

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

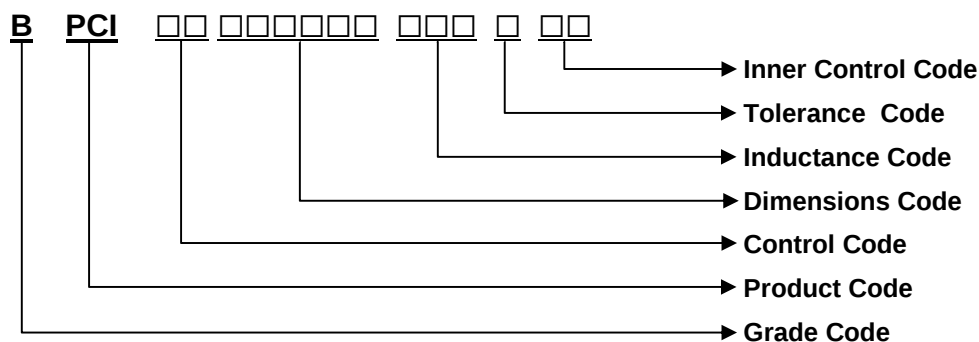
Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
BPCI	7.3	7.3	4.6	0.33 ~ 10000
	12.0	12.0	5.0	
	12.0	12.0	6.0	
	12.0	12.0	8.0	
	12.0	12.0	10.0	



BPCI00121210 Series Specification

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

2 Part Numbering:



3 Rating:

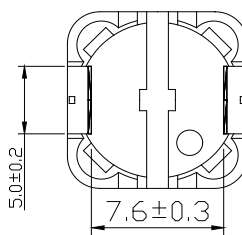
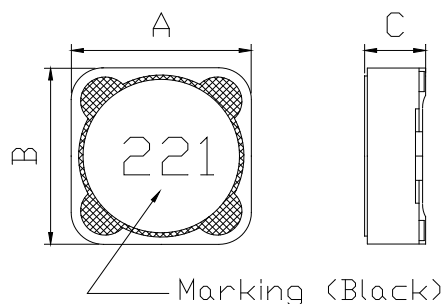
Operating Temperature: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

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: 10.0 Max. mm

Net Weight (grms)

SIZE CODE	Net Weight (grms)
121210	5.45(Typ.)

BPCI00121210 Series Specification

6 Electrical Characteristics:

Part No.	Inductance L(μH)	Test Frequency	Resistance RDC(Ω) Max.	Rated DC Current		Tolerance	Marking
				Isat(A)	Irms(A)		
BPCI001212101R0□00	1.0	100kHz/0.1V	5.5m	19.90	11.60	T	1R0
BPCI001212101R8□00	1.8	100kHz/0.1V	6.5m	13.40	11.00	T	1R8
BPCI001212102R0□00	2.0	100kHz/0.1V	7.0m	12.90	10.70	T	2R0
BPCI001212102R2□00	2.2	100kHz/0.1V	7.0m	12.90	10.70	M,T	2R2
BPCI001212102R5□00	2.5	100kHz/0.1V	8.0m	12.16	10.30	T	2R5
BPCI001212103R5□00	3.5	100kHz/0.1V	9.7m	12.00	8.70	T	3R5
BPCI001212103R6□00	3.6	100kHz/0.1V	10.0m	12.00	8.70	T	3R6
BPCI001212104R7□00	4.7	100kHz/0.1V	11.0m	11.00	8.40	M,T	4R7
BPCI001212105R8□00	5.8	100kHz/0.1V	11.3m	10.50	7.60	T	5R8
BPCI001212106R8□00	6.8	100kHz/0.1V	11.5m	10.00	7.10	M,T	6R8
BPCI001212107R5□00	7.5	100kHz/0.1V	14.0m	8.48	6.80	M,T	7R5
BPCI001212108R2□00	8.2	100kHz/0.1V	16.0m	8.30	6.70	M,T	8R2
BPCI00121210100□00	10	100kHz/0.1V	17.0m	8.20	6.95	M,T	100
BPCI00121210120□00	12	100kHz/0.1V	18.5m	7.04	6.20	M,T	120
BPCI00121210150□00	15	100kHz/0.1V	25.0m	5.80	5.22	M,T	150
BPCI00121210180□00	18	100kHz/0.1V	27.0m	5.40	5.10	M,T	180
BPCI00121210220□00	22	100kHz/0.1V	29.0m	5.12	4.95	M,T	220
BPCI00121210330□00	33	100kHz/0.1V	53.0m	4.25	3.60	M,T	330
BPCI00121210470□00	47	100kHz/0.1V	63.0m	3.60	3.45	M,T	470
BPCI00121210560□00	56	100kHz/0.1V	68.0m	2.85	2.95	M,T	560
BPCI00121210680□00	68	100kHz/0.1V	93.0m	2.76	2.85	M,T	680
BPCI00121210820□00	82	100kHz/0.1V	99.0m	2.62	2.60	M,T	820
BPCI00121210850□00	85	100kHz/0.1V	0.120	2.60	2.60	M,T	850
BPCI00121210101□00	100	100kHz/0.1V	0.126	2.31	2.45	M	101
BPCI00121210121□00	120	100kHz/0.1V	0.154	2.05	2.20	M	121
BPCI00121210151□00	150	100kHz/0.1V	0.174	1.80	1.90	M	151
BPCI00121210181□00	180	100kHz/0.1V	0.191	1.66	1.86	M	181

NOTE: tolerance M=±20% , T=±30%

1. Isat : Based on inductance change (ΔL/L₀ : drop 25% Max.) @ambient temperature 25℃

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

BPCI00121210 Series Specification

6 Electrical Characteristics:

Part No.	Inductance L(μH)	Test Frequency	Resistance RDC(Ω) Max.	Rated DC Current		Tolerance	Marking
				Isat(A)	Irms(A)		
BPCI00121210221□00	220	100kHz/0.1V	0.246	1.64	1.72	M	221
BPCI00121210331□00	330	100kHz/0.1V	0.386	1.28	1.28	M	331
BPCI00121210391□00	390	100kHz/0.1V	0.440	1.20	1.27	M	391
BPCI00121210471□00	470	100kHz/0.1V	0.471	1.06	1.25	M	471
BPCI00121210561□00	560	100kHz/0.1V	0.650	1.01	0.98	M	561
BPCI00121210681□00	680	100kHz/0.1V	0.730	0.83	0.96	M	681
BPCI00121210821□00	820	100kHz/0.1V	0.824	0.81	0.94	M	821
BPCI00121210102□00	1000	100kHz/0.1V	1.220	0.70	0.78	M	102
BPCI00121210122□00	1200	100kHz/0.1V	1.330	0.64	0.79	M	122
BPCI00121210152□00	1500	100kHz/0.1V	1.990	0.56	0.58	M	152
BPCI00121210182□00	1800	100kHz/0.1V	2.180	0.48	0.54	M	182
BPCI00121210222□00	2200	100kHz/0.1V	2.580	0.43	0.52	M	222
BPCI00121210332□00	3300	100kHz/0.1V	4.600	0.30	0.40	M	332

