

Power Inductor



BPCI Series



Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems. They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency.

Benefits

1. Ferrite SMD Shielded Type
2. Various package size and wide inductance range

Applications

1. AP Routers, STBs
2. LCD TVs and monitors
3. Game consoles
4. LED lightings
5. DC/DC converters

Product Information

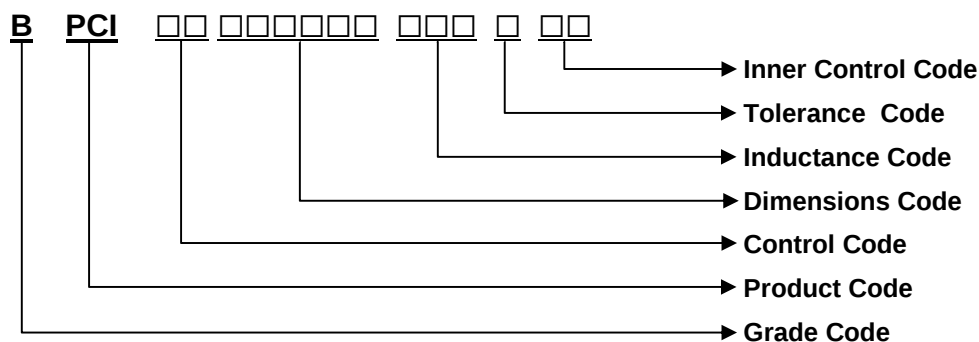
Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
BPCI	7.3	7.3	4.6	0.33 ~ 10000
	12.0	12.0	5.0	
	12.0	12.0	6.0	
	12.0	12.0	8.0	
	12.0	12.0	10.0	



BPCI00121250 Series Specification

1 Scope: This specification applies to the Pb Free high current type SMD inductors

2 Part Numbering:



3 Rating:

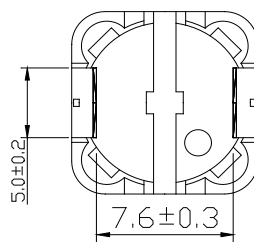
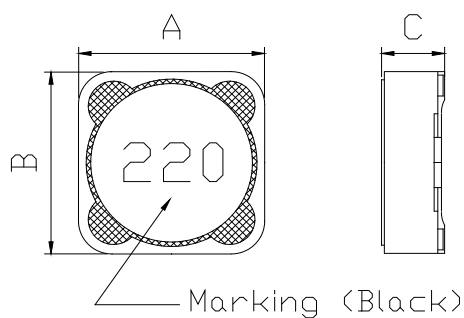
Operating Temperature: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature (on tape & reel): -20°C to $+40^{\circ}\text{C}$; 75% RH max.

4 Standard Testing Condition:

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature (15 to 35°C)	20 to 30°C
Humidity	Ordinary Humidity (25 to 85% RH)	50 to 80 %RH

5 Configuration and Dimensions:



A: 12.0 ± 0.5 mm

B: 12.0 ± 0.5 mm

C: 5.0 Max. mm

Net Weight (grms)

SIZE CODE	Net Weight (grms)
121250	2.56 (Typ.)

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6 Electrical Characteristics:

