

# Power Inductor

## BKPB 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

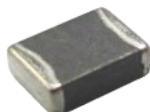
1. Energy Storage, Efficiently stores and transfers energy in DC-DC converters and power supplies.
2. High Current Handling, Supports high current capacity with minimal losses, ensuring thermal stability.
3. Compact and Efficient Design, Advanced materials and construction enable miniaturization without sacrificing performance, ideal for space-constrained designs.

### Applications

1. Consumer Electronics: Smartphones, laptops, tablets, wearable devices, and gaming consoles.
2. Industrial Equipment: Robotics, power tools, industrial automation, and IoT devices.
3. DC-DC converters, inverters, and battery management systems.
4. Base stations, 5G infrastructure, and signal processing systems.

### Product Information

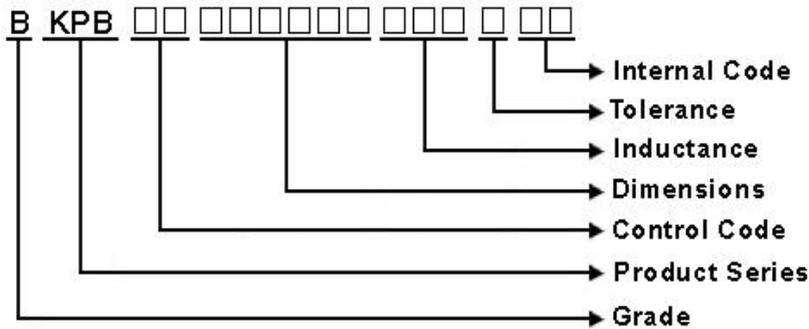
| Series | L (mm) | W(mm) | T (mm) | Inductance (μH) |
|--------|--------|-------|--------|-----------------|
| BKPB   | 1.6    | 0.8   | 0.8    | 0.0022 ~ 4.7    |
|        | 1.6    | 0.8   | 0.8    |                 |
|        | 2.0    | 1.25  | 1.0    |                 |
|        | 2.0    | 1.25  | 0.95   |                 |
|        | 2.0    | 1.6   | 1.0    |                 |
|        | 2.5    | 2.0   | 1.0    |                 |
|        | 2.5    | 2.0   | 1.2    |                 |



## BKPB001608DZ Series Specification

**1 Scope:** This specification applies to Multilayer power inductors

**2 Part Numbering:**



**3 Rating:**

Operating Temperature: - 5 5 °C ~ 1 2 5 °C(Including self - temperature rise)

Storage Temperature: - 5 5 °C ~ 1 2 5 °C(after PCB)

- 5 °C~4 0 °C, Humidity 4 0 %~7 0 %(before PCB)

**4 Marking:**

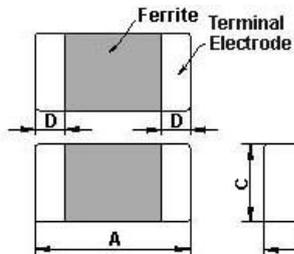
No Marking

**5 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     |

## BKPB001608DZ Series Specification

### 6 Configuration and Dimensions:



Dimensions in mm

| TYPE | 1608DZ   |
|------|----------|
| A    | 1.6±0.15 |
| B    | 0.8±0.15 |
| C    | 0.8±0.15 |
| D    | 0.3±0.20 |

Net Weight (grms)

| Size Code    | Net Weight (grms) |
|--------------|-------------------|
| BKPB001608DZ | 0.00670           |

### 7 Electrical Characteristics:

| Part No.           | Inductance (uH) | Test Freq. | RDC (Ω)±30% | Isat (mA)Max. | Irms (mA)Max. | Tolerance (±%) |
|--------------------|-----------------|------------|-------------|---------------|---------------|----------------|
| BKPB001608DZR47□A2 | 0.47            | 3MHz,200mV | 0.15        | 400           | 1100          | 20,30          |
| BKPB001608DZ1R0□A2 | 1               | 3MHz,200mV | 0.2         | 200           | 950           | 20,30          |
| BKPB001608DZ2R2□A2 | 2.2             | 3MHz,200mV | 0.3         | 150           | 750           | 20,30          |