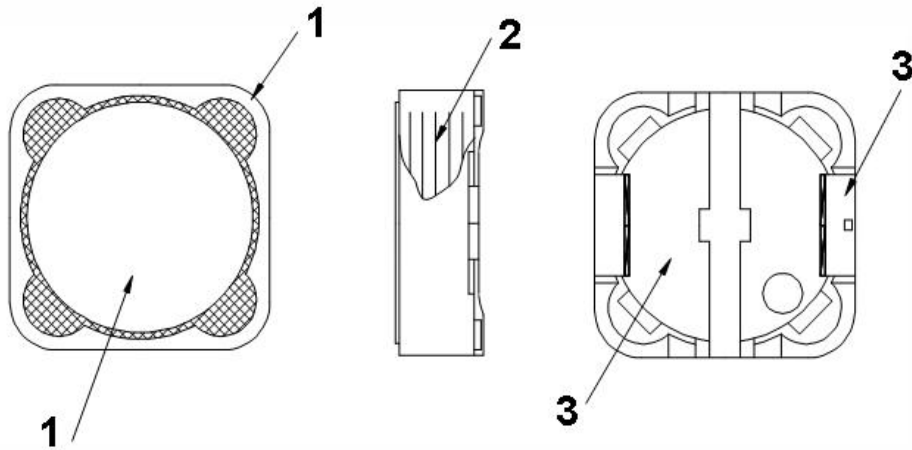
NOTE: tolerance M=±20% , T=±30%

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

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

BPCI00121210 Series Specification

6.1 Construction:



6.2 Material List:

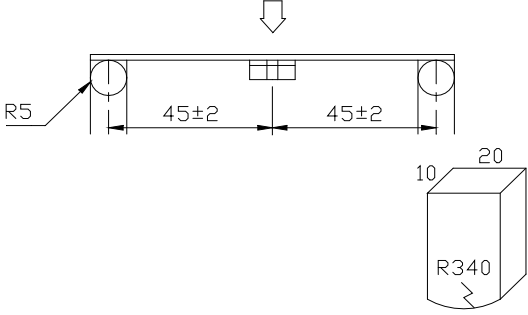
NO.	ITEM	DESCRIPTION & TYPE
1	CORE	FERRITE
2	WIRE	MAGNET WIRE (P180)
3	TERMINAL	Ag/Cu/Ni/Sn

BPCI00121210 Series Specification

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

BPCI00121210 Series Specification

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 graph shows a temperature profile for reflow soldering. The y-axis is Temperature (°C) with markers at 25, 160, 217, and 260. The x-axis is Time. The profile starts at 25°C, rises through a preheat phase (150-200°C, 60-120 sec), enters a liquidus phase (>217°C, 60-150 sec), reaches a peak soldering temperature of 260°C ± 3°C for 10-30 seconds, and then ramps down at 6°C/sec max. The ramp up is at 3°C/sec max. 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.

BPCI00121210 Series Specification

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.															

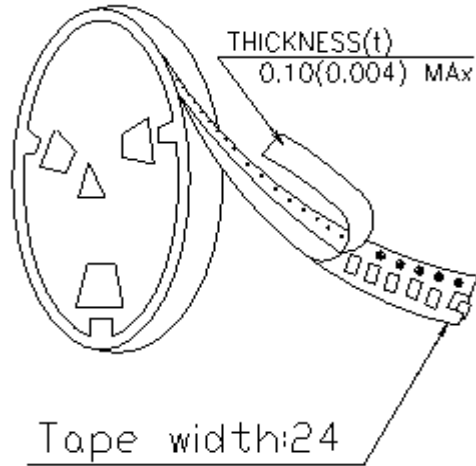
Test conditions :

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

BPCI00121210 Series Specification

7 Packaging:

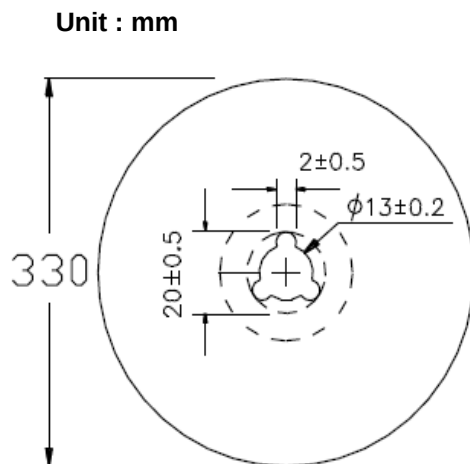
7.1 Packaging -Cover Tape



7.2 Packaging Quantity

TYPE	PCS/REEL
BPCI00121210	250

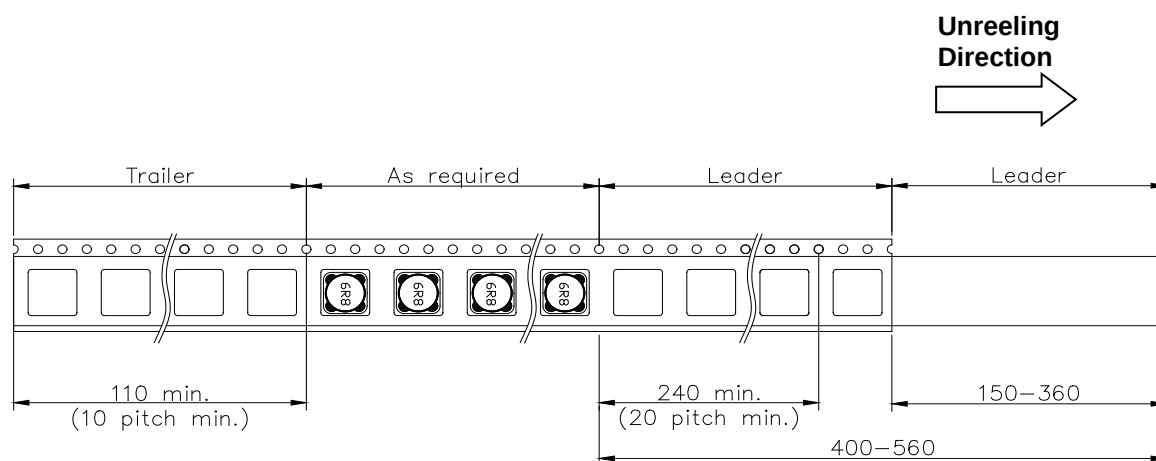
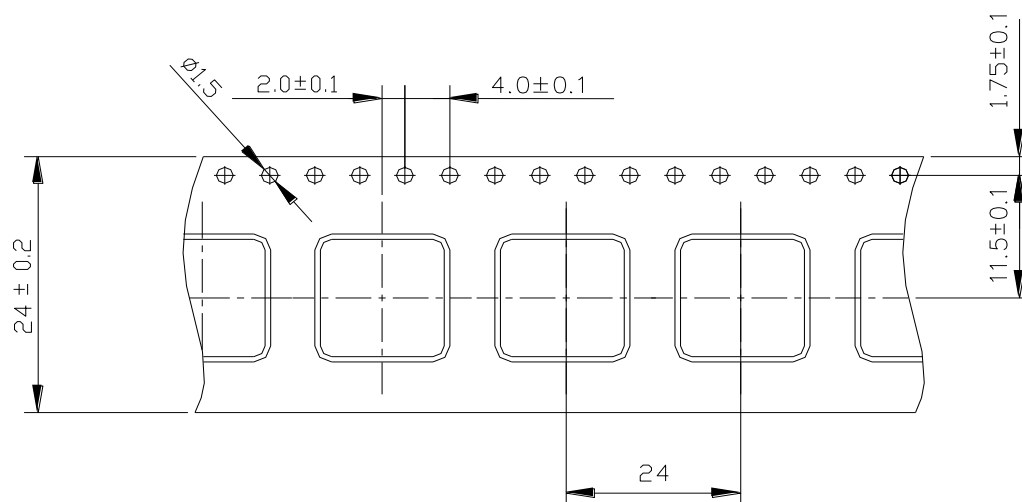
7.3 Reel Dimensions



BPCI00121210 Series Specification

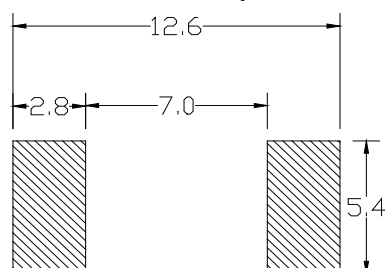
7 Packaging:

7.4 Tape Dimensions in mm



8 Recommended Land Pattern:

(STANDARD PATTERN) Unit : mm



BPCI00121210 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.