

## Multilayer Power Inductors



The BKPx Series is a miniature type of multilayer power inductor constructed using low-loss ferrite material to support high-speed switching frequencies. The compact size and high efficiency is ideal for DC-DC converter applications in space-limited boards.

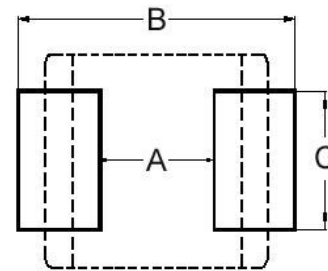
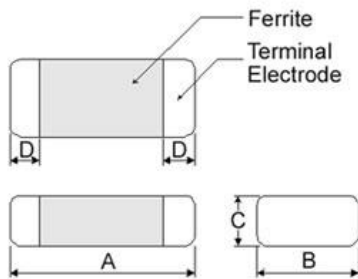
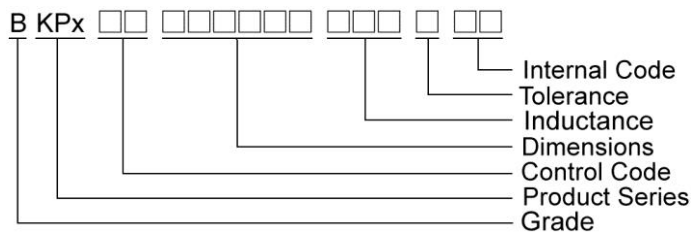
### Features

- RoHS, Halogen Free and REACH Compliance
- Small size
- Low profile
- High current
- Magnetically shielded configuration allowing for high density mounting

### Applications

- DC-DC converters
- Power modules
- Cellular phones
- DSC, PND, DVD
- Wireless card and other electronic devices

### Product Identification



Dimensions in mm

| TYPE   | A        | B         | C        | D       |
|--------|----------|-----------|----------|---------|
| 1608FZ | 1.6±0.15 | 0.8±0.15  | 0.6±0.15 | 0.3±0.2 |
| 1608DZ | 1.6±0.15 | 0.8±0.15  | 0.8±0.15 | 0.3±0.2 |
| 201210 | 2.0±0.20 | 1.25±0.20 | 1.0 Max  | 0.5±0.3 |
| 201610 | 2.0±0.20 | 1.6±0.20  | 1.0 Max  | 0.5±0.3 |
| 252010 | 2.5±0.20 | 2.0±0.20  | 1.0 Max  | 0.6±0.2 |
| 252012 | 2.5±0.20 | 2.0±0.20  | 1.2 Max  | 0.6±0.2 |

Dimensions in mm

| TYPE   | A         | B         | C         |
|--------|-----------|-----------|-----------|
| 1608FZ | 0.7 ~ 0.8 | 1.8 ~ 2.0 | 0.6 ~ 0.8 |
| 1608DZ | 0.7 ~ 0.8 | 1.8 ~ 2.0 | 0.6 ~ 0.8 |
| 201210 | 0.8 ~ 1.2 | 2.3 ~ 2.9 | 1.0 ~ 1.4 |
| 201610 | 0.8 ~ 1.2 | 2.1 ~ 2.7 | 1.6 ~ 2.0 |
| 252010 | 1.3 ~ 1.9 | 2.7 ~ 3.5 | 2.0 ~ 2.6 |
| 252012 | 1.3 ~ 1.9 | 2.7 ~ 3.5 | 2.0 ~ 2.6 |

# SMD Multilayer Power Inductors – BKPA/BKPB/BKPE Series

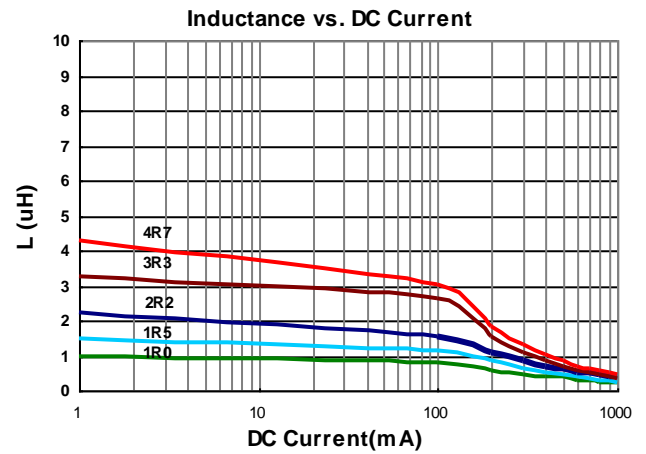
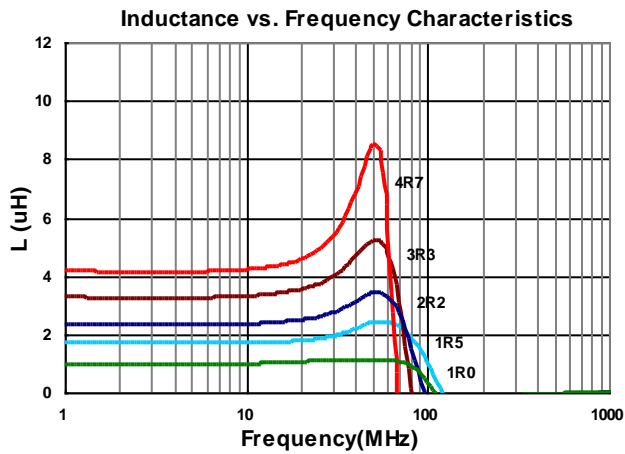
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Rated current<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|---------------------------|
| BKPA002012101R0□00 | 1.0                             | 20, 30                   | 1                       | 0.18                           | 1100                      |
| BKPA002012101R5□00 | 1.5                             | 20, 30                   | 1                       | 0.19                           | 1000                      |
| BKPA002012102R2□00 | 2.2                             | 20, 30                   | 1                       | 0.22                           | 900                       |
| BKPA002012103R3□00 | 3.3                             | 20, 30                   | 1                       | 0.25                           | 700                       |
| BKPA002012104R7□00 | 4.7                             | 20, 30                   | 1                       | 0.35                           | 600                       |