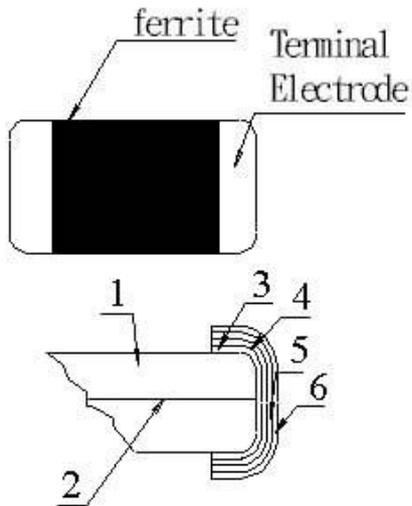
**NOTE: tolerance M=±20%**

1. Operating temperature range - 5 5°C ~ 1 2 5°C(Including self - temperature rise)
2. Isat for Inductance drop 30% from its value without current.
3. I rms for a 40°C temperature rise from 25°C ambient with current.

## BKPB001608DZ Series Specification

### 8 BKPB001608DZ Series

#### 8.1 Construction:



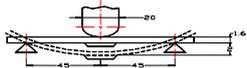
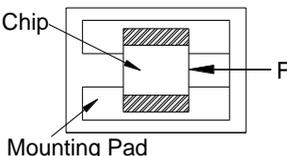
#### 8.2 Material List:

| No | Part              | Material            |
|----|-------------------|---------------------|
| 1  | Ferrite Substance | NiO-CuO-ZnO-Ferrite |
| 2  | Silver electrode  | Ag                  |
| 3  | Silver electrode  | Ag                  |
| 4  | Cu plating        | Cu                  |
| 5  | Ni plating        | Ni                  |
| 6  | Sn plating        | Sn                  |