Part No.	Inductance L(μH)	Test Frequency	Resistance RDC(Ω) Max.	Rated DC Current Isat(A)	Irms(A)	Tolerance	Marking
BPCI001212503R0□00	3.0	100kHz/0.25V	15m	7.00	7.00	M,T	3R0
BPCI001212503R3□00	3.3	100kHz/0.25V	15m	7.00	7.00	T	3R3
BPCI001212503R9□00	3.9	100kHz/0.25V	15m	6.50	6.50	T	3R9
BPCI001212504R2□00	4.2	100kHz/0.25V	16m	6.50	6.50	T	4R2
BPCI001212504R7□00	4.7	100kHz/0.25V	18m	5.70	5.70	M,T	4R7
BPCI001212506R8□00	6.8	100kHz/0.25V	23m	4.90	4.90	M,T	6R8
BPCI001212508R2□00	8.2	100kHz/0.25V	26m	4.60	4.60	T	8R2
BPCI00121250100□00	10.0	100kHz/0.25V	28m	4.50	4.50	M,T	100
BPCI00121250120□00	12	100kHz/0.25V	38m	4.00	4.00	M,T	120
BPCI00121250150□00	15	100kHz/0.25V	50m	3.20	3.20	M,T	150
BPCI00121250180□00	18	100kHz/0.25V	57m	3.10	3.10	M,T	180
BPCI00121250220□00	22	100kHz/0.25V	66m	2.90	2.90	M,T	220
BPCI00121250270□00	27	100kHz/0.25V	80m	2.80	2.80	M,T	270
BPCI00121250330□00	33	100kHz/0.25V	97m	2.70	2.70	M,T	330
BPCI00121250390□00	39	100kHz/0.25V	0.132	2.10	2.10	M,T	390
BPCI00121250470□00	47	100kHz/0.25V	0.150	1.90	1.90	M,T	470
BPCI00121250560□00	56	100kHz/0.25V	0.190	1.80	1.80	M,T	560
BPCI00121250680□00	68	100kHz/0.25V	0.220	1.50	1.50	M,T	680
BPCI00121250820□00	82	100kHz/0.25V	0.260	1.30	1.30	M,T	820
BPCI00121250101□00	100	100kHz/0.25V	0.308	1.20	1.20	M,T	101
BPCI00121250121□00	120	100kHz/0.25V	0.380	1.10	1.10	M,T	121
BPCI00121250151□00	150	100kHz/0.25V	0.530	0.95	0.95	M,T	151
BPCI00121250181□00	180	100kHz/0.25V	0.620	0.85	0.85	M,T	181
BPCI00121250221□00	220	100kHz/0.25V	0.700	0.80	0.80	M,T	221
BPCI00121250271□00	270	100kHz/0.25V	0.870	0.60	0.60	M,T	271
BPCI00121250331□00	330	100kHz/0.25V	0.990	0.50	0.50	M,T	331

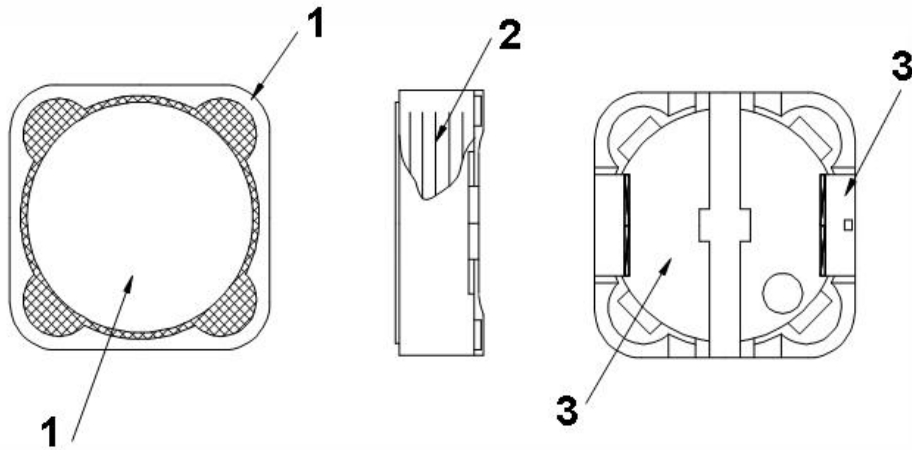
NOTE: tolerance K=±10%, M=±20%, T=±30%

1. Isat : Based on inductance change (ΔL/Lo : drop 10% Max.) @ambient temperature 25°C

2. Irms : Based on temperature rise (ΔT : 40°C TYP.)

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6.1 Construction:



6.2 Material List:

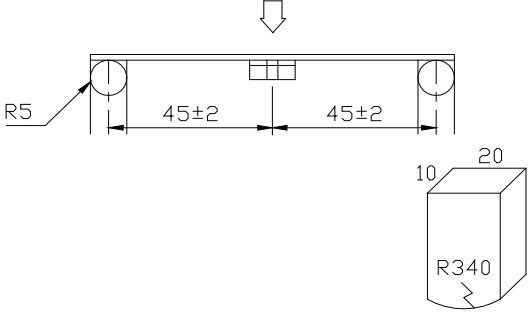
NO.	ITEM	DESCRIPTION & TYPE
1	CORE	FERRITE
2	WIRE	MAGNET WIRE (P180)
3	TERMINAL	Ag/Cu/Ni/Sn

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ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Insulation resistance	There shall be no other damage or problems.	DC 100V voltage shall be applied across this sample of top surface and the terminal. The insulation resistance shall be more than $1 \times 10^8 \Omega$.
Dielectric withstand voltage	There shall be no other damage or problems.	AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample
Temperature characteristics	$\Delta L/L20^\circ\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^\circ\text{C}$	The test shall be performed after the sample has stabilized in an ambient temperature of -20 to $+85^\circ\text{C}$, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L20^\circ\text{C} \leq \pm 10\%$.

MECHANICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Substrate bending	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage or electrical damage.	The sample shall be soldered onto the printed circuit board in figure 1 and a load applied until the figure in the arrow direction is made approximately 3mm. (keep time 30 seconds) PCB dimension shall be the page 7/9 F(Pressurization)  PRESSURE ROD figure-1

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MECHANICAL

TEST ITEM	SPECIFICATION	
Vibration	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each. (A total of 6 hours)
Solderability	New solder More than 90%	Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated over the whole of the sample before hard, the sample shall then be preheated for about 2 minutes in a temperature of 130~150°C and after it has been immersed to a depth 0.5mm below for 3±0.2 seconds fully in molten solder M705 with a temperature of 245±5°C. More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath.
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	Temperature profile of reflow soldering The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.

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ENVIRONMENT CHARACTERISTICS

TEST ITEM	SPECIFICATION																
High temperature storage	$\Delta L/L_o \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of 125°C and a normal humidity. Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Low temperature storage	$\Delta L/L_o \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of $-40 \pm 3^\circ\text{C}$. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Change of temperature	$\Delta L/L_o \leq \pm 5\%$ There shall be no other damage of problems	The sample shall be subject to 5 continuous cycles, such as shown in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made. table 2 <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard atmospheric</td><td>No.1→No.2</td></tr> <tr> <td>3</td><td>$125 \pm 2^\circ\text{C}$ (Thermostat No.2)</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard atmospheric</td><td>No.2→No.1</td></tr> </tbody> </table>		Temperature	Duration	1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/L_o \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in a temperature of $40 \pm 2^\circ\text{C}$ and a humidity(RH) of 90~95%. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.															

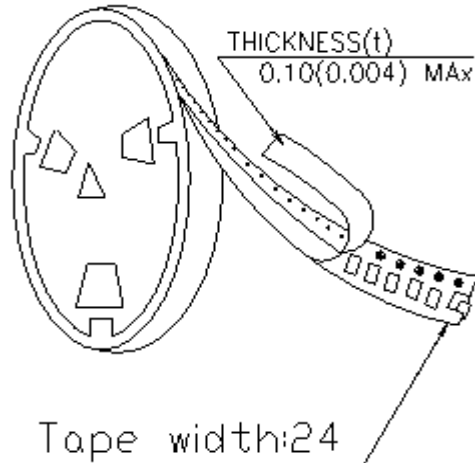
Test conditions :

The sample shall be reflow soldered onto the printed circuit board in every test.

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7 Packaging:

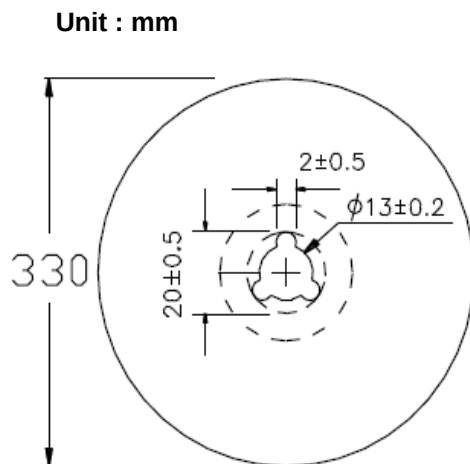
7.1 Packaging -Cover Tape



7.2 Packaging Quantity

TYPE	PCS/REEL
BPCI00121250	500

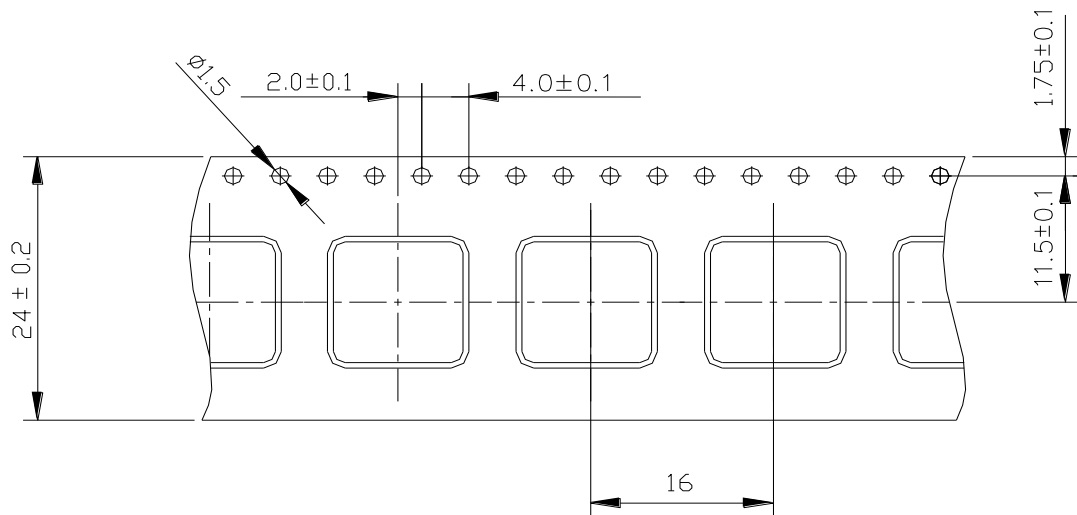
7.3 Reel Dimensions



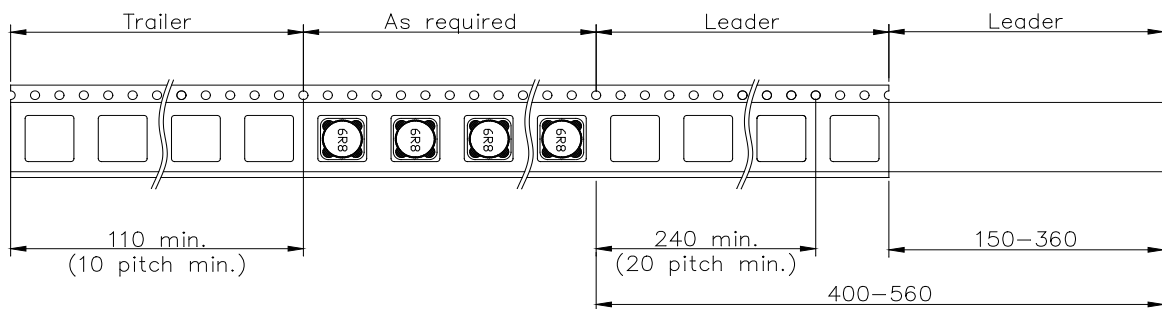
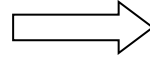
BPCI00121250 Series Specification

7 Packaging:

7.4 Tape Dimensions in mm

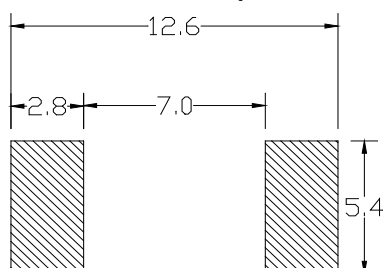


Unreeling
Direction



8 Recommended Land Pattern:

(STANDARD PATTERN) Unit : mm



BPCI00121250 Series Specification

9 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 or 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. The moisture sensitivity level (MSL) of products is classified as level 1.