**Note:** When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$ , T= $\pm 30\%$

- Operating temperature range - 55°C ~ 125°C(Including self - temperature rise)
- Rated Current for a 40°C temperature rise from 25°C ambient with current
- Measure Equipment :  
L : Agilent HP4287A+16197A, 1MHz 200mV  
RDC : HP 4338B, or equivalent

**Test Instruments :** HP4287A Inductance / Material Analyzer



# SMD Multilayer Power Inductors –BKPA/BKPB/BKPE Series

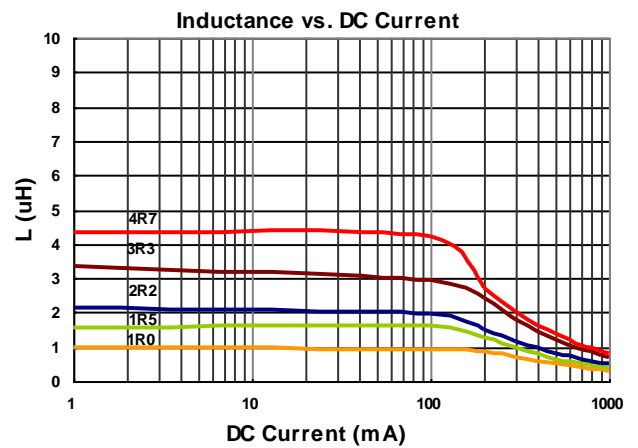
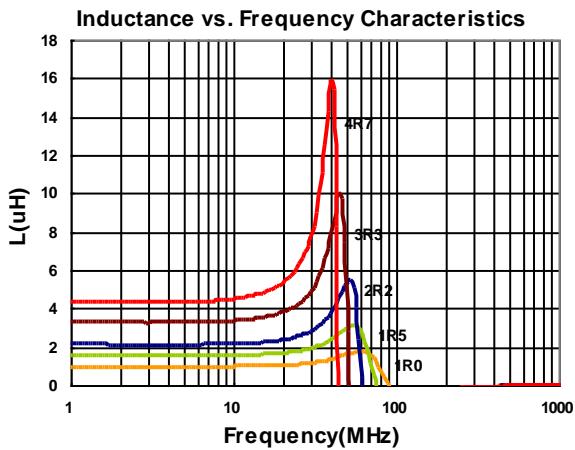
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Rated current<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|---------------------------|
| BKPA002520101R0□00 | 1.0                             | 20, 30                   | 1                       | 0.11                           | 1200                      |
| BKPA002520101R5□00 | 1.5                             | 20, 30                   | 1                       | 0.13                           | 1100                      |
| BKPA002520102R2□00 | 2.2                             | 20, 30                   | 1                       | 0.15                           | 1000                      |
| BKPA002520103R3□00 | 3.3                             | 20, 30                   | 1                       | 0.18                           | 1000                      |
| BKPA002520104R7□00 | 4.7                             | 20, 30                   | 1                       | 0.25                           | 900                       |

**Note:** When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$ , T= $\pm 30\%$

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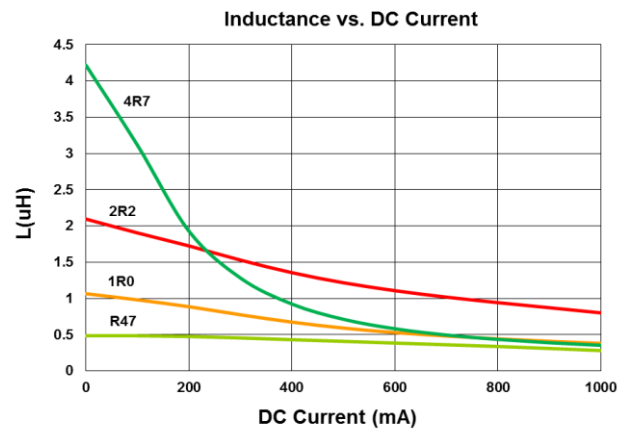
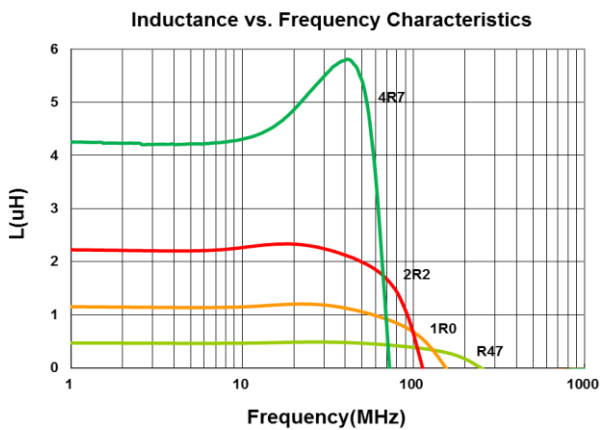
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|------------------|------------------|
| BKPB001608DZR47□A2 | 0.47                            | 20, 30                   | 3                       | 0.15                           | 400              | 1100             |
| BKPB001608DZ1R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.20                           | 200              | 950              |
| BKPB001608DZ2R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.30                           | 150              | 750              |
| BKPB001608DZ4R7□A6 | 4.7                             | 20                       | 3                       | 0.44 $\pm 25\%$                | 80               | 800              |

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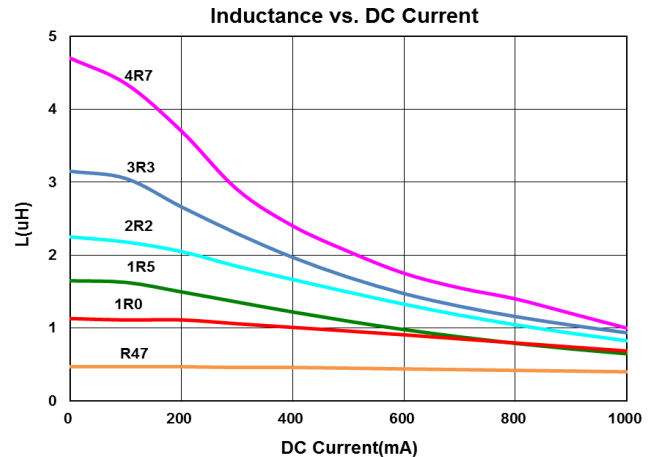
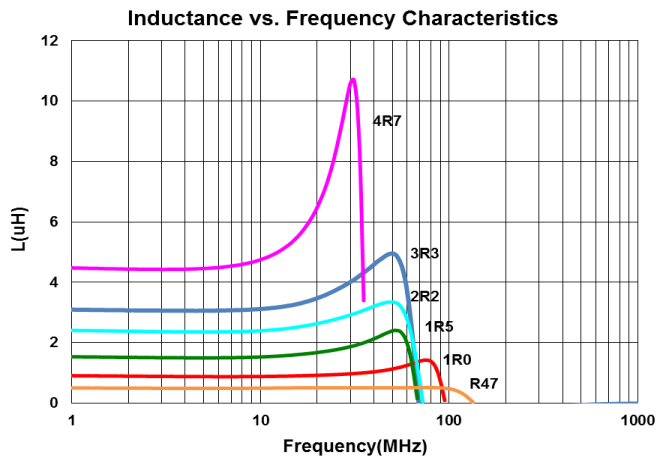
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|------------------|------------------|
| BKPB00201210R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.09                           | 1100             | 1300             |
| BKPB002012101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.12                           | 650              | 1200             |
| BKPB002012101R5□A2 | 1.5                             | 20, 30                   | 3                       | 0.15                           | 450              | 1100             |
| BKPB002012102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.19                           | 400              | 1100             |
| BKPB002012102R7□A2 | 2.7                             | 20, 30                   | 3                       | 0.21                           | 300              | 1000             |
| BKPB002012103R3□A2 | 3.3                             | 20, 30                   | 3                       | 0.24                           | 300              | 800              |
| BKPB002012104R7□A2 | 4.7                             | 20, 30                   | 3                       | 0.26                           | 200              | 700              |

**Note: When ordering, please specify tolerance code. Tolerance: M $\pm$ 20% , T $\pm$ 30%**

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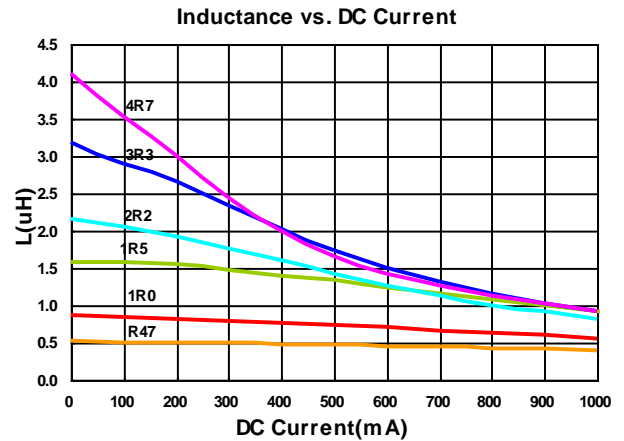
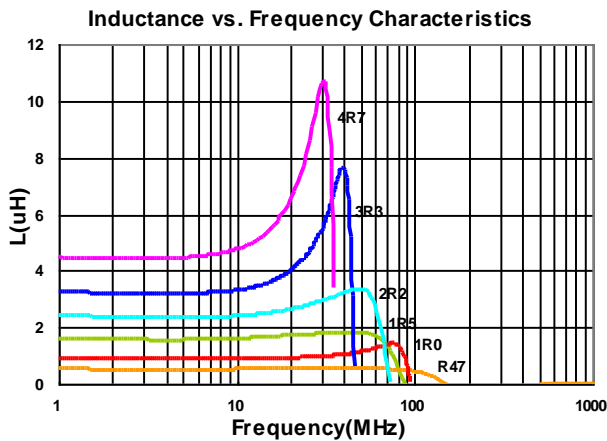
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|---------------------|------------------|------------------|
| BKPB00201610R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.06 $\pm$ 30%      | 1200             | 1600             |
| BKPB002016101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.09 $\pm$ 30%      | 850              | 1300             |
| BKPB002016102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.13 $\pm$ 30%      | 400              | 1000             |
| BKPB002016103R3□A2 | 3.3                             | 20, 30                   | 3                       | 0.17 $\pm$ 30%      | 350              | 850              |
| BKPB002016104R7□A2 | 4.7                             | 20, 30                   | 3                       | 0.21 $\pm$ 30%      | 200              | 800              |
| BKPB00201610R47□A6 | 0.47                            | 20, 30                   | 3                       | 0.06 $\pm$ 25%      | 1200             | 1600             |
| BKPB002016101R0□A6 | 1.0                             | 20, 30                   | 3                       | 0.085 $\pm$ 25%     | 850              | 1300             |
| BKPB002016101R5□A6 | 1.5                             | 20, 30                   | 3                       | 0.11 $\pm$ 25%      | 600              | 1200             |
| BKPB002016102R2□A6 | 2.2                             | 20, 30                   | 3                       | 0.11 $\pm$ 25%      | 400              | 1200             |
| BKPB002016103R3□A6 | 3.3                             | 20, 30                   | 3                       | 0.12 $\pm$ 25%      | 350              | 850              |
| BKPB002016104R7□A6 | 4.7                             | 20, 30                   | 3                       | 0.14 $\pm$ 25%      | 200              | 1100             |

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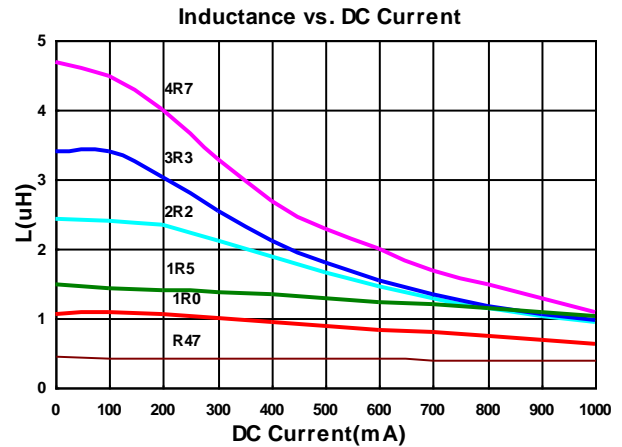
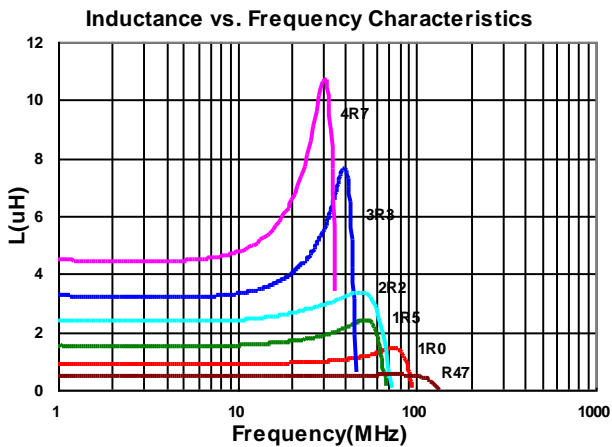
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|---------------------|------------------|------------------|
| BKPB00252010R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.04 $\pm$ 30%      | 1500             | 1800             |
| BKPB002520101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.06 $\pm$ 30%      | 900              | 1500             |
| BKPB002520101R5□A2 | 1.5                             | 20, 30                   | 3                       | 0.07 $\pm$ 30%      | 800              | 1400             |
| BKPB002520102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.10 $\pm$ 30%      | 500              | 1200             |
| BKPB002520103R3□A2 | 3.3                             | 20, 30                   | 3                       | 0.12 $\pm$ 30%      | 400              | 1100             |
| BKPB002520104R7□A2 | 4.7                             | 20, 30                   | 3                       | 0.14 $\pm$ 30%      | 300              | 1000             |
| BKPB00252010R47□A6 | 0.47                            | 20, 30                   | 3                       | 0.04 $\pm$ 25%      | 1500             | 1800             |
| BKPB002520101R0□A6 | 1.0                             | 20, 30                   | 3                       | 0.055 $\pm$ 25%     | 900              | 1600             |
| BKPB002520102R2□A6 | 2.2                             | 20, 30                   | 3                       | 0.08 $\pm$ 25%      | 500              | 1300             |
| BKPB002520103R3□A6 | 3.3                             | 20, 30                   | 3                       | 0.10 $\pm$ 25%      | 400              | 1200             |
| BKPB002520104R7□A6 | 4.7                             | 20, 30                   | 3                       | 0.11 $\pm$ 25%      | 300              | 1100             |

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## Test Instruments : HP4287A Inductance / Material Analyzer



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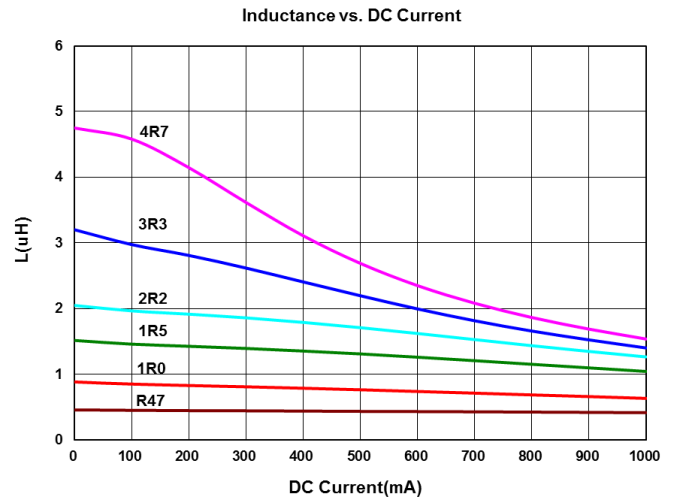
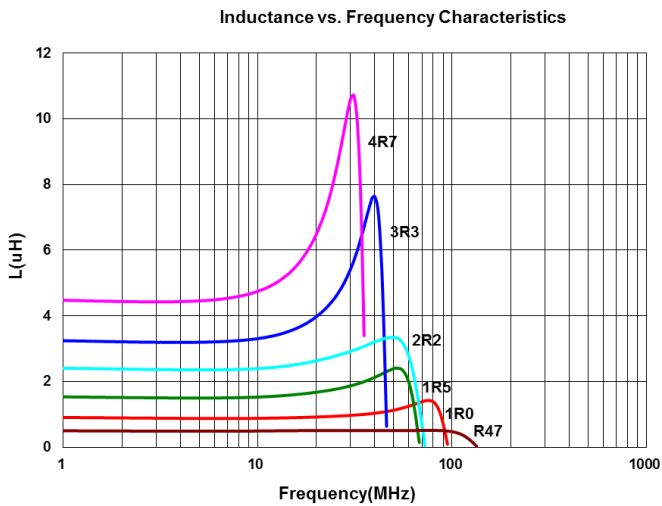
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|------------------|------------------|
| BKPB00252012R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.04                           | 1500             | 1800             |
| BKPB002520121R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.05                           | 950              | 1600             |
| BKPB002520121R5□A2 | 1.5                             | 20, 30                   | 3                       | 0.07                           | 900              | 1400             |
| BKPB002520122R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.10                           | 700              | 1200             |
| BKPB002520123R3□A2 | 3.3                             | 20, 30                   | 3                       | 0.12                           | 500              | 1100             |
| BKPB002520124R7□A2 | 4.7                             | 20, 30                   | 3                       | 0.14                           | 350              | 1000             |

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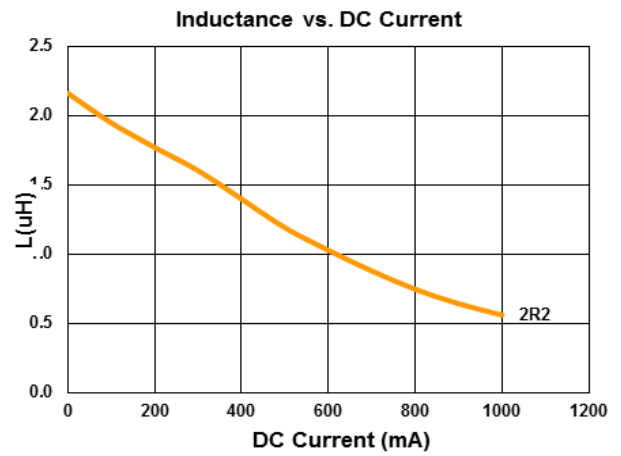
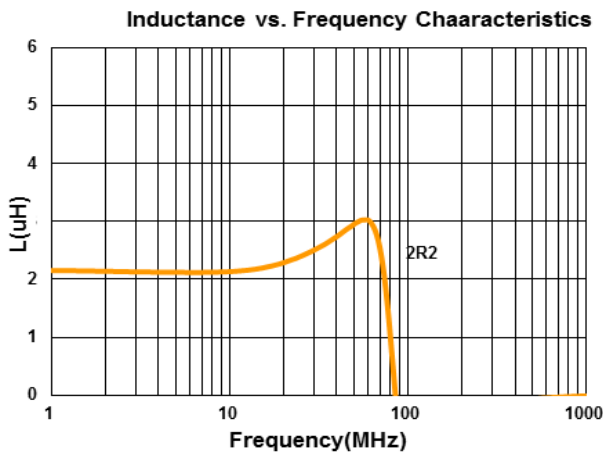
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 25\%$ | Isat(mA)<br>Max(Typ.) | Irms(mA)<br>Max(Typ.) |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|
| BKPE001608FZ2R2□A6 | 2.2                             | 20, 30                   | 3                       | 0.38                           | 250(300)              | 650(750)              |

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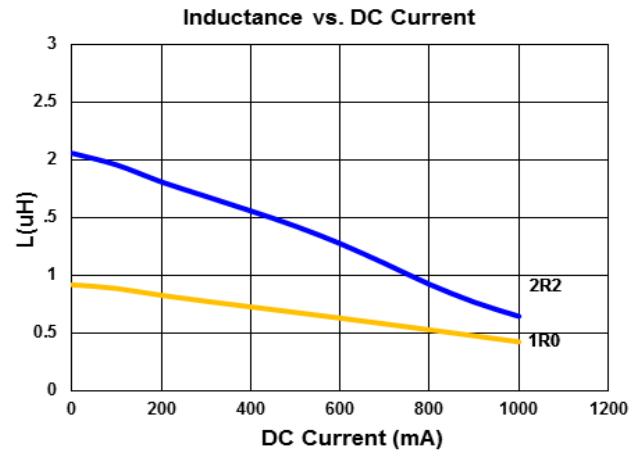
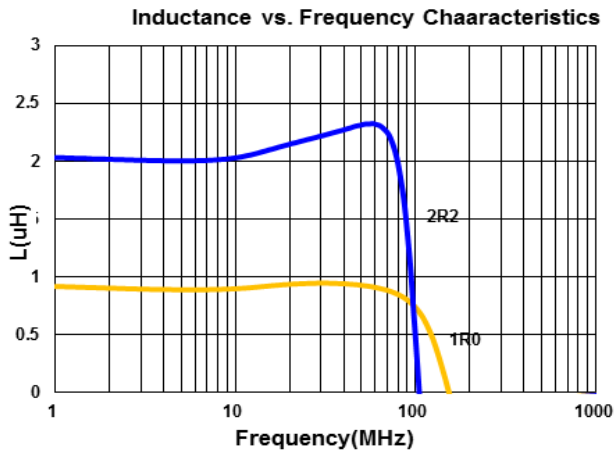
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 25\%$ | Isat(mA)<br>Max(Typ.) | Irms(mA)<br>Max(Typ.) |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|
| BKPE001608DZ1R0□A6 | 1.0                             | 20, 30                   | 3                       | 0.13                           | 500(650)              | 1300(1450)            |
| BKPE001608DZ2R2□A6 | 2.2                             | 20, 30                   | 3                       | 0.38                           | 300(350)              | 700(900)              |

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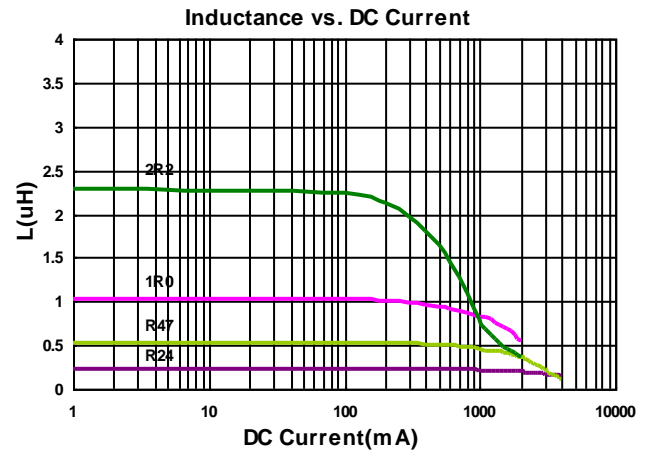
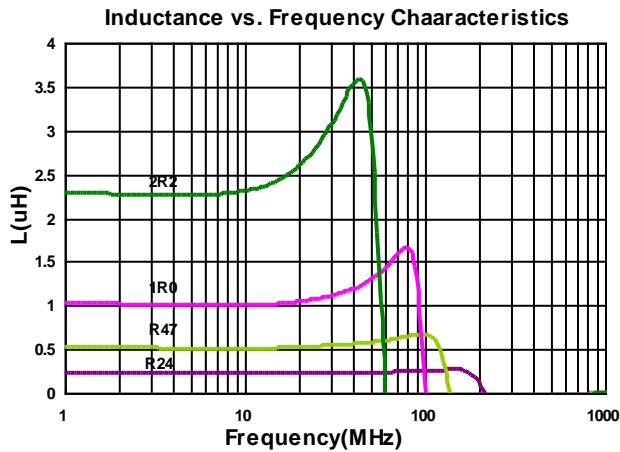
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 25\%$ | Isat(mA)<br>Max(Typ.) | Irms(mA)<br>Max(Typ.) |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|
| BKPE00201210R24□A2 | 0.24                            | 20, 30                   | 3                       | 0.03                           | 2700(3300)            | 2400(3200)            |
| BKPE00201210R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.06                           | 1600(2000)            | 2200(3000)            |
| BKPE002012101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.10                           | 1400(1700)            | 1800(2100)            |
| BKPE002012102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.125                          | 500(800)              | 1600(1900)            |

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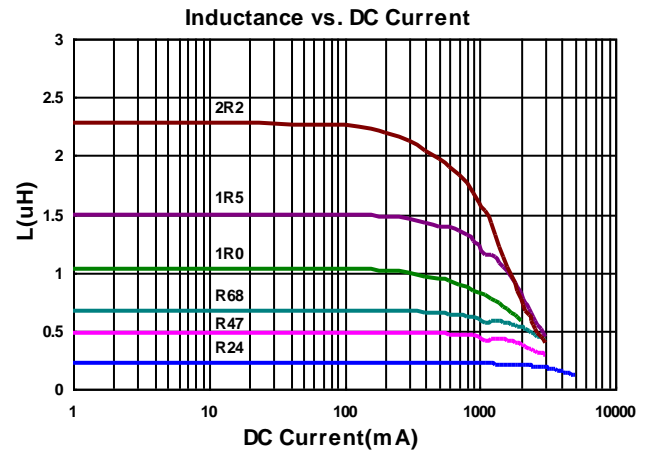
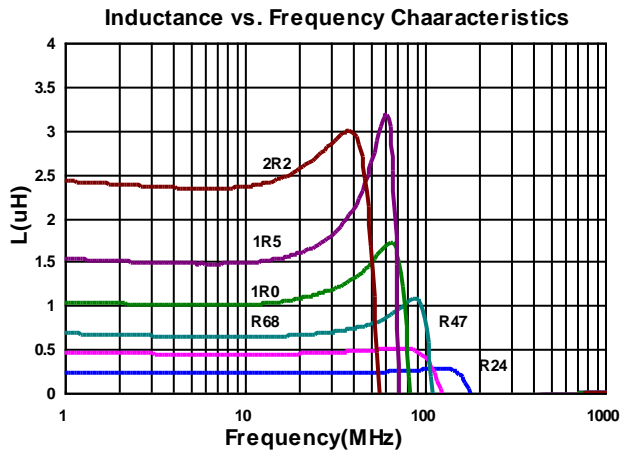
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|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|
| BKPE00201610R24□A2 | 0.24                            | 20, 30                   | 3                       | 0.023                          | 3600(4000)            | 3500(4200)            |
| BKPE00201610R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.037                          | 2500(2900)            | 2600(3100)            |
| BKPE00201610R68□A2 | 0.68                            | 20, 30                   | 3                       | 0.065                          | 2500(2800)            | 2400(2800)            |
| BKPE002016101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.068                          | 1500(1900)            | 2200(2600)            |
| BKPE002016101R5□A2 | 1.5                             | 20, 30                   | 3                       | 0.100                          | 1500(1800)            | 1600(1900)            |
| BKPE002016102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.210                          | 1000(1300)            | 1500(1800)            |

**Note: When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$ , T= $\pm 30\%$**

- Operating temperature range - 55°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- I rms for a 40°C temperature rise from 25°C ambient with current
- Measure Equipment :  
L : Agilent HP4287A+16197A, 3MHz 200mV  
RDC : HP 4338B, or equivalent

**Test Instruments : HP4287A Inductance / Material Analyzer**



# SMD Multilayer Power Inductors – BKPA/BKPB/BKPE Series

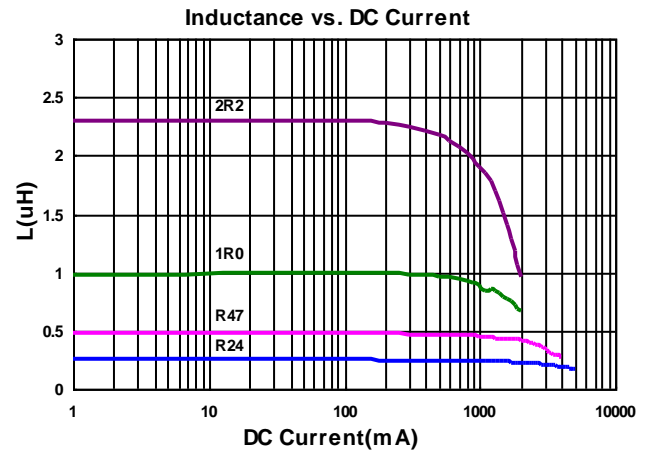
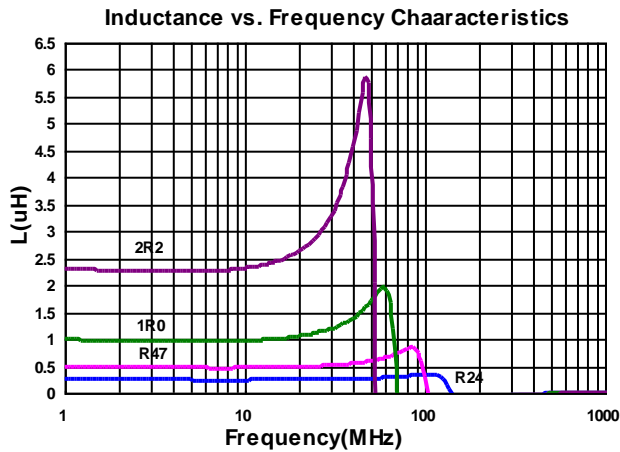
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 25\%$ | Isat(mA)<br>Max(Typ.) | Irms(mA)<br>Max(Typ.) |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|-----------------------|-----------------------|
| BKPE00252010R24□A2 | 0.24                            | 20, 30                   | 3                       | 0.024                          | 4800(5200)            | 4100(4900)            |
| BKPE00252010R47□A2 | 0.47                            | 20, 30                   | 3                       | 0.040                          | 3100(3500)            | 3000(3600)            |
| BKPE002520101R0□A2 | 1.0                             | 20, 30                   | 3                       | 0.050                          | 1500(1900)            | 2900(3500)            |
| BKPE002520102R2□A2 | 2.2                             | 20, 30                   | 3                       | 0.110                          | 1400(1700)            | 1600(1900)            |

**Note: When ordering, please specify tolerance code. Tolerance: M= $\pm 20\%$ , T= $\pm 30\%$**

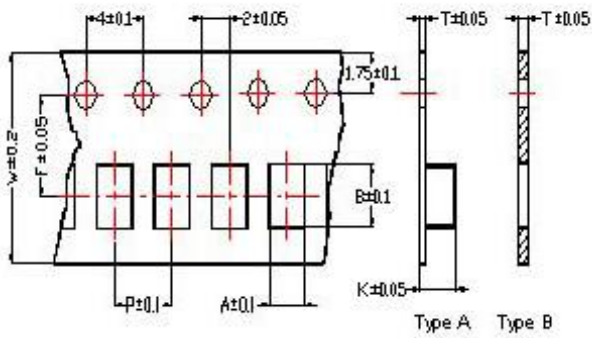
- Operating temperature range - 55°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- I rms for a 40°C temperature rise from 25°C ambient with current
- Measure Equipment :  
L : Agilent HP4287A+16197A, 3MHz 200mV  
RDC : HP 4338B, or equivalent

**Test Instruments :** HP4287A Inductance / Material Analyzer



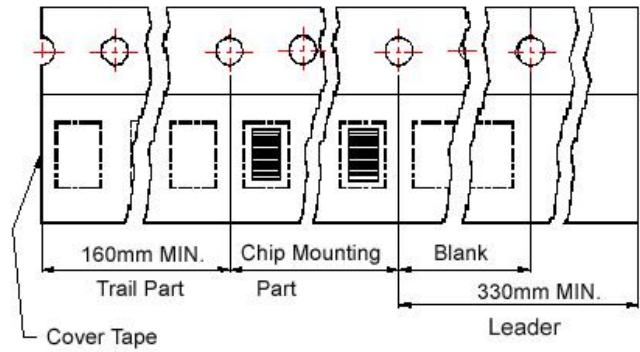
## Packaging Specifications

**Tape Dimensions**

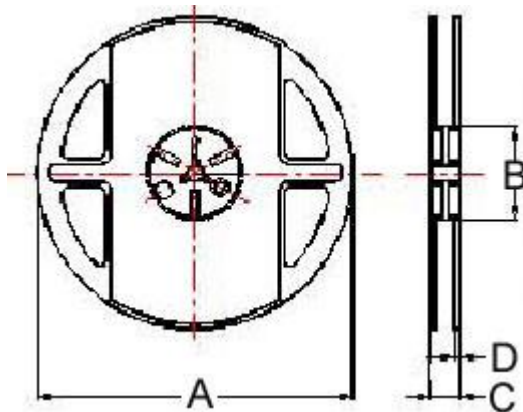


**Tape Material**

Carrier Tape: Polycarbonate (Tape A)  
 Carrier Tape: Paper (Tape B)  
 Cover Tape: Polystyrene



**Reel Dimensions**



Dimensions in mm

| TYPE   | Tape Dimensions |      |      |     |     |     |      |           | Reel Dimensions |    |    |     | Quantity<br>PCS / REEL |
|--------|-----------------|------|------|-----|-----|-----|------|-----------|-----------------|----|----|-----|------------------------|
|        | A               | B    | T    | W   | P   | F   | K    | Tape Type | A               | B  | C  | D   |                        |
| 1608FZ | 1.05            | 1.85 | 0.75 | 8.0 | 4.0 | 3.5 | -    | B         | 178             | 60 | 12 | 1.5 | 4000                   |
| 1608DZ | 1.05            | 1.85 | 0.95 | 8.0 | 4.0 | 3.5 | -    | B         | 178             | 60 | 12 | 1.5 | 4000                   |
| 201210 | 1.45            | 2.25 | 0.22 | 8.0 | 4.0 | 3.5 | 1.04 | A         | 178             | 60 | 12 | 1.5 | 3000                   |
| 201610 | 1.80            | 2.20 | 0.22 | 8.0 | 4.0 | 3.5 | 1.15 | A         | 178             | 60 | 12 | 1.5 | 3000                   |
| 252010 | 2.25            | 2.8  | 0.25 | 8.0 | 4.0 | 3.5 | 1.35 | A         | 178             | 60 | 12 | 1.5 | 3000                   |
| 252012 | 2.25            | 2.8  | 0.25 | 8.0 | 4.0 | 3.5 | 1.35 | A         | 178             | 60 | 12 | 1.5 | 3000                   |

## Multilayer Power Inductors



The BKPB Series is a miniature type of multilayer power inductor constructed using low-loss ferrite material to support high-speed switching frequencies. The compact size and high efficiency is ideal for DC-DC converter applications in space-limited boards.

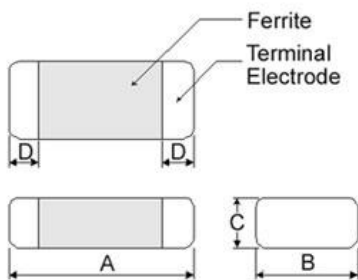
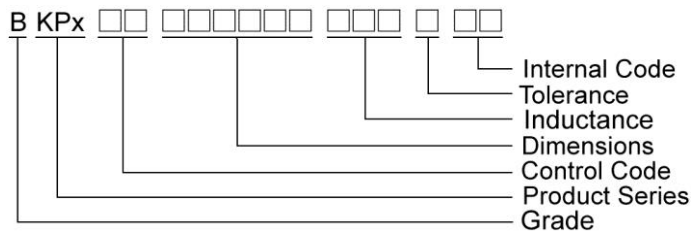
### Features

- For High Frequency SW (15MHz to 200MHz)
- Bias Current Characteristics improved.
- Low Power loss
- High DC Bias
- High Current
- Low ACR

### Applications

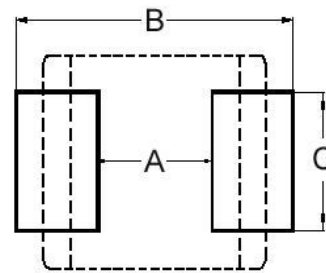
- High Frequency DC/DC converter.

### Product Identification



Dimensions in mm

| TYPE   | A        | B         | C        | D       |
|--------|----------|-----------|----------|---------|
| 2012C5 | 2.0±0.20 | 1.25±0.20 | 0.95 Max | 0.5±0.3 |



Dimensions in mm

| TYPE   | A         | B         | C         |
|--------|-----------|-----------|-----------|
| 2012C5 | 0.8 ~ 1.2 | 2.3 ~ 2.9 | 1.0 ~ 1.4 |

# SMD Multilayer Power Inductors – BKPB Series

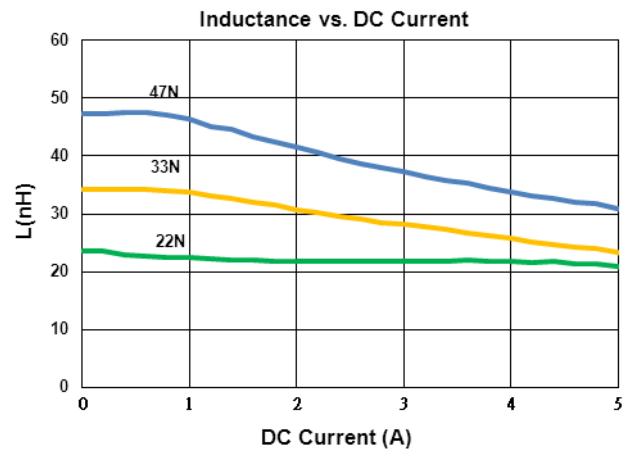
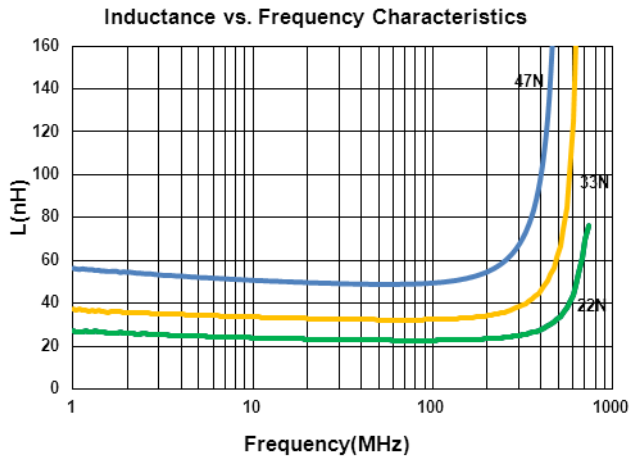
## Electrical Characteristics

| Part Number        | Inductance<br>( $\mu\text{H}$ ) | Tolerance<br>( $\pm\%$ ) | Test Frequency<br>(MHz) | RDC<br>( $\Omega$ ) $\pm 30\%$ | Isat<br>(mA) Max | Irms<br>(mA) Max |
|--------------------|---------------------------------|--------------------------|-------------------------|--------------------------------|------------------|------------------|
| BKPB002012C522N□A2 | 0.022                           | 10, 20                   | 50                      | 0.044                          | 3000             | 2000             |
| BKPB002012C533N□A2 | 0.033                           | 10, 20                   | 50                      | 0.050                          | 2700             | 1800             |
| BKPB002012C547N□A2 | 0.047                           | 10, 20                   | 50                      | 0.058                          | 2400             | 1600             |

**Note:** When ordering, please specify tolerance code. Tolerance: K= $\pm 10\%$ , M= $\pm 20\%$

- Operating temperature range - 55°C ~ 125°C(Including self - temperature rise)
- Isat for Inductance drop 30% from its value without current
- Irms for a 40°C temperature rise from 25°C ambient with current
- Measure Equipment :  
L : Agilent E4991A+16197A, 50MHz 200mV  
RDC : HP 4338B, or equivalent

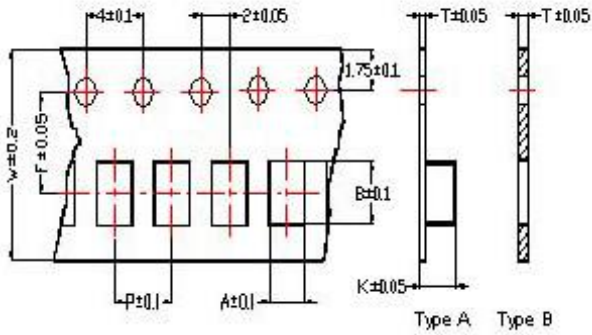
**Test Instruments :** E4991A Inductance / Material Analyzer





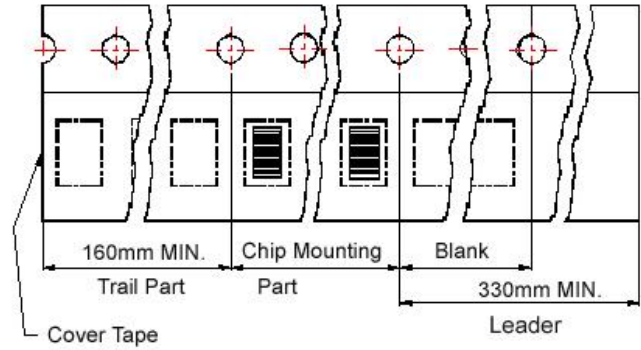
## Packaging Specifications

### Tape Dimensions

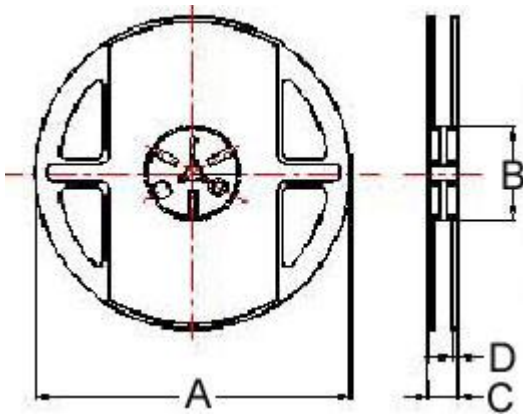


### Tape Material

Carrier Tape: Polycarbonate (Tape A)  
 Carrier Tape: Paper (Tape B)  
 Cover Tape: Polystyrene



### Reel Dimensions



Dimensions in mm

| TYPE   | Tape Dimensions |      |      |     |     |     |      |           | Reel Dimensions |    |    |     | Quantity<br>PCS / REEL |
|--------|-----------------|------|------|-----|-----|-----|------|-----------|-----------------|----|----|-----|------------------------|
|        | A               | B    | T    | W   | P   | F   | K    | Tape Type | A               | B  | C  | D   |                        |
| 2012C5 | 1.45            | 2.25 | 0.22 | 8.0 | 4.0 | 3.5 | 1.04 | A         | 178             | 60 | 12 | 1.5 | 3000                   |