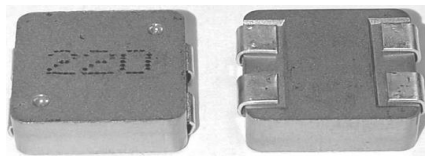


molded coupled inductor

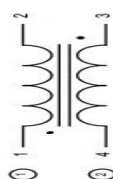
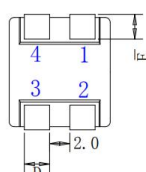
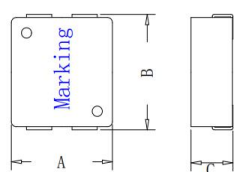
BCOHL1090/1041-Series

● Photograph picture

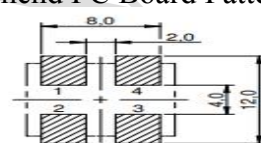


BCOHL1090/1041

● Dimensions



Recommend PC Board Pattern



ITEM	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
BCOHL1041-Series	10.0 ± 0.3	11.2 ± 0.5	4.1MAX	2.5 ± 0.2	2.2 ± 0.2
BCOHL1090-Series	10.0 ± 0.3	11.2 ± 0.5	9.0MAX	2.5 ± 0.2	2.2 ± 0.2

● Part Numbering

BCOHL 1090 - 1R0 M
A B C D

A:Series (系列代號)

B:Dimension (尺寸)

C:Inductance(電感值)

D:Inductance Tolerance (電感值公差)

B×C

1R0=1.0uH

M=±20%

● Features

1. rohs magnetic shield, 1:1 transformer.
2. Excellent electrical performance and better EMI performance
3. Compared with similar components, it has better leakage inductance (Lk) and rated current (Ir).
4. Operating temperature range:-55 °C to 155 °C

● Applications

1. Isolated converters, such as flyback converters
2. Step-down, boost, SEPIC, Zeta, Cuk .
3. A switching regulator with a second, unregulated output voltage.

● 特點

1. 符合 RoHs. 磁屏蔽,1:1 变压器.
2. 出色的电气性能和更佳的 EMI 性能.
3. 与同类元件相比, 具有更佳的漏电感 (Lk) 和额定电流 (Ir)
4. 工作温度范围: -55°C 至 155°C

● 應用

1. 隔离式转换器, 如反激式转换器.
2. 降压、升压、Sepic、Zeta、Cuk 转换器.
3. 带有第二个、未稳压输出电压的开关稳压器

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BCOHL1041/1090-Series

● Specification

ITEM	INDUCTANCE μ H @100KHZ,0.25V,0A ⁽¹⁾	DCR $m\Omega$ 25°C MAX.	DCR $m\Omega$ 25°C Typ.	HEAT RATING CURRENT DC AMPS ⁽⁵⁾ TYPICAL(Irms)	SATURATION CURRENT DC AMPS ⁽⁶⁾ TYPICAL(Isat)
BCOHL1041-1R0M	1.0 $\pm$ 20%	7.50	6.30	12.0	30.2
BCOHL1041-1R5M	1.5 $\pm$ 20%	10.0	8.6	11.10	28.1
BCOHL1041-2R2M	2.2 $\pm$ 20%	16.50	14.0	8.60	20.6
BCOHL1041-2R7M	2.7 $\pm$ 20%	16.80	16.3	7.40	16.5
BCOHL1041-3R3M	3.3 $\pm$ 20%	23.50	20.7	6.80	14.3
BCOHL1041-4R7M	4.7 $\pm$ 20%	29.0	24.4	6.20	13.8
BCOHL1041-6R8M	6.8 $\pm$ 20%	44.0	38.0	5.0	12.0
BCOHL1041-8R2M	8.2 $\pm$ 20%	46.0	41.2	4.70	11.3
BCOHL1041-100M	10.0 $\pm$ 20%	62.0	55.0	3.70	9.8
BCOHL1041-150M	15.0 $\pm$ 20%	95.0	83.0	3.25	7.8
BCOHL1041-220M	22.0 $\pm$ 20%	160.0	144.0	2.20	6.1
BCOHL1041-330M	33.0 $\pm$ 20%	230.0	207.0	2.05	5.0
BCOHL1041-470M	47.0 $\pm$ 20%	340.0	312.0	1.50	4.4
BCOHL1090-1R0M	1.0 $\pm$ 20%	5.60	4.5	17.0	43.5
BCOHL1090-1R5M	1.5 $\pm$ 20%	9.40	8.8	12.50	34
BCOHL1090-2R2M	2.2 $\pm$ 20%	12.50	10.5	11.50	29.5
BCOHL1090-3R3M	3.3 $\pm$ 20%	26.0	23.5	7.50	28.2
BCOHL1090-4R7M	4.7 $\pm$ 20%	40.0	36.0	5.90	24.2
BCOHL1090-6R8M	6.8 $\pm$ 20%	51.50	46.0	5.0	21.2
BCOHL1090-8R2M	8.2 $\pm$ 20%	63.0	56.0	4.80	18.5
BCOHL1090-100M	10.0 $\pm$ 20%	69.0	62.0	4.50	17.0
BCOHL1090-150M	15.0 $\pm$ 20%	87.0	78.0	3.90	9.5
BCOHL1090-220M	22.0 $\pm$ 20%	106.0	95.0	3.40	8.1
BCOHL1090-330M	33.0 $\pm$ 20%	145.0	130.0	2.90	6.8
BCOHL1090-470M	47.0 $\pm$ 20%	240.0	216.0	2.30	6.0

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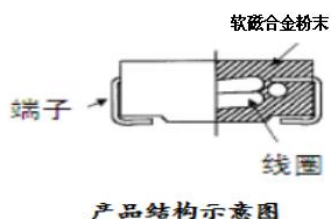
BCOHL1041/1090-Series

Note:

- (1) Tolerance of Inductance: $N=\pm 30\%$, $M=\pm 20\%$.
 - (2) All test data is referenced to 25°C ambient.
 - (3) Inductance is measured at 100KHz. 25°C ambient.
 - (4) Operating Temperature Range-55°C to +155°C.
 - (5) DC current (I_{rms}) (A) that will cause an approximate ΔT of 40°C.
 - (6) DC current (I_{sat}) (A) that will cause L_o to drop approximately 30%.
 - (7) Rated operating voltage (across inductor) = 50 V
 - (8) The part Temperature (ambient + temp. rise) should not exceed 155°C under worst case operating conditions. Circuit design, 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.
- (1) 電感的公差: $N = \pm 30\%$, $M = \pm 20\%$.
 - (2) 所有的測試資料應該是在 25°C 的環境溫度下測試.
 - (3) 感值測試頻率 100KHz. 25°C 環境溫度.
 - (4) 操作溫度範圍 - 55°C 到 +155°C.
 - (5) 加 DC (I_{rms}) 電流值 (A) 會導致 ΔT 40°C 左右的變化.
 - (6) 加 DC (I_{sat}) 電流值 (A) 會導致初始值下降 30% 左右.
 - (7) 額定工作電壓 (跨電感) = 50 V
 - (8) 在最壞的操作條件下, 部分溫度 (環境溫度 + 溫升) 不應超過攝氏 155 度。電路設計、元器件放置、印刷電路板痕迹尺寸和厚度、氣流和其他冷卻條件都會影響零件的溫度。零件溫度應在最終使用時進行驗證。

molded coupled inductor

● Material List

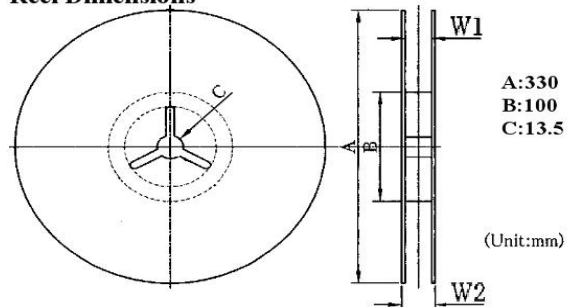


NO	ITEM	Materials
1	Core	Magnetic Metal Powder or equivalen
2	Wire	Polyester Wire or equivalen
3	External Electode	Copper
	Electroplating	Ni/Sn
4	ink	Black ink

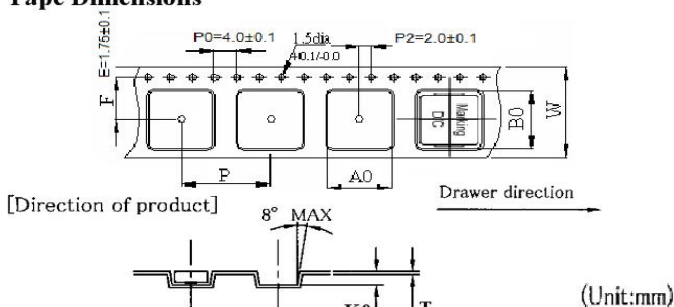
● Packaging Information

(1) Reel Dimension & Tape Dimension / Packaging Quantity

Reel Dimensions

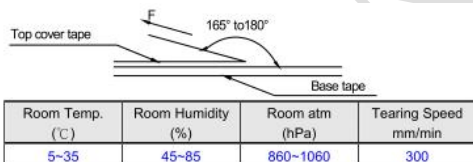


Tape Dimensions



ITEM	DIMENSIONS (m/m)									
	Q'TY (PCS)	W1±0.3	W2±0.5	W±0.35	A0±0.15	B0±0.15	K0±0.15	P±0.15	F±0.15	T±0.05
BCOHL1041	800	24.8	29.0	24.0	10.5	11.8	4.5	16.0	11.5	0.4
BCOHL1090	300	24.8	29.0	24.0	10.5	11.8	9.5	16.0	11.5	0.4

(2) Tearing Off Force



The force tearing off cover 10 to 130 grams (0.1N to 1.3N) in the arrow direction under the following conditions.

● Storage conditions/Note things

(1) Storage temperature and humidity conditions :

1. Product packing with Carrier tape: +5°C~+40°C and less than 60% RH.
2. Product alone: -20°C~+60°C and less than 60% RH.

(2) Products should be used within 6 months.

(3) The packaging material should be kept where no chlorine or sulfur exists in the air.

(4) Do not touch the electrodes (soldering terminals) with fingers as this may lead to deterioration of solder ability

(5) The use of tweezers or vacuum pick-ups is strongly recommended for individual components.

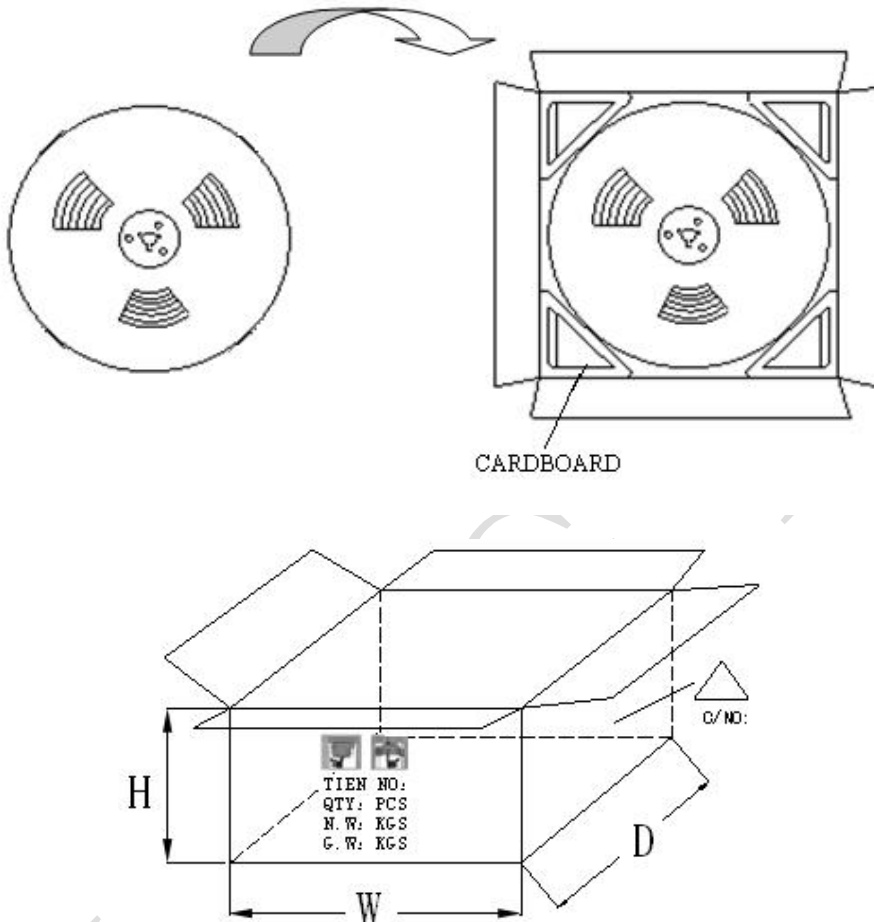
(6) Violation of the technical product specifications such as exceeding the nominal rated current will void the warranty.

(7) Applying currents with audio-frequency signals may result in audible noise due to the magnetostrictive material properties.

molded coupled inductor

BCOHL1041/1090-Series

● Package for standard

ITEM			
Packing method & Dimensions			Box Size
 Diagram illustrating the packaging method and dimensions for the molded coupled inductor. The inductor is shown mounted on a cardboard tray, which is placed inside a cardboard box. The box dimensions are labeled: W (Width), D (Depth), and H (Height). The box also features a label with the following information: TIEN NO., QTY: PCS, N.W: KGS, G.W: KGS, and G/NO.			W=345mm D=345mm H=185mm
ITEM	Packing Quantity	Reel Quantity	Total Quantity
BCOHL1041	800 Pcs/Reel	5 Reel/Box	4000 Pcs/Box
BCOHL1090	300 Pcs/Reel	5 Reel/Box	1500 Pcs/Box

molded coupled inductor

BCOHL1041/1090-Series

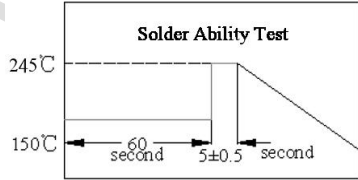
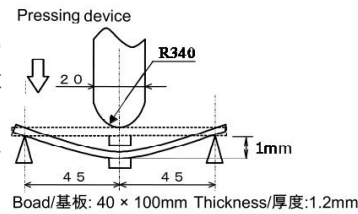
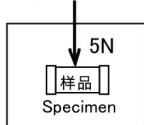
● General Characteristics

Operation Temperature	-55°C to +155°C (Includes temperature when the coil is heated)
External Appearance	On visual inspection, the coil has no external defects.

● Electrical Performance Test

Inductance	Refer to standard electrical characteristics list.
DCR	
Saturation Current(Isat)	BCOHL1041/1090-Series $\Delta L \leq 30\%$ typical.
Heat Rated Current(Irms)	Approximately $\Delta T \leq 40^\circ\text{C}$.

● Reliability Test

Solder Ability Test	- More than 90% of terminal electrode should be covered with solder. - After fluxing, component shall be dipped in a melted. - Solder: bath at $245^\circ\text{C} \pm 5^\circ\text{C}$ for 5 ± 0.5 seconds. 		
Heat resistance of Reflow Soldering Test	- Components should have not evidence of electrical and mechanical damage. - Inductance: within $\pm 10\%$ of initial value. - Preheat: $150 \pm 5^\circ\text{C}$ 60seconds. - Solder temperature: $255 \pm 5^\circ\text{C} / -0^\circ\text{C}$. - Flux: rosin. - Dip time: 10 ± 0.5 seconds.		
Adhesion strength Test	- No apparent damage - Product is mounted on PCB. Thereafter R340 pressure fixture is used to apply pressure to product from backside of the board at a rate of approx. 1mm/sec. until bending width becomes 1mm and keep it for 5sec. 		
Welding strength Test	- No separation or indication of electrode. - A static load using a R5.0 pressing tool shall be applied to the body of the specimen in the direction of the arrow and shall be hold for 3 ± 1 sec. 		
Insulating Resistance	Over 100MΩ at 100V D.C. between coil and core.		
Dielectric Strength	No dielectric breakdown at 30V D.C. for 1 minute between coil and core.		
Vibration Test	<table border="1"> <tr> <td>Inductance deviation within +10% after vibration for 1 hour. In each of three orientations at Sweep vibration (10~55~10HZ) with 1.5mmP-P amplitudes.</td> <td>1. No separation or indication of electrode.</td> </tr> </table>	Inductance deviation within +10% after vibration for 1 hour. In each of three orientations at Sweep vibration (10~55~10HZ) with 1.5mmP-P amplitudes.	1. No separation or indication of electrode.
Inductance deviation within +10% after vibration for 1 hour. In each of three orientations at Sweep vibration (10~55~10HZ) with 1.5mmP-P amplitudes.	1. No separation or indication of electrode.		
Drop Test	<table border="1"> <tr> <td>Inductance deviation within +10% after being dropped once with 981m/s² (100G) shock Attitude upon a rubber block method shock testing machine, in three different orientations.</td> <td>2. $\Delta L/L \leq 15\%$</td> </tr> </table>	Inductance deviation within +10% after being dropped once with 981m/s ² (100G) shock Attitude upon a rubber block method shock testing machine, in three different orientations.	2. $\Delta L/L \leq 15\%$
Inductance deviation within +10% after being dropped once with 981m/s ² (100G) shock Attitude upon a rubber block method shock testing machine, in three different orientations.	2. $\Delta L/L \leq 15\%$		

molded coupled inductor

BCOHL1041/1090-Series

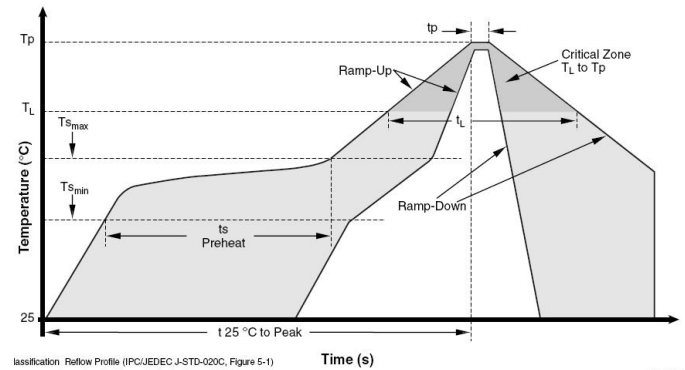
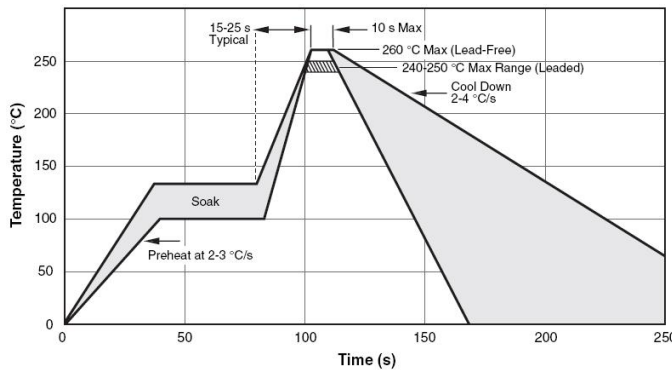
● Reliability Test

Item	Required Characteristics	Test Method/Condition
High Temperature Storage Test	1. No case deformation or change in appearance 2. $\Delta L/L \leq 15\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 15\%$ ● Temperature: $155^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 96 ± 2 hours. ● Tested not less than 1 hour, nor more than 2 hours at room.	
Low Temperature Storage Test	1. No case deformation or change in appearance 2. $\Delta L/L \leq 15\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 15\%$ ● Temperature: $-55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 96 ± 2 hours. ● Tested not less than 1 hour, nor more than 2 hours at room.	
High Temperature Humidity Test	1. No case deformation or change in appearance 2. $\Delta L/L \leq 15\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 15\%$ ● Temperature: $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$. ● Humidity: $85 \pm 5\% \text{RH}$ ● Test Time: 96 ± 2 hours ● Tested not less than 1 hour. Nor more than 2 hours at room temperature.	
Thermal Shock Test Storage Test	1. No case deformation or change in appearance 2. $\Delta L/L \leq 15\%$ 3. $\Delta Q/Q \leq 30\%$ 4. $\Delta DCR/DCR \leq 15\%$ ● First -55°C for 30 Minutes, last 155°C for 30 Minutes as 1 cycle. Go through 20 cycles.	

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BCOHL1041/1090-Series

● Soldering re-flow



IPC/JEDEC J-STD-020C, Figure 5-1

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (Ts _{max} to Tp)	3 °C/second max.	3 °C/second max.
Preheat		
± Temperature Min (Ts _{min})	100 °C	150 °C
± Temperature Max (Ts _{max})	150 °C	200 °C
± Time (ts _{min} to ts _{max})	60-120 seconds	60-180 seconds
Time maintained above:		
± Temperature (T _L)	183 °C	217 °C
± Time (t _L)	60-150 seconds	60-150 seconds
Peak/Classification Temperature (Tp)	See Table 4.1	See Table 4.2
Time within 5 °C of actual Peak Temperature (tp)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

Table 4. Classification Reflow Profiles (per IPC/JEDEC J-STD-020C, Table 5.2)

Note 1: All temperatures refer to topside of the package, measured on the package body surface.

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	240 +0/-5 °C	225 +0/-5 °C
≥2.5 mm	225 +0/-5 °C	225 +0/-5 °C

Table 5. SnPb Eutectic Process – Package Peak Reflow Temperatures (per IPC/JEDEC J-STD-020C, Table 4.1)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6 mm	260 + 0 °C *	260 + 0 °C *	260 + 0 °C *
1.6 mm - 2.5 mm	260 + 0 °C *	250 + 0 °C *	245 + 0 °C *
≥2.5 mm	250 + 0 °C *	245 + 0 °C *	245 + 0 °C *

* Tolerance: Process compatibility is up to and including the stated classification temperature (this means Peak reflow temperature + 0 °C. For example 260 °C + 0 °C) at the rated MSL level.

Table 6. Pb-free Process – Package Classification Reflow Temperatures (per IPC/JEDEC J-STD-020C, Table 4.2)

Note 1: The profiling tolerance is + 0 °C, -X °C (based on machine variation capability) whatever is required to control the profile process but at no time will it exceed -5 °C. Process compatibility at the peak reflow profile temperatures as defined in Table 4.2.

Note 2: Package volume excludes external terminals (balls, bumps, lands, leads) and/or nonintegral heat sinks.

Note 3: The maximum component temperature reached during reflow depends on package thickness and volume. The use of convection reflow processes reduces the thermal gradients between packages. However, thermal gradients due to differences in thermal mass of SMD packages may still exist.

Note 4: Components intended for use in a “lead-free” assembly process shall be evaluated using the “lead-free” classification temperatures and profiles defined in Tables 4.1, 4.2 and 5.2 whether or not lead free.

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BCOHL1041/1090-Series

• Modify records

Numbering	Date	Modify content
	2020/6/22	First edition