## BKPB001608DZ Series Specification

### 9 Reliability Of Ferrite Multilayer power inductors

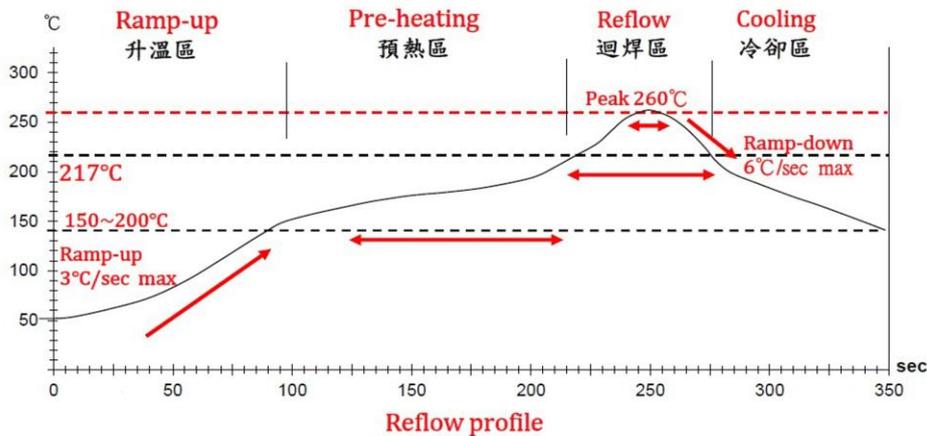
#### 1-1.Mechanical Performance

| No    | Item                         | Specification   | Test Method  |
|-------|------------------------------|---|--|
| 1-1-1 | Flexure Strength             | The forces applied on the right conditions must not damage the terminal electrode and the ferrite   | Test device shall be soldered on the substrate<br>Substrate Dimension: 100x40x1.6mm<br>Deflection: 2.0mm<br>Keeping Time: 30sec<br> |
| 1-1-2 | Vibration                    |   |  |
| 1-1-3 | Resistance to Soldering Heat | Appearance: No damage<br>More than 75% of the terminal electrode should be covered with solder.<br>Inductance: within $\pm 20\%$ of initial value | Pre-heating: 150°C, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free)<br>Solder Temperature: 260 $\pm$ 5°C<br>Immersion Time: 10 $\pm$ 1sec  |
| 1-1-4 | Solder ability               | The electrodes shall be at least 95% covered with new solder coating  | Pre-heating: 150°C, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free)<br>Solder Temperature: 245 $\pm$ 5°C<br>Immersion Time: 4 $\pm$ 1sec   |
| 1-1-5 | Terminal Strength Test       | No split termination<br>                                       | Test device shall be soldered on the substrate, then apply a force in the direction of the arrow.<br>Force : 5N<br>Keeping Time: 10 $\pm$ 1sec   |

#### 1-2.Environmental Performance

| No  | Item                        | Specification   | Test Method  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
|---|-----------------------------|---|--|------------------|------------------|------------|---|-------------|----|---|------------|---|---|-------------|----|---|------------|---|
| 1-2-1   | Temperature Cycle           | Appearance: No damage<br>Inductance: within $\pm 20\%$ of initial value | One cycle:   |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
|   |                             |   | <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55<math>\pm</math>3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25<math>\pm</math>2</td> <td>3</td> </tr> <tr> <td>3</td> <td>125<math>\pm</math>3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25<math>\pm</math>2</td> <td>3</td> </tr> </tbody> </table> | Step             | Temperature (°C) | Time (min) | 1 | -55 $\pm$ 3 | 30 | 2 | 25 $\pm$ 2 | 3 | 3 | 125 $\pm$ 3 | 30 | 4 | 25 $\pm$ 2 | 3 |
|   |                             |   | Step   | Temperature (°C) | Time (min)       |            |   |             |    |   |            |   |   |             |    |   |            |   |
|   |                             |   | 1  | -55 $\pm$ 3      | 30               |            |   |             |    |   |            |   |   |             |    |   |            |   |
|   |                             |   | 2  | 25 $\pm$ 2       | 3                |            |   |             |    |   |            |   |   |             |    |   |            |   |
| 3   | 125 $\pm$ 3                 | 30  |  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| 4   | 25 $\pm$ 2                  | 3   |  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| Total: 100cycles  |                             |   |  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| Measured after exposure in the room condition for 24hrs   |                             |   |  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| Temperature: 40 $\pm$ 2°C<br>Relative Humidity: 90 ~ 95% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs |                             |   |  |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| 1-2-2   | Humidity Resistance         | Appearance: No damage<br>Inductance: within $\pm 30\%$ of initial value | Temperature: 125 $\pm$ 3°C<br>Relative Humidity: 0% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs   |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| 1-2-3   | High Temperature Resistance |   | Temperature: -55 $\pm$ 3°C<br>Relative Humidity: 0% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs   |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
| 1-2-4   | Low Temperature Resistance  |   | Temperature: -55 $\pm$ 3°C<br>Relative Humidity: 0% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs   |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |
|   |                             |   | Temperature: -55 $\pm$ 3°C<br>Relative Humidity: 0% / Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs   |                  |                  |            |   |             |    |   |            |   |   |             |    |   |            |   |

# BKPB001608DZ Series Specification



Lead-Free(LF)標準溫度分析範圍

Refer to J-STD-020C

| 管制項目<br>Item.       | 升温區<br>Ramp-up | 預熱區<br>Pre-heating | 迴焊區<br>Reflow | Peak Temp   | 冷卻區<br>Cooling   |
|---------------------|----------------|--------------------|---------------|-------------|------------------|
| 溫度範圍<br>Temp.scope  | R.T ~ 150°C    | 150°C ~ 200°C      | Above 217°C   | 260±5°C     | Peak Temp.~150°C |
| 標準時間<br>Time spec.  | -              | 60 ~ 180 sec       | 60 ~ 150 sec  | 20 ~ 40 sec | -                |
| 實際時間<br>Time result | -              | 75 ~ 100 sec       | 90 ~ 120 sec  | 20 ~ 35 sec | -                |

