

Chilisin P/N： **MHCH201610A-R47M-A8**

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

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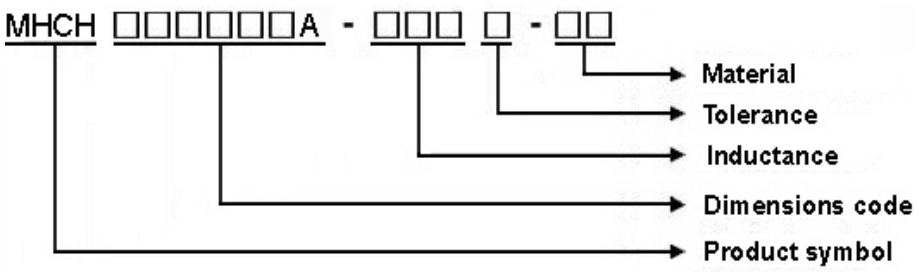
ISO9001 & ISO14001 & TS16949 CHILISIN ELECTRONICS CORP.

MHCH201610A Series Specification

1 Scope: This specification applies to Molding power inductors

2 Part Numbering:



3 Rating:

Operating Temperature: －４０℃～１２５℃(Including self - temperature rise)

Storage Temperature: －４０℃～１２５℃(after PCB)
－５℃～３５℃,Humidity ４５%～８５%(before PCB)

4 Marking:

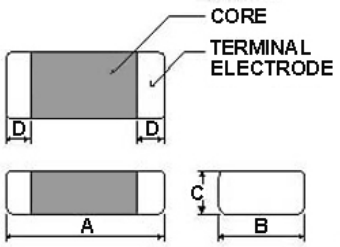
No Marking

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

MHCH201610A Series Specification

6 Configuration and Dimensions:



Dimensions in mm

TYPE	MHCH201610A
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)	Test Freq.	Irms(A) Max.(Typ)	Isat(A) Max.(Typ)	RDC(mΩ) Max.(Typ)	Tolerance (±%)
MHCH201610A-R47M-A8	0.47	2MHz,0.2V	3.6(4.2)	4.8(5.4)	32(26)	20

NOTE:

1.Operating temperature range －４０℃～１２５℃(Including self - temperature rise)

2.Isat for Inductance drop 30% from its value without current.

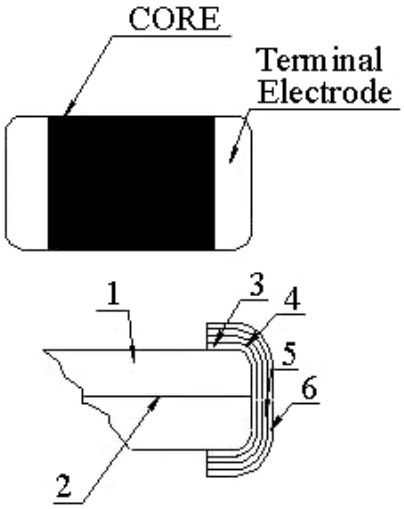
3.Irms for a 40℃ temprature rise from 25℃ ambient.

4.All test data is referenced to 25℃ ambient

MHCH201610A Series Specification

8 MHCH201610A Series

8.1 Construction:



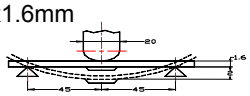
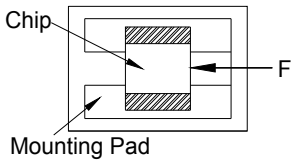
8.2 Material List:

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

MHCH201610A Series Specification

9 Reliability of molding power inductors

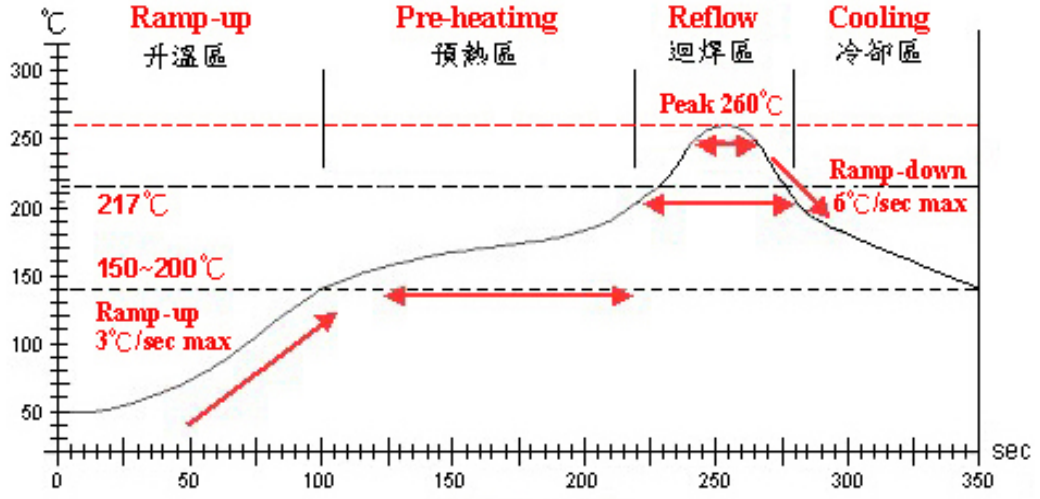
1-1.Mechanical Performance

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		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 ±20% of initial value	Pre-heating: 150℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 260±5℃ Immersion Time: 10±1sec
1-1-4	Solder ability	The electrodes shall be at least 95% covered with new solder coating	Pre-heating: 150℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245±5℃ Immersion Time: 4±1sec
1-1-5	Terminal Strength Test	No split termination 	Test device shall be soldered on the substrate, then apply a force in the direction of the arrow. Force : 5N Keeping Time: 10±1sec

1-2.Environmental Performance

No	Item	Specification	Test Method
1-2-1	Temperature Cycle	Appearance: No damage Inductance:within±20% of initial value	One cycle: Step / Temperature (℃) / Time (min) 1 / -40±3 / 30 2 / 25±2 / 2 3 / 125±3 / 30 4 / 25±2 / 2 Total: 100cycles Measured after exposure in the room condition for 24hrs
1-2-2	Humidity Resistance		Temperature: 60±2℃ Relative Humidity: 90 ~ 95% / Time: 500hrs Measured after exposure in the room condition for 12hrs
1-2-3	High Temperature Resistance		Temperature: 85±3℃ Relative Humidity: 0% / Time: 500hrs Measured after exposure in the room condition for 12hrs
1-2-4	Low Temperature Resistance		Temperature: -40±3℃ Relative Humidity: 0% / Time: 500hrs Measured after exposure in the room condition for 12hrs

MHCH201610A 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

MHCH201610A Series Specification

10 Test Data for Pre-production Samples

Chilisin P/N: MHCH201610A-R47M-A8

Measured Item		L0 (uH)	L1 (uH)Max.	RDC (mΩ)Max.	A m/m	B m/m	C m/m	D m/m				
Spec	Customer	0.47±20%										
	Suggest		L0*0.7	32(26typ)	2.0±0.2	1.6±0.2	1.0 Max.	0.5±0.3				
Test Freq.		Isat=0A 2MHz 0.2V	Isat=4.8A 2MHz 0.2V									
1		0.495	0.353	26.1	2.15	1.78	0.98	0.48				
2		0.431	0.314	25.7	2.14	1.78	0.97	0.46				
3		0.477	0.345	25.1	2.14	1.78	0.96	0.46				
4		0.482	0.350	25.6	2.14	1.79	0.96	0.48				
5		0.472	0.353	25.8	2.14	1.78	0.98	0.49				
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
$\overline{X}$		0.4714	0.343	25.66	2.142	1.782	0.97	0.474				
R		0.064	0.039	1	0.01	0.01	0.02	0.03				
Customer												
Sample												

Test Instrument

L : Agilent E4991A/HP4287A+16197A

RDC : CHEN HWA 502BC / HP4338B

Isat : Agilent E4980A+HP42841A

Irms : Agilent 6641 SYSTEM DC POWER SUPPLY

Appearance and Dimensions:

SPEC : Refer to Item 6

Test Method : Visual Inspection and Measured with Slide Calipers.

