



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

RoHS & Halogen Free & REACH Compliance.

SPECIFICATION FOR APPROVAL

Customer : _____

Customer P/N: _____

Drawing No : _____

Quantity : 0 **Pcs.** **Date :** 2020/07/09

Chilisin P/N : MHCD252012A-4R7M-A8S

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

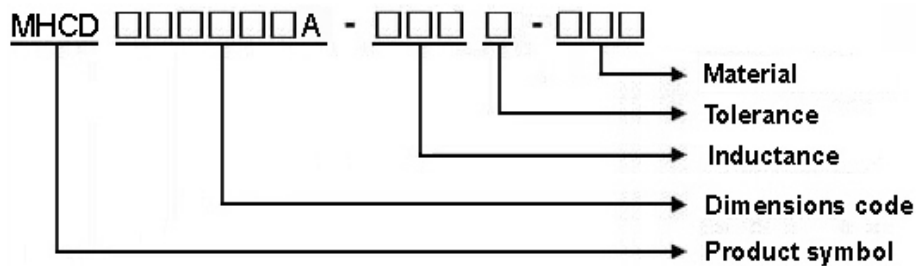
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MHCD252012A Series Specification

1 Scope: This specification applies to Alloy Molding power inductors

2 Part Numbering:



3 Rating:

Operating Temperature: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (after PCB)

$-5^{\circ}\text{C} \sim 35^{\circ}\text{C}$, Humidity 45% ~ 85% (before PCB)

4 Marking:

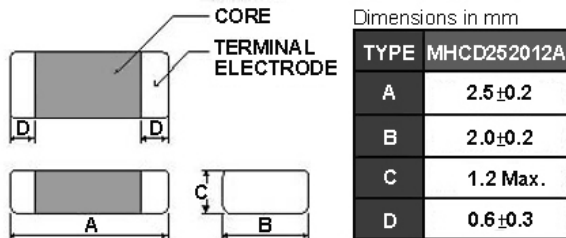
No Marking

5 Standard Testing Condition

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

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6 Configuration and Dimensions:



7 Electrical Characteristics:

Part No.	Inductance (μ H)	Test Freq.	I _{rms} (A) Max.(Typ)	I _{sat} (A) Max.(Typ)	RDC(m Ω) Max.(Typ)	SRF (MHz)Min.	Tolerance (\pm %)
MHCD252012A-R33M-A8S	0.33	2MHz,0.2V	4.0(4.6)	6.8(8.5)	35(27)	125	20
MHCD252012A-R47M-A8S	0.47	2MHz,0.2V	3.7(4.4)	6.2(7.8)	39(29)	91	20
MHCD252012A-R68M-A8S	0.68	2MHz,0.2V	3.3(3.7)	5.5(6.5)	46(40)	75	20
MHCD252012A-1R0M-A8S	1	2MHz,0.2V	3.0(3.5)	4.0(5.0)	59(45)	50	20
MHCD252012A-1R5M-A8S	1.5	2MHz,0.2V	2.5(2.7)	3.4(4.0)	70(62)	40	20
MHCD252012A-2R2M-A8S	2.2	2MHz,0.2V	2.0(2.3)	3.3(3.8)	115(102)	32	20
MHCD252012A-3R3M-A8S	3.3	2MHz,0.2V	1.8(2.1)	2.5(2.8)	158(143)	28	20
MHCD252012A-4R7M-A8S	4.7	2MHz,0.2V	1.7(2.1)	2.1(2.7)	240(200)	23	20

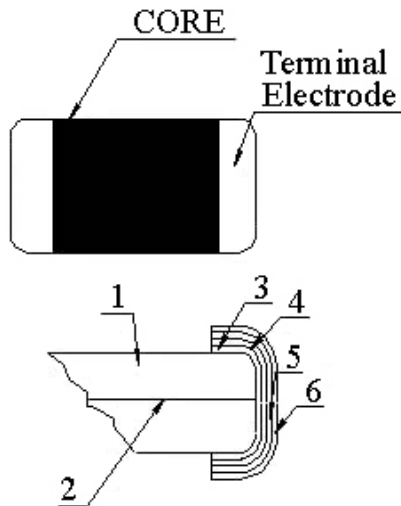
NOTE:

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. All test data is referenced to 25 °C ambient

MHCD252012A Series Specification

8 MHCD252012A Series

8.1 Construction:



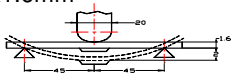
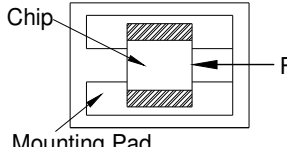
8.2 Material List:

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

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9 Reliability Of Molding power inductors

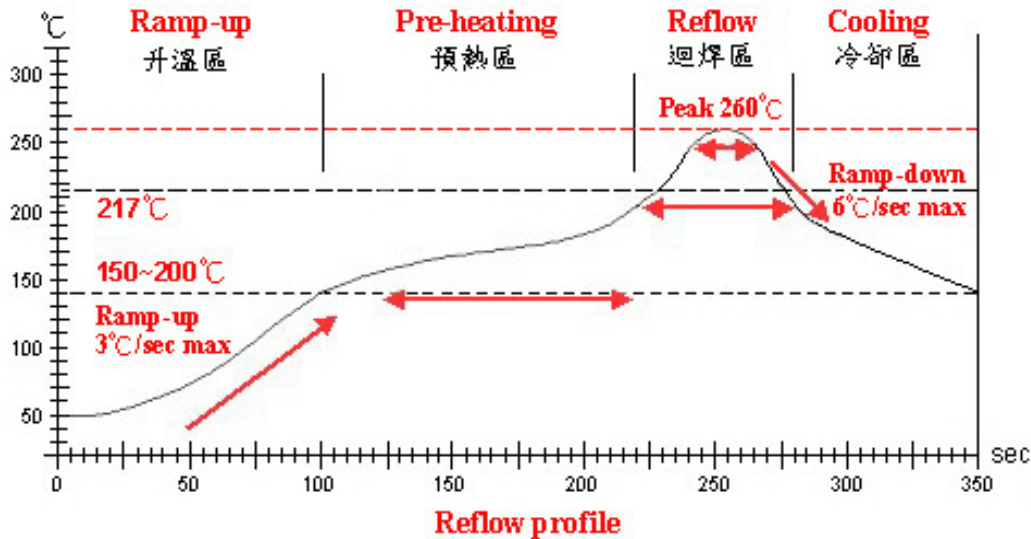
1-1.Mechanical Performance

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



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10 Test Data for Pre-production Samples

Chilisin P/N: MHCD252012A-4R7M-A8S

Measured Item	L0 (uH)	L1 (uH)Max.	RDC (mΩ)Max.	SRF (MHz)Min.	A m/m	B m/m	C m/m	D m/m			
Spec Customer	4.7±20%										
Suggest		L0*0.7	240(200typ)	23	2.5±0.2	2.0±0.2	1.2 Max.	0.6±0.3			
Test Freq.	Isat=0A 2MHz 0.2V	Isat=2.1A 2MHz 0.2V									
1	4.23	3.18	196.1	30	2.62	2.16	1.14	0.52			
2	4.17	3.03	221.4	28.8	2.64	2.14	1.14	0.54			
3	4.19	3.22	190	30	2.62	2.16	1.13	0.52			
4	4.31	3.17	227	26.6	2.62	2.14	1.13	0.52			
5	4.41	3.43	192	27.7	2.64	2.16	1.14	0.52			
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
\bar{X}	4.262	3.206	205.3	28.62	2.628	2.152	1.136	0.524			
R	0.24	0.4	37	3.4	0.02	0.02	0.01	0.02			
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:

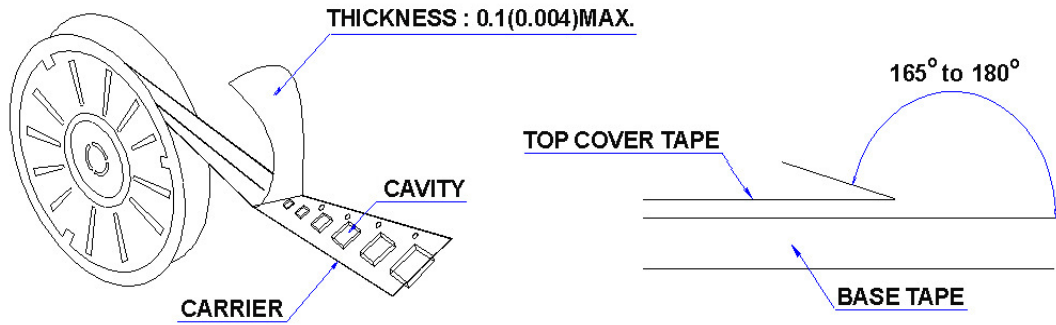
	Unless Otherwise Specified	In Case of Doubt
Temperature	Ordinary Temperature (15 to 35°C)	20 ± 2 °C
Humidity	Ordinary Humidity (25 to 85 %RH)	60 to 70 %RH

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11 Packaging:

11.1 Packaging -Cover Tape

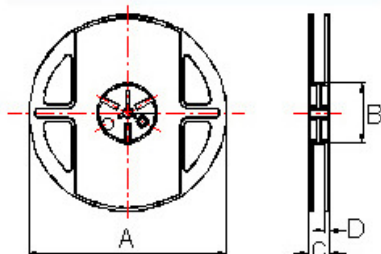
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
MHCD252012A	✓	3000

11.3 Reel Dimensions



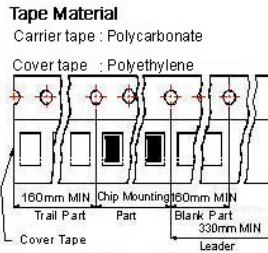
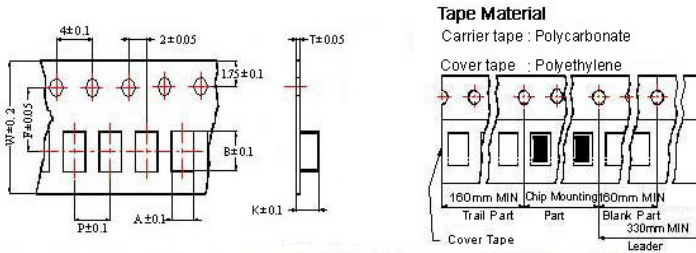
Dimensions in mm

TYPE	A	B	C	D
MHCD252012A	178	60	12	1.5

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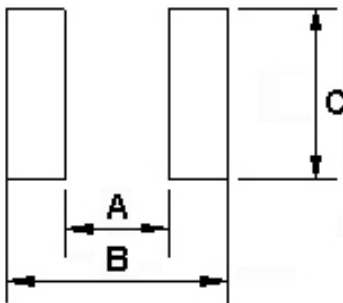
11 Packaging:

11.4 Tape Dimensions in mm



TYPE	A	B	T	W	P	F	K
MHCD252012A	2.25	2.80	0.22	8	4	3.5	1.35

12 Recommended Land Pattern:



Dimensions in mm

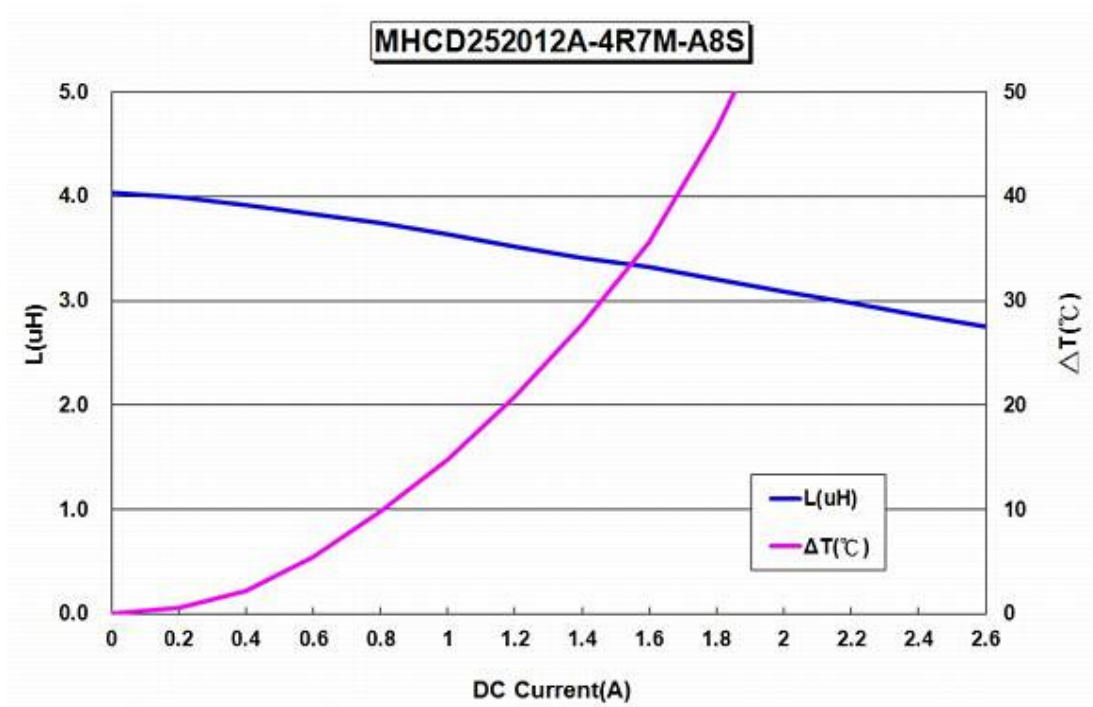
TYPE	A	B	C
MHCD252012A	1.2	2.8	2.0

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.

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14 Graph:



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