NOTE :

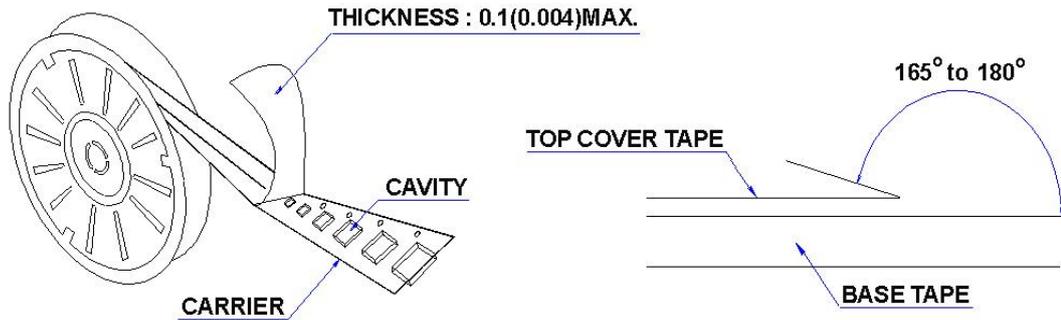
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

## BKPB001608DZ Series Specification

### 11 Packaging:

#### 11.1 Packaging -Cover Tape

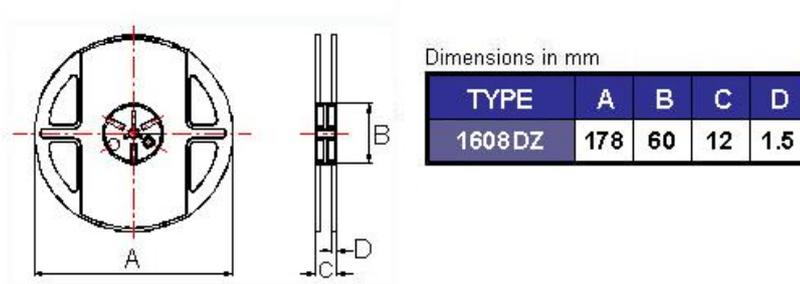
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



#### 11.2 Packaging Quantity

| TYPE   | PCS/REEL |
|--------|----------|
| 1608DZ | 4000     |

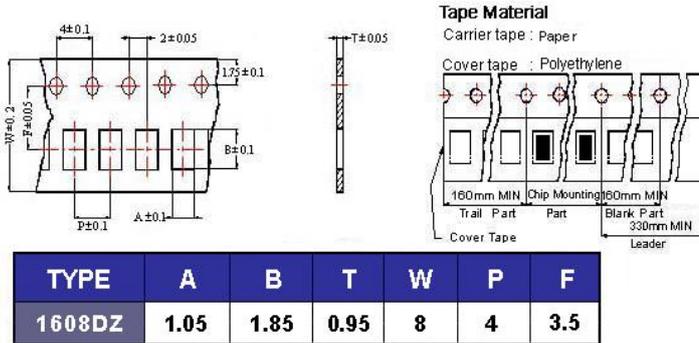
#### 11.3 Reel Dimensions



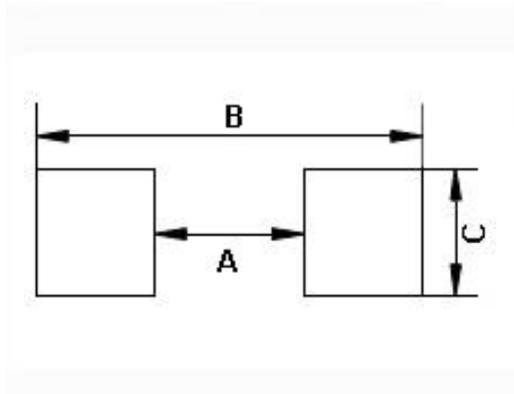
## BKPB001608DZ Series Specification

### 11 Packaging:

#### 11.4 Tape Dimensions in mm



### 12 Recommended Land Pattern:



Dimensions in mm

| TYPE   | A       | B       | C       |
|--------|---------|---------|---------|
| 1608DZ | 0.7~0.8 | 1.8~2.0 | 0.6~0.8 |

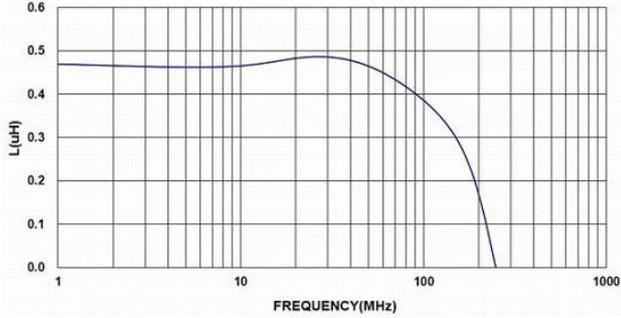
### 13 Note:

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

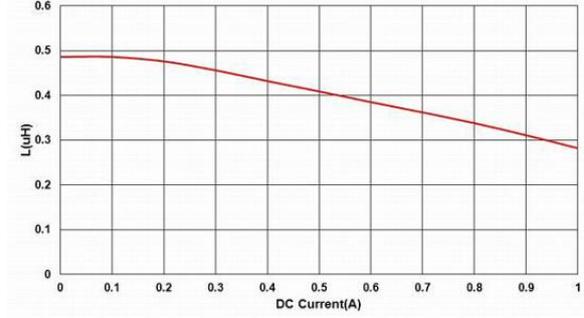
# BKPB001608DZ Series Specification

**14** Graph:

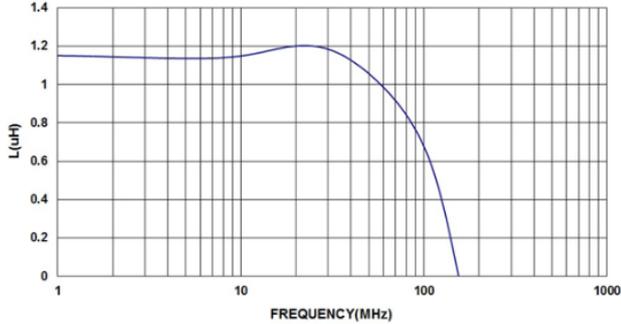
BKPB001608DZR47MA2



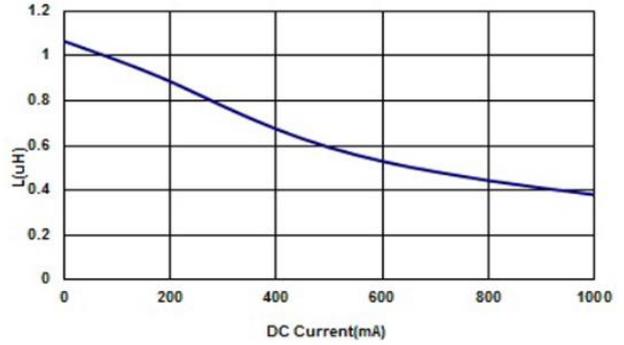
BKPB001608DZR47MA2



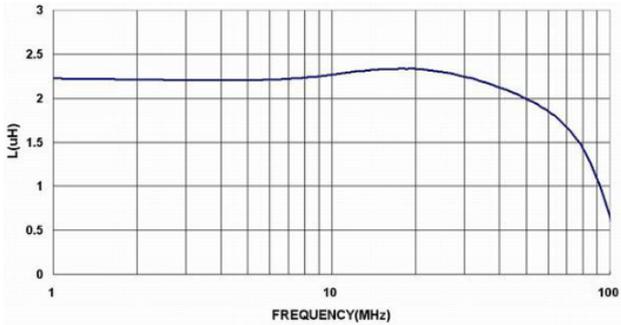
BKPB001608DZ1R0MA2



BKPB001608DZ1R0MA2



BKPB001608DZ2R2MA2



BKPB001608DZ2R2MA2