Test Conditions:

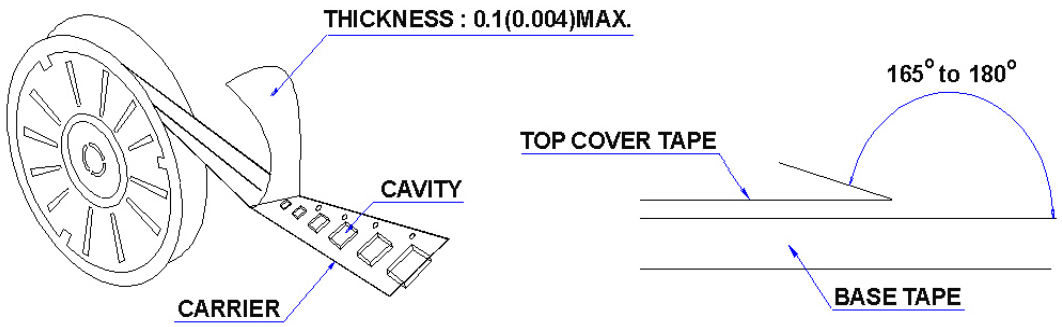
	Unless Otherwise Specified	In Case of Doubt
Temperature	Ordinary Temperature (15 to 35℃)	20 ± 2 ℃
Humidity	Ordinary Humidity (25 to 85 %RH)	60 to 70 %RH

MHCH201610A Series Specification

11 Packaging:

11.1 Packaging -Cover Tape

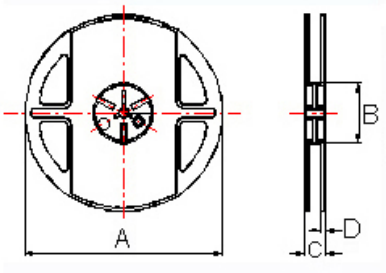
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
MHCH201610A	✓	3000

11.3 Reel Dimensions



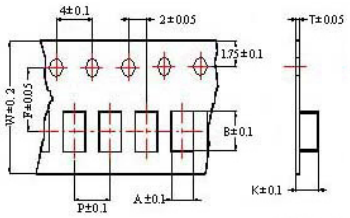
Dimensions in mm

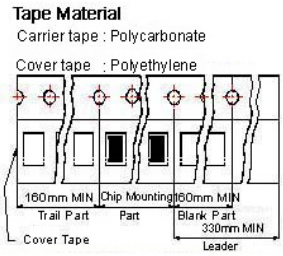
TYPE	A	B	C	D
MHCH201610A	178	60	12	1.5

MHCH201610A Series Specification

11 Packaging:

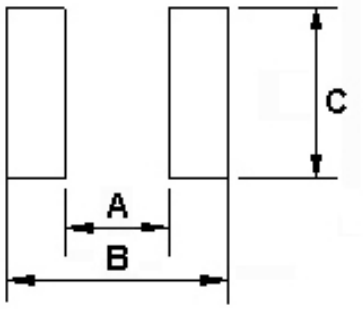
11.4 Tape Dimensions in mm





TYPE	A	B	T	W	P	F	K
MHCH201610A	1.8	2.2	0.22	8	4	3.5	1.15

12 Recommended Land Pattern:



Dimensions in mm

TYPE	A	B	C
MHCH201610A	0.9	2.0	1.6

13 Note:

1. Please make sure that your product 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)
5. 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.

MHCH201610A Series Specification

14 Graph: