QS9000 & ISO14001 & TS16949 **CHILISIN ELECTRONICS CORP.**

Lead-Free & RoHs Compliance!!

SPECIFICATION FOR APPROVAL

CUSTOMER：

CUSTOMER P/N：

OUR DWG No：

QUANTITY： **X** **Pcs.** **DATE：** **2013/10/30**

ITEM： **MHCB12050-R47M-C1**

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

奇力新電子股份有限公司
CHILISIN ELECTRONICS CORP.
NO.29,LANE 301,TEHHSIN ROAD,HUKOU,
HSINCHU,TAIWAN,303,
REPUBLIC OF CHINA
TEL：(03) 599-2646
FAX：(03) 599-9176
E-mail：taiwan@chilisin.com.tw
http：//www.chilisin.com.tw

台北營業處
TAIPEI OFFICE
3F,NO.233-1,PAO-CHIAO ROAD,
HSIN TIEN,TAIPEI,TAIWAN, R.O.C.
TEL：(02)29112073
FAX：(02)29147698
E-mail：taipei@chilisin.com.tw

東莞奇力新電子有限公司
DONG GUANG CHILISIN ELECTRONICS LTD.
YULIANGWEI ADMINISTRATION AREA,
QINGXI TOWN, DONGGUANG,GUANGDONG,
CHINA
TEL：00286769-7730251~3
FAX：00286769-7730232
E-mail：cect@chilisin.com.tw

奇力新電子(蘇州)有限公司
CHILISIN ELECTRONICS(SUZHOU)CO.,LTD
NO.10, Zhu Yuan Road, Suzhou New District,
Suzhou,P.R.C.
TEL：00286512-8255568
FAX：00286512-8255568
E-mail：chilisin.suzhou@yageo.com.tw

DRAWN BY	CHECKED BY	APPROVED BY
張鈺雯 **chang.yuwen**	張鈺雯 chang.yuwen	JACKY鍾 jacky.chung

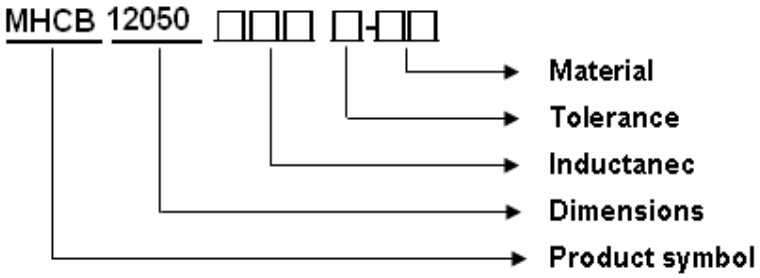
QS9000 & ISO14001 & TS16949 CHILISIN ELECTRONICS CORP.

MHCB12050 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 : MHCB12050-R47M-C1

Marking : R47

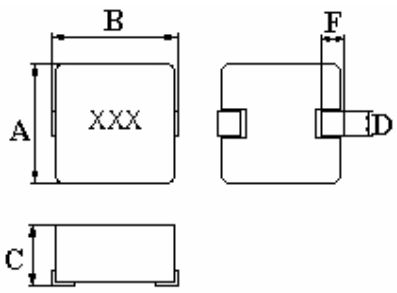
Marking color : Black

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

MHCB12050 Series Specification

6 Configuration and Dimensions:



Dimensions in mm

TYPE	MHCB12050
A	12.6±0.2
B	13.8max
C	5.0 max
D	3.7 typ
F	2.7±0.7

7 ELECTRICAL CHARACTERISTICS :

Part No.	Initilal Inductance (uH)Idc=0A	Test Freq.	Irms (A)Typ.	Isat (A)Typ.	RDC (mΩ)Max.	Tolerance (±%)
MHCB12050-R47M-C1	0.47	100KHz,0.5V	38	65	1.3(1.1)	20

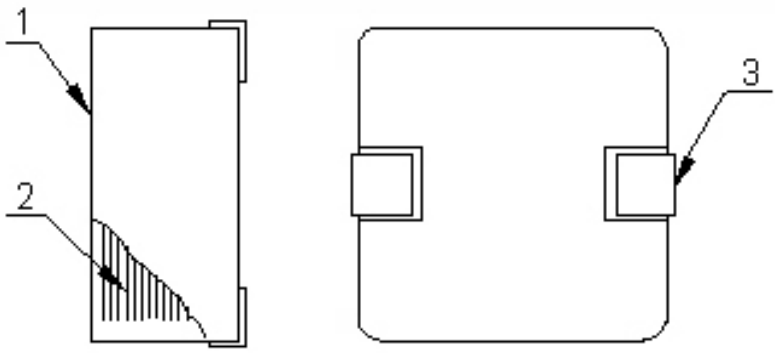
NOTE:

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 20%
3. Operating Temperature Range - 55°C to + 125°C
4. The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating condition 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.

MHCB12050 Series Specification

8 MHCB12050 Series

8.1 Construction:



8.2 Material List:

ITEM	PART	DESCRIPTION
1	COATING + CORE	POLYMER + CARBONYL IRON POWDERS
2	WIRE	COPPER WIRE
3	TERMINAL	TERMINAL COPPER

MHCB12050 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 Inductance:within±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℃, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 260±5℃ 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 Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 245±5℃ 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

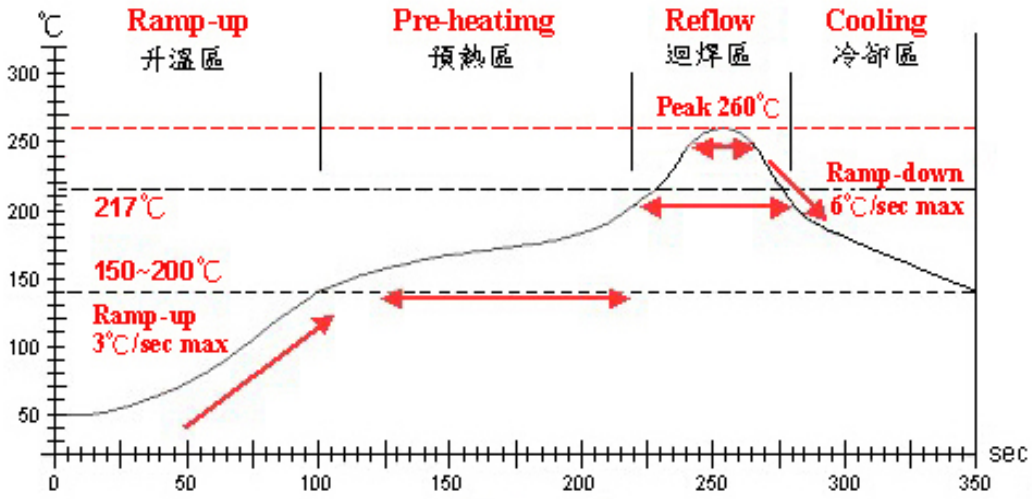
No	Item	Specification	Test Method
1-2-1	Temperature Shock	Appearance: No damage Inductance:within±10% of initial value	10 cycles (Air to Air) 1 cycles shall consist of: 30 minutes exposure to –55 ℃ 30 minutes exposure to 125 ℃ 15 seconds maximum transition between temperatures
1-2-2	Temperature Cycle		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℃ Relative Humidity: 90 ~ 95% Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-4	Heat Life	Temperature: 85±3℃ 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±3℃ Relative Humidity: 0% Time: 1000hrs Measured after exposure in the room condition for 24hrs

MHCB12050 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	—

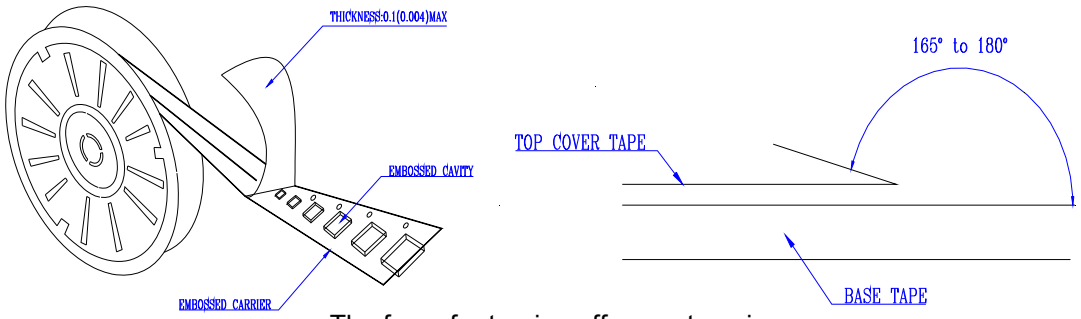
NOTE :

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

MHCB12050 Series Specification

11 PACKAGING

11.1 Packaging -Cover tape

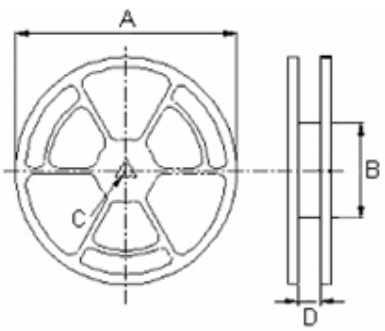


The force for tearing off cover tape is
10 to 60 grams in the arrow direction.

11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
MHCB12050	V	500

11.3 Reel Dimensions



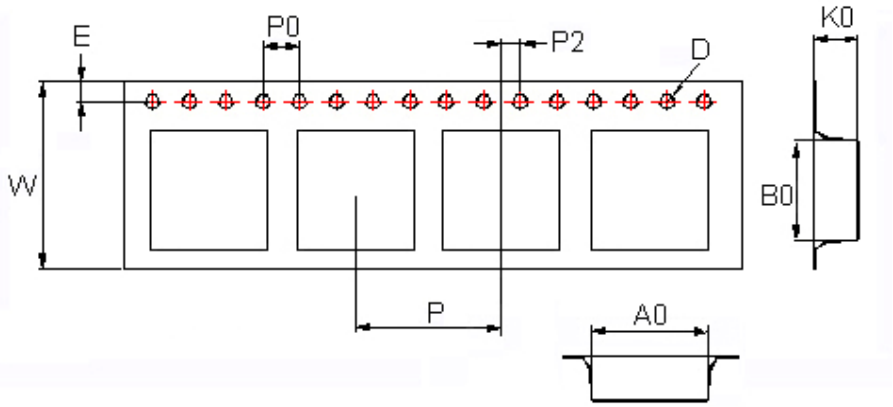
Reel Dimensions : mm

TYPE	A	B	C	D
MHCB12050	330	100	13	24.4

MHCB12050 Series Specification

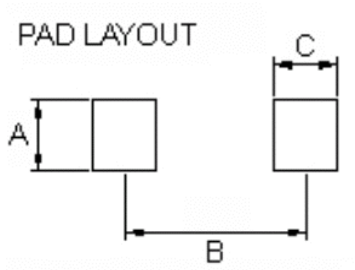
11 PACKAGING

11.4 Tape Dimensions in mm



TYPE	A0	B0	K0	D	E	W	P	P0	P2
MHCB12050	13	14	5.25	1.55	1.75	24	16	4	2

12 Recommended Pattern



Dimensions

TYPE	A(in/mm)	B(in/mm)	C(in/mm)
MHCB12050	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)

MHCB12050 Series Specification

14 Curve: