

Specification for Approval

Date: 2012/07/02

Customer : _____

TAI-TECH P/N: HPC2012 Series

CUSTOMER P/N: _____

DESCRIPTION: _____

QUANTITY: _____ pcs

REMARK:		
Customer Approval Feedback		

西北臺慶科技股份有限公司
TAI-TECH Advanced Electronics Co., Ltd

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Power Inductor	HPC2012 Series
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ECN HISTORY LIST					
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REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	12/07/02	新發行	楊祥忠	詹偉特	蕭羽恬
備 註					

Power Inductor

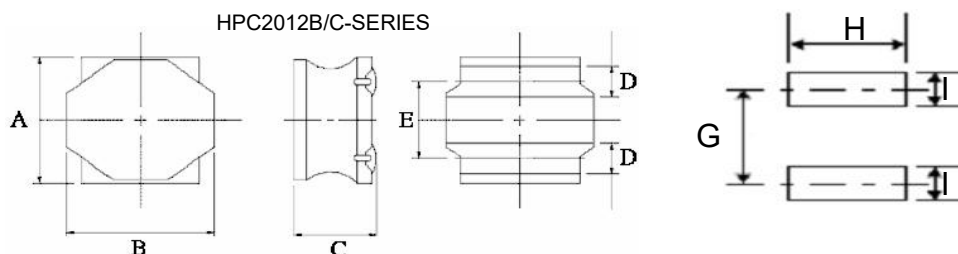
HPC2012 Series

1. Features

1. This specification applies Low Profile Power Inductors.
2. 100% Lead(Pb) & Halogen-Free and RoHS compliant.



2. Dimension



Series	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	G(mm)	H(mm)	I(mm)
HPC2012B/C	2.0±0.1	2.0±0.1	1.2 max.	0.5±0.2	1.25±0.2	1.35 ref.	2.0 ref.	0.65 ref.

Units: mm

3. Part Numbering

HPC **2012** **B** - **2R2** **M**

A B C D E

A: Series

B: Dimension

C: Control S/N

D: Inductance

2R2=2.2uH

E: Inductance Tolerance

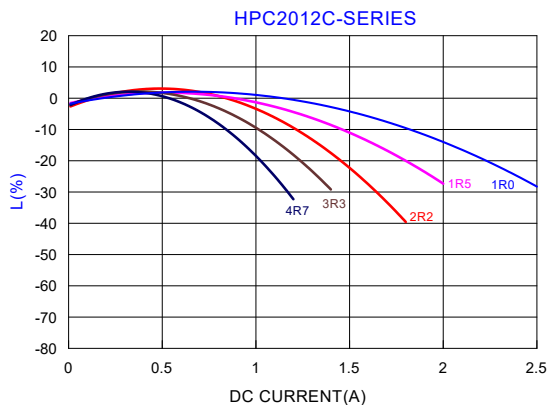
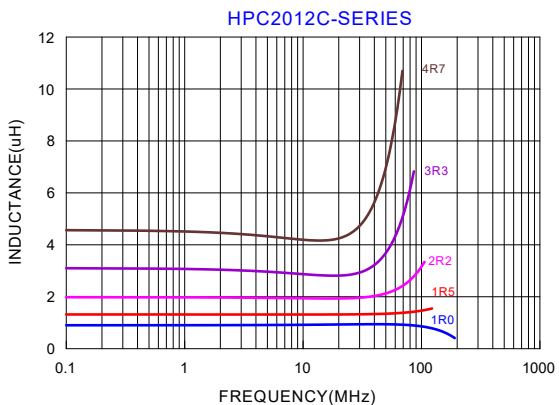
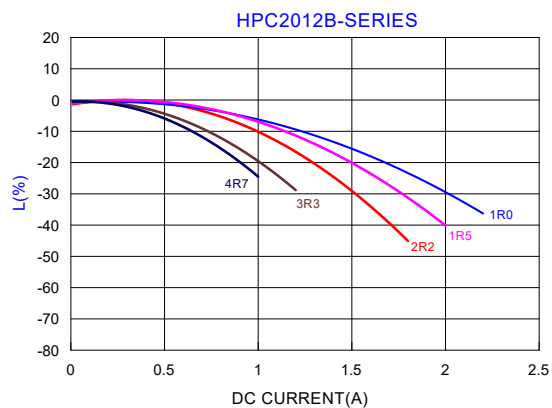
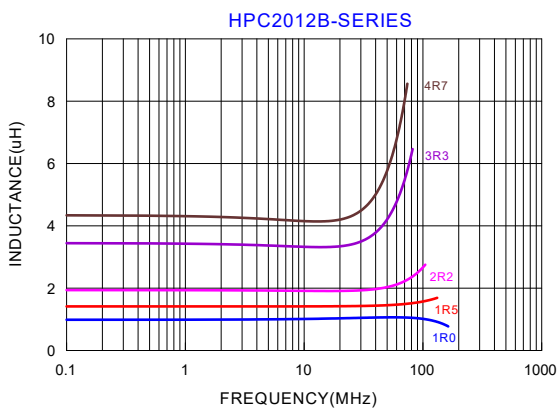
M=±20%; Y=±30%

4. Specification

TAI-TECH Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) ±20%	I sat (A)	I rms (A)
HPC2012B-1R0Y	1.0	±30%	1V100K	0.070	1.90	1.70
HPC2012B-1R5Y	1.5	±30%	1V100K	0.090	1.65	1.50
HPC2012B-2R2M	2.2	±20%	1V100K	0.107	1.35	1.37
HPC2012B-3R3M	3.3	±20%	1V100K	0.190	1.00	1.02
HPC2012B-4R7M	4.7	±20%	1V100K	0.241	0.90	0.91
HPC2012C-1R0Y	1.0	±30%	1V100K	0.073	2.20	1.65
HPC2012C-1R5Y	1.5	±30%	1V100K	0.100	1.80	1.40
HPC2012C-2R2M	2.2	±20%	1V100K	0.129	1.60	1.20
HPC2012C-3R3M	3.3	±20%	1V100K	0.227	1.25	0.90
HPC2012C-4R7M	4.7	±20%	1V100K	0.325	1.10	0.75

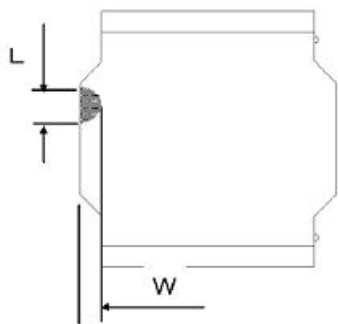
Note:

Isat: Based on inductance change ($\Delta L/L0: \leq -30\%$) @ ambient temp. 25°CI rms: Based on temperature rise ($\Delta T: 40^\circ\text{C typ.}$)



Core chipping

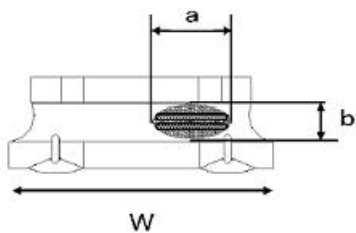
The appearance standard of the chipping size in top side, of bottom side ferrite core is following dimension.



Type	L	W
HPC2012B/C	0.4mm Max.	0.4mm Max

Void appearance tolerance Limit

Size of voids occurring to coating resin is specified below.

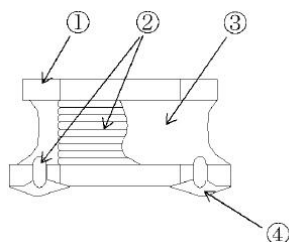


Exposed wire tolerance limit of coating resin part on product side.

Size of exposed wire occurring to coating resin is specified below.

1. Width direction (dimension a): Acceptable when $a \leq w/2$
Nonconforming when $a > w/2$
2. Length direction (dimension b): Dimension b is not specified.
3. When total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

5. Material List



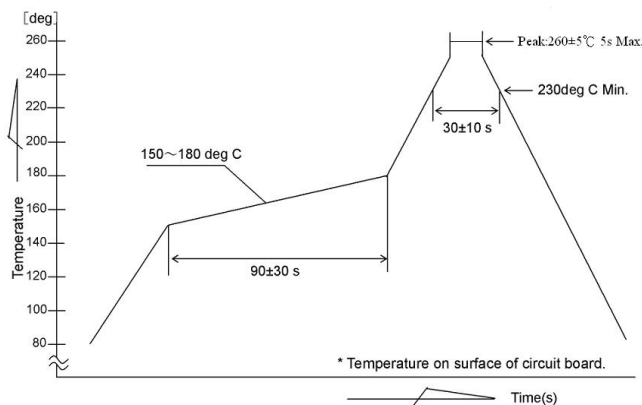
No.	Item	Material
1	Core	Ni-Zn ferrite
2	Wire	Copper Wire
3	Coating	Epoxy
4	Solder	Lead free

6. Reliability and Test Condition

Item	Performance	Test Method and Remarks
Operating Temperature	- 25 ~ +120℃.	Including self-generated heat
Storage Temperature	-40 ~ +85℃. - 5 to 40℃ for the product with taping.	
Rated current		
Inductance (L)	Within the specified tolerance	LCR Meter: HP 4285A or equivalent, 100kHz, 1V
DC Resistance		DC Ohmmeter: HIOKI3227 or equivalent
Temperature characteristics	Inductance change: Within±20%	Measurement of inductance shall be taken at temperature rang within-25℃ to +85℃. With reference to inductance value at+20 ℃,change rate shall be calculated. Measurement of inductance shall be taken at temperature rang within-40℃ to +125℃. With reference to inductance value at+20 ℃,change rate shall be calculated.
Resistance to flexure substrate	No damage.	The test samples shall be soldered to the testing board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2mm. Substrate size: 100x40x1.0 Substrate material: glass epoxy-resin Solder cream thickness: 0.10
Adhesion of Terminal electrode	Shall not come off PC board.	The test samples shall be soldered to the testing board and by the reflow. Applied force: 10 N to X and Y directions. Duration: 5s Solder cream thickness: 0.15
Resistance to Vibration	Inductance change: Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions. Frequency: 10-55Hz Total Amplitude: 1.5mm (May not exceed acceleration 196m/S ²) Sweeping Method:10Hz to 55Hz to 10Hz for 1min. Time: 2 hours each in X,Y, and Z Direction. Recovery: At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.
Solderability	At least 90% of surface of terminal electrode is covered by new solder.	The test samples shall be dipped in flux, and then immersed in molten solder as shown in below. Flux: methanol solution containing rosin 25% Solder temperature: 245±5℃ Time: 5±1.0 sec. Immersion depth: All sides of mounting terminal shall be immersed.
Resistance to soldering	Inductance change: Within±10% No abnormality observed in appearance.	The test sample shall be exposed to reflow oven at 230±5℃ for 40 seconds, with peak temperature at 260±5℃ for 5 seconds,2 times. Test board thickness: 1.0mm Test board material: glass epoxy-resin

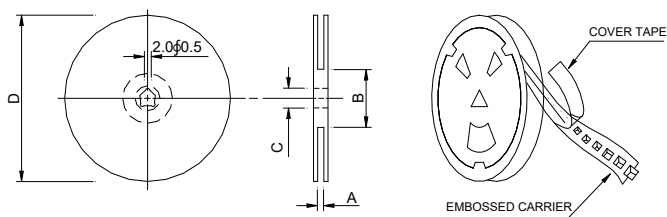
Item	Performance	Test Method and Remarks															
Thermal shock		The test samples shall be soldered to the test board by the reflow. The test samples shall be placed at specified temperature for specified time by step 1 to step 4 as shown below in sequence. The temperature cycles shall be repeated 100 cycles . <table border="1" data-bbox="991 309 1370 427"> <thead> <tr> <th>Phase</th> <th>Temperature(°C)</th> <th>Time(min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3°C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp</td> <td>Within 3</td> </tr> <tr> <td>3</td> <td>85±2°C</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temp</td> <td>Within 3</td> </tr> </tbody> </table>	Phase	Temperature(°C)	Time(min.)	1	-40±3°C	30±3	2	Room Temp	Within 3	3	85±2°C	30±3	4	Room Temp	Within 3
Phase	Temperature(°C)	Time(min.)															
1	-40±3°C	30±3															
2	Room Temp	Within 3															
3	85±2°C	30±3															
4	Room Temp	Within 3															
Damp heat life test		Test Method and Remarks The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below. Temperature: 60±2°C Humidity: 90~95%RH Time: 500+24/-0 hrs															
Loading under damp heat life test	Inductance change: Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below. Temperature: 60±2°C Humidity: 90~95%RH Applied current: Rated current Time: 500+24/-0 hrs															
Low temperature life test		The test samples shall be soldered to the test board by the reflow. After that, the test samples shall be placed at test conditions as shown in below. Temperature:-40±2°C Time:500+24/-0 hrs															
Loading at high temperature life test		The test samples shall be soldered to the test board by the reflow. Temperature: 85±2°C. Applied current: Rated current Time: 500+24/-0 hrs.															

7. Soldering



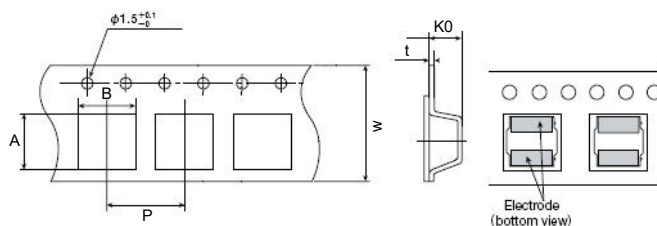
8. Packaging Information

(1) Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
HPC2012B/C	10±1.5	60±1.0	13±0.5	180±0.5

(2) Tape Dimension



Type	A(mm)	B(mm)	Ko(mm)	P(mm)	W(mm)	t(mm)
HPC2012B/C	2.2±0.1	2.2±0.1	1.3±0.1	4.0±0.1	8.0±0.2	0.25±0.05

(3) Packaging Quantity

Type	Chip / Reel
HPC2012B/C	2500

Application Notice

- Storage Conditions
 - To maintain the solderability of terminal electrodes:
 1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°C and 60% RH.
 3. Recommended products should be used within 12 months form the time of delivery.
 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

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