

# Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

## REMINDERS

- Product information in this catalog is as of October 2013. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

Please note that TAIYO YUDEN CO., LTD. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact TAIYO YUDEN CO., LTD. for further details of product specifications as the individual specification is available.

- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.

- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,( automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact TAIYO YUDEN CO., LTD. for more detail in advance.

Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

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- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN' s official sales channel").

It is only applicable to the products purchased from any of TAIYO YUDEN' s official sales channel.

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- Caution for export

Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

# WIRE-WOUND CHIP POWER INDUCTORS(BR SERIES)



REFLOW

## ■ PARTS NUMBER

\*Operating Temp. : -40~+105°C (Including self-generated heat)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | R | △ | L | 2 | 5 | 1 | 8 | T | 2 | R | 2 | M | △ | △ | △ |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |   |   |   |   |   |   |   |   |   |

△=Blank space

### ①Series name

| Code | Series name                    |
|------|--------------------------------|
| BR   | Wire-Wound chip power inductor |

### ②Characteristics

| Code | Characteristics |
|------|-----------------|
| FL   | Low profile     |
| △L   |                 |
| HL   |                 |
| △C   | High current    |

### ③Dimensions (L × W)

| Code | Type (inch) | Dimensions (L × W) [mm] |
|------|-------------|-------------------------|
| 1608 | 1608 (0603) | 1.6 × 0.8               |
| 2012 | 2012 (0805) | 2.0 × 1.25              |
| 2016 | 2016 (0806) | 2.0 × 1.6               |
| 2515 | 2515 (1006) | 2.5 × 1.5               |
| 2518 | 2518 (1007) | 2.5 × 1.8               |
| 3225 | 3225 (1210) | 3.2 × 2.5               |

### ④Packaging

| Code | Packaging |
|------|-----------|
| T    | Taping    |

### ⑤Nominal inductance

| Code (example) | Nominal inductance [μH] |
|----------------|-------------------------|
| R20            | 0.2                     |
| 1R0            | 1.0                     |
| 100            | 10                      |
| 101            | 100                     |

※R=Decimal point

### ⑥Inductance tolerance

| Code | Inductance tolerance |
|------|----------------------|
| K    | ±10%                 |
| M    | ±20%                 |

### ⑦Internal code

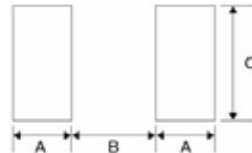
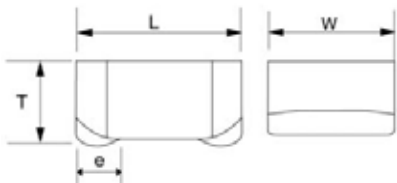
## ■ STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY

### Recommended Land Patterns

#### Surface Mounting

•Mounting and soldering conditions should be checked beforehand.

•Applicable soldering process to these products is reflow soldering only.



| Type | A    | B    | C    |
|------|------|------|------|
| 1608 | 0.55 | 0.70 | 1.00 |
| 2012 | 0.60 | 1.00 | 1.45 |
| 2016 | 0.60 | 1.00 | 1.80 |
| 2125 | 0.60 | 1.50 | 1.70 |
| 2518 | 0.60 | 1.50 | 2.00 |
| 3225 | 0.85 | 1.70 | 2.70 |

Unit:mm

| Type     | L                        | W                         | T                        | e                          | Standard quantity [pcs] |               |
|----------|--------------------------|---------------------------|--------------------------|----------------------------|-------------------------|---------------|
|          |                          |                           |                          |                            | Paper tape              | Embossed tape |
| BR L1608 | 1.6±0.2<br>(0.063±0.008) | 0.8±0.2<br>(0.031±0.008)  | 0.7 max<br>(0.028 max)   | 0.45±0.15<br>(0.016±0.006) | —                       | 3000          |
| BR C1608 | 1.6±0.2<br>(0.063±0.008) | 0.8±0.2<br>(0.031±0.008)  | 0.8±0.2<br>(0.031±0.008) | 0.45±0.15<br>(0.016±0.006) | —                       | 3000          |
| BR L2012 | 2.0±0.2<br>(0.079±0.008) | 1.25±0.2<br>(0.049±0.008) | 1.0 max<br>(0.040 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 3000          |
| BR C2012 | 2.0±0.2<br>(0.079±0.008) | 1.25±0.2<br>(0.049±0.008) | 1.4 max<br>(0.056 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 2000          |
| BR C2016 | 2.0±0.2<br>(0.079±0.008) | 1.6±0.2<br>(0.063±0.008)  | 1.6±0.2<br>(0.063±0.008) | 0.5±0.2<br>(0.020±0.008)   | —                       | 2000          |
| BR L2515 | 2.5±0.2<br>(0.098±0.008) | 1.5±0.2<br>(0.060±0.008)  | 1.2 max<br>(0.048 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 2000          |
| BRFL2518 | 2.5±0.2<br>(0.098±0.008) | 1.8±0.2<br>(0.071±0.008)  | 1.0 max<br>(0.040 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 3000          |
| BR L2518 | 2.5±0.2<br>(0.098±0.008) | 1.8±0.2<br>(0.071±0.008)  | 1.2 max<br>(0.048 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 3000          |
| BRHL2518 | 2.5±0.2<br>(0.098±0.008) | 1.8±0.2<br>(0.071±0.008)  | 1.5 max<br>(0.060 max)   | 0.5±0.2<br>(0.020±0.008)   | —                       | 2000          |
| BR C2518 | 2.5±0.2<br>(0.098±0.008) | 1.8±0.2<br>(0.071±0.008)  | 1.8±0.2<br>(0.071±0.008) | 0.5±0.2<br>(0.020±0.008)   | —                       | 2000          |
| BR L3225 | 3.2±0.2<br>(0.126±0.008) | 2.5±0.2<br>(0.098±0.008)  | 1.7 max<br>(0.068 max)   | 0.75±0.2<br>(0.03±0.008)   | —                       | 2000          |

Unit:mm (inch)

► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

## PARTS NUMBER

## ● 1608 (0603) TYPE

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L1608T1R0M | RoHS | 1.0                              | $\pm 20\%$           | 700                                        | 0.230                                        | 510                        | 650                              | 1.0                          |
| BR L1608T1R5M | RoHS | 1.5                              | $\pm 20\%$           | 600                                        | 0.280                                        | 440                        | 590                              | 1.0                          |
| BR L1608T2R2M | RoHS | 2.2                              | $\pm 20\%$           | 400                                        | 0.400                                        | 360                        | 500                              | 1.0                          |
| BR L1608T3R3M | RoHS | 3.3                              | $\pm 20\%$           | 300                                        | 0.650                                        | 290                        | 390                              | 1.0                          |
| BR L1608T4R7M | RoHS | 4.7                              | $\pm 20\%$           | 150                                        | 1.00                                         | 240                        | 310                              | 1.0                          |
| BR L1608T6R8M | RoHS | 6.8                              | $\pm 20\%$           | 100                                        | 1.64                                         | 200                        | 250                              | 1.0                          |
| BR L1608T100M | RoHS | 10                               | $\pm 20\%$           | 45                                         | 2.00                                         | 170                        | 220                              | 1.0                          |
| BR L1608T150M | RoHS | 15                               | $\pm 20\%$           | 32                                         | 2.56                                         | 150                        | 200                              | 1.0                          |

| Parts number    | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|-----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                 |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR C1608TR43M 6 | RoHS | 0.43                             | $\pm 20\%$           | 740                                        | 0.082                                        | 1,400                      | 1,100                            | 6.0                          |
| BR C1608TR50M 6 | RoHS | 0.50                             | $\pm 20\%$           | 710                                        | 0.090                                        | 1,200                      | 1,050                            | 6.0                          |
| BR C1608TR60M 6 | RoHS | 0.60                             | $\pm 20\%$           | 630                                        | 0.099                                        | 1,100                      | 940                              | 6.0                          |
| BR C1608TR72M 6 | RoHS | 0.72                             | $\pm 20\%$           | 600                                        | 0.144                                        | 1,000                      | 810                              | 6.0                          |
| BR C1608TR82M 6 | RoHS | 0.82                             | $\pm 20\%$           | 560                                        | 0.176                                        | 950                        | 730                              | 6.0                          |
| BR C1608T1R0M 6 | RoHS | 1.0                              | $\pm 20\%$           | 550                                        | 0.188                                        | 890                        | 680                              | 6.0                          |

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR C1608TR20M | RoHS | 0.20                             | $\pm 20\%$           | 400                                        | 0.060                                        | 1,750                      | 980                              | 7.96                         |
| BR C1608TR35M | RoHS | 0.35                             | $\pm 20\%$           | 300                                        | 0.080                                        | 1,400                      | 810                              | 7.96                         |
| BR C1608TR45M | RoHS | 0.45                             | $\pm 20\%$           | 200                                        | 0.090                                        | 1,250                      | 800                              | 7.96                         |
| BR C1608TR56M | RoHS | 0.56                             | $\pm 20\%$           | 170                                        | 0.095                                        | 1,150                      | 760                              | 7.96                         |
| BR C1608TR77M | RoHS | 0.77                             | $\pm 20\%$           | 150                                        | 0.110                                        | 1,000                      | 660                              | 7.96                         |
| BR C1608T1R0M | RoHS | 1.0                              | $\pm 20\%$           | 140                                        | 0.180                                        | 850                        | 520                              | 7.96                         |
| BR C1608T1R5M | RoHS | 1.5                              | $\pm 20\%$           | 120                                        | 0.300                                        | 700                        | 410                              | 7.96                         |
| BR C1608T2R2M | RoHS | 2.2                              | $\pm 20\%$           | 100                                        | 0.550                                        | 550                        | 280                              | 7.96                         |

## ● 2012 (0805) TYPE

| Parts number    | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|-----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                 |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L2012TR47M 6 | RoHS | 0.47                             | $\pm 20\%$           | 500                                        | 0.048                                        | 1,500                      | 1,900                            | 6.0                          |
| BR L2012T1R0M 6 | RoHS | 1.0                              | $\pm 20\%$           | 400                                        | 0.108                                        | 1,050                      | 1,230                            | 6.0                          |
| BR L2012T2R2MD6 | RoHS | 2.2                              | $\pm 20\%$           | 250                                        | 0.184                                        | 680                        | 950                              | 6.0                          |

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L2012TR47M | RoHS | 0.47                             | $\pm 20\%$           | 350                                        | 0.090                                        | 1,100                      | 1,050                            | 7.96                         |
| BR L2012T1R0M | RoHS | 1.0                              | $\pm 20\%$           | 300                                        | 0.135                                        | 850                        | 850                              | 7.96                         |
| BR L2012T1R5M | RoHS | 1.5                              | $\pm 20\%$           | 250                                        | 0.180                                        | 700                        | 750                              | 7.96                         |
| BR L2012T2R2M | RoHS | 2.2                              | $\pm 20\%$           | 200                                        | 0.300                                        | 600                        | 550                              | 7.96                         |
| BR L2012T3R3M | RoHS | 3.3                              | $\pm 20\%$           | 190                                        | 0.500                                        | 490                        | 440                              | 7.96                         |
| BR L2012T4R7M | RoHS | 4.7                              | $\pm 20\%$           | 150                                        | 0.550                                        | 340                        | 400                              | 7.96                         |
| BR L2012T6R8M | RoHS | 6.8                              | $\pm 20\%$           | 60                                         | 0.750                                        | 290                        | 350                              | 7.96                         |
| BR L2012T100M | RoHS | 10                               | $\pm 20\%$           | 30                                         | 0.850                                        | 270                        | 330                              | 2.52                         |
| BR L2012T150M | RoHS | 15                               | $\pm 20\%$           | 15                                         | 1.00                                         | 220                        | 300                              | 2.52                         |
| BR L2012T220M | RoHS | 22                               | $\pm 20\%$           | 13                                         | 1.30                                         | 190                        | 270                              | 2.52                         |
| BR L2012T330M | RoHS | 33                               | $\pm 20\%$           | 8.0                                        | 2.00                                         | 150                        | 220                              | 2.52                         |
| BR L2012T470M | RoHS | 47                               | $\pm 20\%$           | 7.0                                        | 3.50                                         | 125                        | 160                              | 2.52                         |
| BR L2012T680M | RoHS | 68                               | $\pm 20\%$           | 6.5                                        | 5.80                                         | 100                        | 110                              | 2.52                         |
| BR L2012T101M | RoHS | 100                              | $\pm 20\%$           | 6.0                                        | 7.70                                         | 85                         | 85                               | 0.796                        |

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR C2012T1R0M  | RoHS | 1.0                              | $\pm 20\%$           | 490                                        | 0.060                                        | 1,500                      | 1,400                            | 1.0                          |
| BR C2012T1R5MD | RoHS | 1.5                              | $\pm 20\%$           | 390                                        | 0.090                                        | 1,200                      | 1,100                            | 1.0                          |
| BR C2012T2R2MD | RoHS | 2.2                              | $\pm 20\%$           | 350                                        | 0.110                                        | 1,100                      | 1,000                            | 1.0                          |
| BR C2012T3R3MD | RoHS | 3.3                              | $\pm 20\%$           | 300                                        | 0.170                                        | 800                        | 870                              | 1.0                          |
| BR C2012T4R7MD | RoHS | 4.7                              | $\pm 20\%$           | 250                                        | 0.265                                        | 700                        | 600                              | 1.0                          |

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30% (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

## ● 2016 (0806) TYPE

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance    | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|-------------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                         |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR C2016T1R0M | RoHS | 1.0                              | $\pm 20\%$              | 450                                        | 0.085                                        | 1,350                      | 1,100                            | 0.10                         |
| BR C2016T1R5M | RoHS | 1.5                              | $\pm 20\%$              | 370                                        | 0.150                                        | 1,100                      | 820                              | 0.10                         |
| BR C2016T2R2M | RoHS | 2.2                              | $\pm 20\%$              | 250                                        | 0.180                                        | 910                        | 760                              | 0.10                         |
| BR C2016T3R3M | RoHS | 3.3                              | $\pm 20\%$              | 140                                        | 0.220                                        | 740                        | 680                              | 0.10                         |
| BR C2016T4R7M | RoHS | 4.7                              | $\pm 20\%$              | 78                                         | 0.270                                        | 660                        | 610                              | 0.10                         |
| BR C2016T6R8M | RoHS | 6.8                              | $\pm 20\%$              | 39                                         | 0.330                                        | 550                        | 560                              | 0.10                         |
| BR C2016T100□ | RoHS | 10                               | $\pm 10\%$ , $\pm 20\%$ | 35                                         | 0.400                                        | 450                        | 520                              | 0.10                         |
| BR C2016T150□ | RoHS | 15                               | $\pm 10\%$ , $\pm 20\%$ | 28                                         | 0.600                                        | 400                        | 410                              | 0.10                         |
| BR C2016T220□ | RoHS | 22                               | $\pm 10\%$ , $\pm 20\%$ | 24                                         | 1.00                                         | 310                        | 310                              | 0.10                         |
| BR C2016T330□ | RoHS | 33                               | $\pm 10\%$ , $\pm 20\%$ | 13                                         | 1.70                                         | 270                        | 240                              | 0.10                         |
| BR C2016T470□ | RoHS | 47                               | $\pm 10\%$ , $\pm 20\%$ | 11                                         | 2.20                                         | 210                        | 210                              | 0.10                         |
| BR C2016T680□ | RoHS | 68                               | $\pm 10\%$ , $\pm 20\%$ | 8                                          | 2.80                                         | 200                        | 190                              | 0.10                         |
| BR C2016T101□ | RoHS | 100                              | $\pm 10\%$ , $\pm 20\%$ | 7                                          | 3.40                                         | 140                        | 170                              | 0.10                         |

## ● 2515 (1006) TYPE

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L2515T1R0M  | RoHS | 1.0                              | $\pm 20\%$           | 160                                        | 0.070                                        | 1,500                      | 1,350                            | 1.0                          |
| BR L2515T1R5M  | RoHS | 1.5                              | $\pm 20\%$           | 130                                        | 0.100                                        | 1,200                      | 1,150                            | 1.0                          |
| BR L2515T2R2M  | RoHS | 2.2                              | $\pm 20\%$           | 100                                        | 0.135                                        | 1,000                      | 1,000                            | 1.0                          |
| BR L2515T3R3MD | RoHS | 3.3                              | $\pm 20\%$           | 70                                         | 0.215                                        | 800                        | 750                              | 1.0                          |
| BR L2515T4R7MD | RoHS | 4.7                              | $\pm 20\%$           | 60                                         | 0.265                                        | 650                        | 700                              | 1.0                          |

## ● 2518 (1007) TYPE

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BRFL2518T1R0M | RoHS | 1.0                              | $\pm 20\%$           | 130                                        | 0.090                                        | 1,200                      | 1,200                            | 1.0                          |
| BRFL2518T1R5M | RoHS | 1.5                              | $\pm 20\%$           | 100                                        | 0.110                                        | 1,100                      | 1,000                            | 1.0                          |
| BRFL2518T2R2M | RoHS | 2.2                              | $\pm 20\%$           | 80                                         | 0.130                                        | 850                        | 950                              | 1.0                          |
| BRFL2518T3R3M | RoHS | 3.3                              | $\pm 20\%$           | 70                                         | 0.220                                        | 700                        | 700                              | 1.0                          |
| BRFL2518T4R7M | RoHS | 4.7                              | $\pm 20\%$           | 60                                         | 0.330                                        | 650                        | 650                              | 1.0                          |

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L2518T1R0M | RoHS | 1.0                              | $\pm 20\%$           | 130                                        | 0.080                                        | 1,600                      | 1,000                            | 7.96                         |
| BR L2518T1R5M | RoHS | 1.5                              | $\pm 20\%$           | 100                                        | 0.100                                        | 1,200                      | 920                              | 7.96                         |
| BR L2518T2R2M | RoHS | 2.2                              | $\pm 20\%$           | 80                                         | 0.135                                        | 1,000                      | 850                              | 7.96                         |
| BR L2518T3R3M | RoHS | 3.3                              | $\pm 20\%$           | 70                                         | 0.300                                        | 800                        | 580                              | 7.96                         |
| BR L2518T4R7M | RoHS | 4.7                              | $\pm 20\%$           | 60                                         | 0.400                                        | 700                        | 470                              | 7.96                         |

| Parts number   | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|----------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|                |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BRHL2518T1R0M  | RoHS | 1.0                              | $\pm 20\%$           | 400                                        | 0.055                                        | 2,000                      | 1,400                            | 1.0                          |
| BRHL2518T1R5M  | RoHS | 1.5                              | $\pm 20\%$           | 350                                        | 0.085                                        | 1,700                      | 1,100                            | 1.0                          |
| BRHL2518T2R2M  | RoHS | 2.2                              | $\pm 20\%$           | 300                                        | 0.115                                        | 1,500                      | 1,000                            | 1.0                          |
| BRHL2518T3R3MD | RoHS | 3.3                              | $\pm 20\%$           | 200                                        | 0.165                                        | 1,200                      | 800                              | 1.0                          |
| BRHL2518T4R7MD | RoHS | 4.7                              | $\pm 20\%$           | 150                                        | 0.245                                        | 1,100                      | 750                              | 1.0                          |

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance    | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|-------------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                         |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR C2518T1R0M | RoHS | 1.0                              | $\pm 20\%$              | 280                                        | 0.050                                        | 2,550                      | 1,650                            | 1.0                          |
| BR C2518T1R5M | RoHS | 1.5                              | $\pm 20\%$              | 230                                        | 0.080                                        | 2,100                      | 1,300                            | 1.0                          |
| BR C2518T2R2M | RoHS | 2.2                              | $\pm 20\%$              | 200                                        | 0.120                                        | 1,800                      | 1,000                            | 1.0                          |
| BR C2518T3R3M | RoHS | 3.3                              | $\pm 20\%$              | 150                                        | 0.175                                        | 1,450                      | 860                              | 1.0                          |
| BR C2518T4R7M | RoHS | 4.7                              | $\pm 20\%$              | 100                                        | 0.230                                        | 1,250                      | 750                              | 1.0                          |
| BR C2518T6R8M | RoHS | 6.8                              | $\pm 20\%$              | 45                                         | 0.280                                        | 1,050                      | 680                              | 1.0                          |
| BR C2518T100□ | RoHS | 10                               | $\pm 10\%$ , $\pm 20\%$ | 20                                         | 0.350                                        | 890                        | 610                              | 1.0                          |
| BR C2518T150□ | RoHS | 15                               | $\pm 10\%$ , $\pm 20\%$ | 13                                         | 0.430                                        | 760                        | 550                              | 1.0                          |
| BR C2518T220□ | RoHS | 22                               | $\pm 10\%$ , $\pm 20\%$ | 10                                         | 0.560                                        | 640                        | 490                              | 1.0                          |
| BR C2518T330□ | RoHS | 33                               | $\pm 10\%$ , $\pm 20\%$ | 8                                          | 0.850                                        | 560                        | 390                              | 1.0                          |
| BR C2518T470□ | RoHS | 47                               | $\pm 10\%$ , $\pm 20\%$ | 6.5                                        | 1.45                                         | 410                        | 300                              | 1.0                          |
| BR C2518T680□ | RoHS | 68                               | $\pm 10\%$ , $\pm 20\%$ | 5.5                                        | 2.40                                         | 340                        | 230                              | 1.0                          |
| BR C2518T101□ | RoHS | 100                              | $\pm 10\%$ , $\pm 20\%$ | 4.5                                        | 3.60                                         | 300                        | 190                              | 1.0                          |

□ Please specify the inductance tolerance code. (M or K)

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

## PARTS NUMBER

## 3225 (1210) TYPE

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 30\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|----------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                      |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L3225TR27M | RoHS | 0.27                             | $\pm 20\%$           | 390                                        | 0.022                                        | 4,500                      | 2,850                            | 7.96                         |
| BR L3225TR36M | RoHS | 0.36                             | $\pm 20\%$           | 350                                        | 0.025                                        | 4,300                      | 2,750                            | 7.96                         |
| BR L3225TR51M | RoHS | 0.51                             | $\pm 20\%$           | 270                                        | 0.029                                        | 3,600                      | 2,550                            | 7.96                         |

| Parts number  | EHS  | Nominal inductance<br>[ $\mu$ H] | Inductance tolerance    | Self-resonant<br>frequency<br>[MHz] (min.) | DC Resistance<br>[ $\Omega$ ] ( $\pm 20\%$ ) | Rated current ※) [mA]      |                                  | Measuring<br>frequency [MHz] |
|---------------|------|----------------------------------|-------------------------|--------------------------------------------|----------------------------------------------|----------------------------|----------------------------------|------------------------------|
|               |      |                                  |                         |                                            |                                              | Saturation current<br>Idc1 | Temperature rise current<br>Idc2 |                              |
| BR L3225T1R0M | RoHS | 1.0                              | $\pm 20\%$              | 220                                        | 0.043                                        | 2,400                      | 2,200                            | 0.1                          |
| BR L3225T1R5M | RoHS | 1.5                              | $\pm 20\%$              | 170                                        | 0.045                                        | 2,200                      | 1,750                            | 0.1                          |
| BR L3225T2R2M | RoHS | 2.2                              | $\pm 20\%$              | 150                                        | 0.065                                        | 1,850                      | 1,600                            | 0.1                          |
| BR L3225T3R3M | RoHS | 3.3                              | $\pm 20\%$              | 140                                        | 0.120                                        | 1,450                      | 1,200                            | 0.1                          |
| BR L3225T4R7M | RoHS | 4.7                              | $\pm 20\%$              | 120                                        | 0.180                                        | 1,300                      | 1,000                            | 0.1                          |
| BR L3225T6R8M | RoHS | 6.8                              | $\pm 20\%$              | 90                                         | 0.270                                        | 1,050                      | 770                              | 0.1                          |
| BR L3225T100□ | RoHS | 10                               | $\pm 10\%$ , $\pm 20\%$ | 70                                         | 0.350                                        | 900                        | 700                              | 0.1                          |
| BR L3225T150□ | RoHS | 15                               | $\pm 10\%$ , $\pm 20\%$ | 20                                         | 0.570                                        | 700                        | 530                              | 0.1                          |
| BR L3225T220□ | RoHS | 22                               | $\pm 10\%$ , $\pm 20\%$ | 13                                         | 0.690                                        | 550                        | 470                              | 0.1                          |
| BR L3225T330□ | RoHS | 33                               | $\pm 10\%$ , $\pm 20\%$ | 9                                          | 0.840                                        | 470                        | 420                              | 0.1                          |
| BR L3225T470□ | RoHS | 47                               | $\pm 10\%$ , $\pm 20\%$ | 7                                          | 1.00                                         | 420                        | 390                              | 0.1                          |
| BR L3225T680□ | RoHS | 68                               | $\pm 10\%$ , $\pm 20\%$ | 6                                          | 1.40                                         | 330                        | 300                              | 0.1                          |
| BR L3225T101□ | RoHS | 100                              | $\pm 10\%$ , $\pm 20\%$ | 5                                          | 2.50                                         | 270                        | 250                              | 0.1                          |

□ Please specify the inductance tolerance code. (M or K)

※) The saturation current value (Idc1) is the DC current value having inductance decrease down to 30%. (at 20°C)

※) The temperature rise current value (Idc2) is the DC current value having temperature increase up to 40°C. (at 20°C)

# WIRE-WOUND CHIP POWER INDUCTORS (BR SERIES)

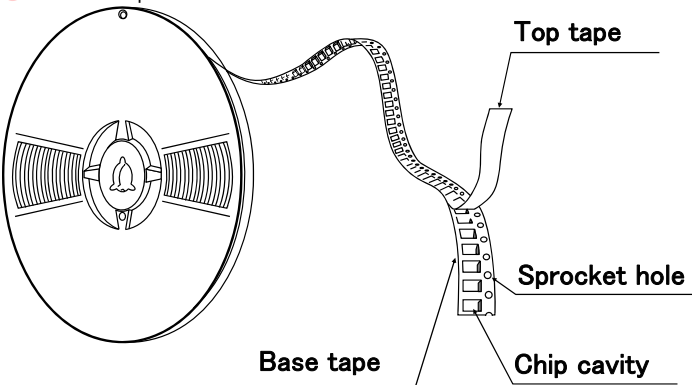
## PACKAGING

### ① Minimum Quantity

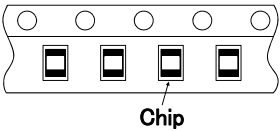
| Type     | Standard Quantity [pcs] |               |
|----------|-------------------------|---------------|
|          | Paper Tape              | Embossed Tape |
| BR C1608 | —                       | 3,000         |
| BR L1608 | —                       | 3,000         |
| BR L2012 | —                       | 3,000         |
| BR C2012 | —                       | 2,000         |
| BR C2016 | —                       | 2,000         |
| BR L2515 | —                       | 2,000         |
| BR C2518 | —                       | 2,000         |
| BRHL2518 | —                       | 2,000         |
| BR L2518 | —                       | 3,000         |
| BRFL2518 | —                       | 3,000         |
| BR L3225 | —                       | 2,000         |

### ② Tape Material

● Embossed tape

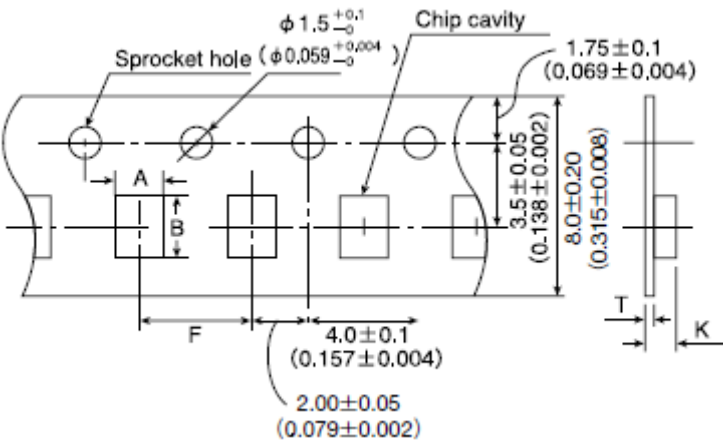


#### Chip Filled



### ③ Taping dimensions

● Embossed Tape 8mm wide (0.315 inches wide)

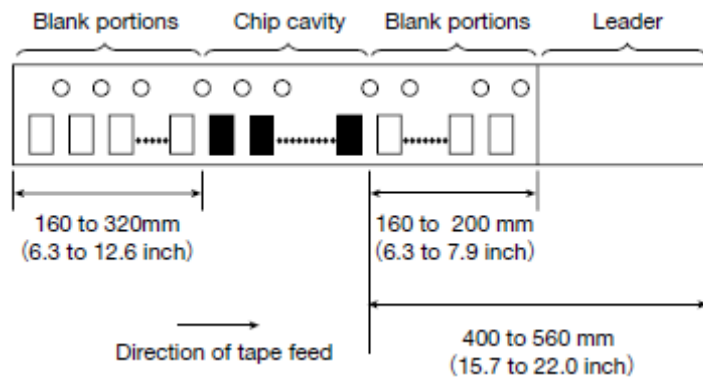


► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>) .

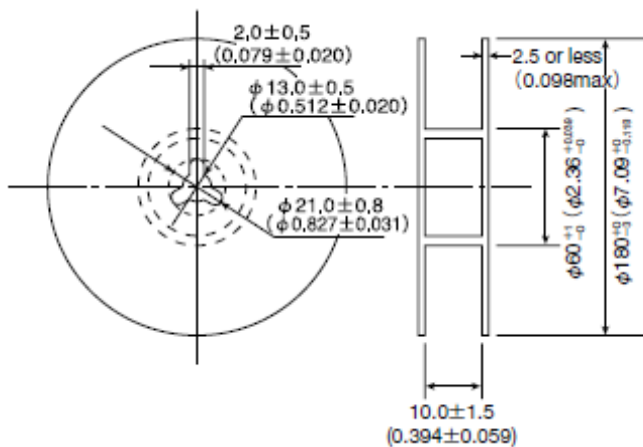
| Type     | Chip cavity               |                           | Insertion pitch          | Tape thickness             |                         |
|----------|---------------------------|---------------------------|--------------------------|----------------------------|-------------------------|
|          | A                         | B                         | F                        | T                          | K                       |
| BR L1608 | 1.1±0.1<br>(0.043±0.004)  | 1.9±0.1<br>(0.075±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.2±0.05<br>(0.008±0.002)  | 0.9 max<br>(0.035 max)  |
| BR C1608 | 1.1±0.1<br>(0.043±0.004)  | 1.9±0.1<br>(0.075±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.2 max<br>(0.047 max)  |
| BR L2012 | 1.45±0.1<br>(0.057±0.004) | 2.2±0.1<br>(0.087±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.2 max<br>(0.047 max)  |
| BR C2012 | 1.45±0.1<br>(0.057±0.004) | 2.37±0.1<br>(0.093±0.004) | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.59 max<br>(0.063 max) |
| BR C2016 | 1.75±0.1<br>(0.069±0.004) | 2.1±0.1<br>(0.083±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.3±0.05<br>(0.012±0.002)  | 1.9 max<br>(0.075 max)  |
| BR L2515 | 1.8±0.1<br>(0.071±0.004)  | 2.8±0.1<br>(0.110±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.45 max<br>(0.057 max) |
| BRFL2518 | 2.3±0.1<br>(0.091±0.004)  | 2.8±0.1<br>(0.110±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.3 max<br>(0.051 max)  |
| BR L2518 | 2.3±0.1<br>(0.091±0.004)  | 2.8±0.1<br>(0.110±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.3±0.05<br>(0.012±0.002)  | 1.45 max<br>(0.057 max) |
| BRHL2518 | 2.1±0.1<br>(0.083±0.004)  | 2.8±0.1<br>(0.110±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.3±0.05<br>(0.012±0.002)  | 1.7 max<br>(0.067 max)  |
| BR C2518 | 2.15±0.1<br>(0.085±0.004) | 2.7±0.1<br>(0.106±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.3±0.05<br>(0.012±0.002)  | 2.2 max<br>(0.087 max)  |
| BR L3225 | 2.8±0.1<br>(0.110±0.004)  | 3.5±0.1<br>(0.138±0.004)  | 4.0±0.1<br>(0.157±0.004) | 0.25±0.05<br>(0.010±0.002) | 1.9 max<br>(0.075 max)  |

Unit : mm (inch)

#### ④Leader and Blank portion

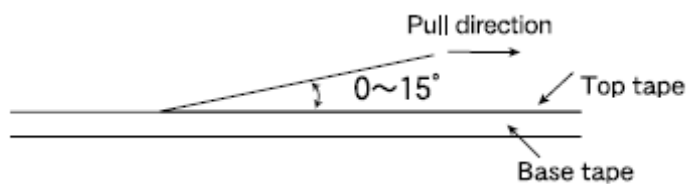


#### ⑤Reel size



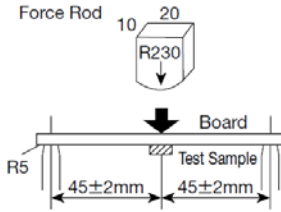
#### ⑥Top Tape Strength

The top tape requires a peel-off force of 0.2 to 0.7N in the direction of the arrow as illustrated below.

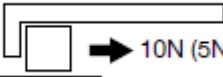


# Wound Chip power inductor (BR-series)

## RELIABILITY DATA

| 1. Operating Temperature Range                 |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | −40∼+105℃                       |
| Test Methods and Remarks                       | Including self-generated heat                                                                                                                                                                                                                                                                                                                                                          |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 2. Storage Temperature Range (after soldering) |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | −40∼+85℃                        |
| Test Methods and Remarks                       | Please refer the term of “7.Storage conditions” in Precautions.                                                                                                                                                                                                                                                                                                                        |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 3. Rated current                               |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | Within the specified tolerance  |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 4. Inductance                                  |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | Within the specified tolerance  |
| Test Methods and Remarks                       | Measuring equipment : LCR Meter (HP 4285A or equivalent)<br>Measuring frequency : Specified frequency                                                                                                                                                                                                                                                                                  |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 5. DC Resistance                               |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | Within the specified tolerance  |
| Test Methods and Remarks                       | Measuring equipment : DC ohmmeter (HIOKI 3227 or equivalent)                                                                                                                                                                                                                                                                                                                           |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 6. Self resonance frequency                    |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | Within the specified tolerance  |
| Test Methods and Remarks                       | Measuring equipment : Impedance analyzer/material analyzer<br>(HP4291A or equivalent HP4191A, 4192A or equivalent)                                                                                                                                                                                                                                                                     |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 7. Temperature characteristic                  |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | Inductance change : Within ±15% |
| Test Methods and Remarks                       | Based on the inductance at 20℃ and Measured at the ambient of −40℃∼+85℃.                                                                                                                                                                                                                                                                                                               |                                 |
|                                                |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| 8. Resistance to the bendability               |                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
| Specified Value                                | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                       | No damage.                      |
| Test Methods and Remarks                       | The given sample is soldered on the board and then the back side of the board is pushed until it bends 2mm like the figure.<br>Dimension of the board : 100×40×1.0mm (0.8mm thickness for 1608(0603) inductors)<br>Material of the board : Glass-epoxy<br>Thickness of soldering paste : 0.12mm<br> |                                 |

| 9. Body strength         |                                                                                                                             |            |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------|
| Specified Value          | ALL OF BR-SERIES                                                                                                            | No damage. |
| Test Methods and Remarks | 2012~<br>Applied force    10N<br>Duration        : 10sec.<br>1608 size<br>Applied force    : 5N<br>Duration        : 10sec. |            |

| 10. Adhesion of terminal electrodes |                                                                                                                                                                                                                                                                |                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Specified Value                     | ALL OF BR-SERIES                                                                                                                                                                                                                                               | Not to removed from the board. |
| Test Methods and Remarks            | The given sample is soldered to the board and then it is kept for 5sec with 10N stress (5N for 1608(0603) inductors) like the figure.<br> → 10N (5N for 1608(0603) inductors) |                                |

| 11. Resistance to vibration |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|---------|--|-----------------|----------------------------------------------------------|--|-----------------|--------------------------------|--|------|---|---------------------------------------|---|---|
| Specified Value             | ALL OF BR-SERIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
| Test Methods and Remarks    | The given sample is soldered to the board and then it is tested depending on the conditions of the following table.<br><table border="1" data-bbox="279 728 1157 907"> <tr> <td>Vibration Frequency</td><td colspan="2">10~55Hz</td></tr> <tr> <td>Total Amplitude</td><td colspan="2">1.5mm (May not exceed acceleration 196m/s<sup>2</sup>)</td></tr> <tr> <td>Sweeping Method</td><td colspan="2">10Hz to 55Hz to 10Hz for 1min.</td></tr> <tr> <td rowspan="3">Time</td><td>X</td><td rowspan="3">For 2 hours on each X, Y, and Z axis.</td></tr> <tr> <td>Y</td></tr> <tr> <td>Z</td></tr> </table> Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs. |                                                                                    | Vibration Frequency | 10~55Hz |  | Total Amplitude | 1.5mm (May not exceed acceleration 196m/s <sup>2</sup> ) |  | Sweeping Method | 10Hz to 55Hz to 10Hz for 1min. |  | Time | X | For 2 hours on each X, Y, and Z axis. | Y | Z |
| Vibration Frequency         | 10~55Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
| Total Amplitude             | 1.5mm (May not exceed acceleration 196m/s <sup>2</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
| Sweeping Method             | 10Hz to 55Hz to 10Hz for 1min.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
| Time                        | X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | For 2 hours on each X, Y, and Z axis.                                              |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
|                             | Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |
|                             | Z                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                    |                     |         |  |                 |                                                          |  |                 |                                |  |      |   |                                       |   |   |

| 12. Solderability        |                                                                                                                    |                                                               |
|--------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Specified Value          | ALL OF BR-SERIES                                                                                                   | At least 90% area of the electrodes is covered by new solder. |
| Test Methods and Remarks | Test Method and Remarks】                                                                                           |                                                               |
|                          | The given sample is dipped into the flux and then it is tested depending on the conditions of the following table. |                                                               |
|                          | Flux : Methanol solution containing rosin 25%.                                                                     |                                                               |
|                          | Solder Temperature                                                                                                 | 245±5°C                                                       |
|                          | Time                                                                                                               | 5±0.5 sec.                                                    |

| 13. Resistance to soldering heat |                                                                                                                                                                                     |                                                                                    |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Specified Value                  | ALL OF BR-SERIES                                                                                                                                                                    | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
| Test Methods and Remarks         | 3 times reflow having the temperature profile of 5sec of 260 $\pm$ 0/—5 °C and 40sec of more than 230°C.<br>Test board thickness : 1.0mm<br>Test board material : glass epoxy-resin |                                                                                    |

| 14. Thermal shock        |                                                                                                                            |                  |                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------|
| Specified Value          | ALL OF BR-SERIES                                                                                                           |                  | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance. |
| Test Methods and Remarks | The given sample is soldered to the board and then its Inductance is measured after 100cycles of the following conditions. |                  |                                                                                    |
|                          | Conditions of 1 cycle                                                                                                      |                  |                                                                                    |
|                          | Step                                                                                                                       | Temperature (°C) | Duration (min)                                                                     |
|                          | 1                                                                                                                          | - 40 $\pm$ 3     | 30 $\pm$ 3                                                                         |
|                          | 2                                                                                                                          | Room temperature | Within 3                                                                           |
|                          | 3                                                                                                                          | + 85 $\pm$ 2     | 30 $\pm$ 3                                                                         |
|                          | 4                                                                                                                          | Room temperature | Within 3                                                                           |

|                                                                                                                              |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15. Damp heat                                                                                                                |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specified Value                                                                                                              | ALL OF BR-SERIES                                                                           | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                               |
| Test Methods and Remarks                                                                                                     | The given sample is soldered to the board and then it is kept at the following conditions. |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                              | Temperature                                                                                | $60 \pm 2^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                              | Humidity                                                                                   | 90~95%RH                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                              | Time                                                                                       | 1000 hours.                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 16. Loading under damp heat                                                                                                  |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specified Value                                                                                                              | ALL OF BR-SERIES                                                                           | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                               |
| Test Methods and Remarks                                                                                                     | The given sample is soldered to the board and then it is kept at the following conditions. |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                              | Temperature                                                                                | $60 \pm 2^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                              | Humidity                                                                                   | 90~95%RH                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                              | Applied current                                                                            | Rated current                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                              | Time                                                                                       | 1000hours.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 17. Low temperature life test                                                                                                |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specified Value                                                                                                              | ALL OF BR-SERIES                                                                           | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                               |
| Test Methods and Remarks                                                                                                     | The given sample is soldered to the board and then it is kept at the following conditions. |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                              | Temperature                                                                                | $-40 \pm 2^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                              | Duration                                                                                   | 1000hours                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 18. High temperature life test                                                                                               |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specified Value                                                                                                              | ALL OF BR-SERIES                                                                           | Inductance change : Within $\pm 10\%$<br>No significant abnormality in appearance.                                                                                                                                                                                                                                                                                                                               |
| Test Methods and Remarks                                                                                                     | The given sample is soldered to the board and then it is kept at the following conditions. |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                              | Temperature                                                                                | $85 \pm 2^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                              | Duration                                                                                   | 1000hours                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 19. Standard conditions                                                                                                      |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specified Value                                                                                                              | ALL OF BR-SERIES                                                                           | Standard test condition :<br>Unless otherwise specified, temperature is $20 \pm 15^{\circ}\text{C}$ and $65 \pm 20\%$ of relative humidity.<br>When there is any question concerning measurement result: In order to provide correlation data, the test shall be condition of $20 \pm 2^{\circ}\text{C}$ of temperature, $65 \pm 5\%$ relative humidity.<br>Inductance is in accordance with our measured value. |

# Wound Chip power inductor (BR-series)

## ■ PRECAUTIONS

### 1. Circuit Design

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions | <p>◆Operating Ambient</p> <p>The products are premised on the usage for the general equipments like the office supply equipment, the telecommunications systems, the measuring equipment, the household equipment and so on.</p> <p>Please ask to TAIYO YUDEN's sales person in advance, if you need to apply them to the equipments or the systems which might have any influences for the human body, the property, like the traffic systems, the safety equipment, the aerospace systems, the nuclear control systems, the medical equipment and soon.</p> |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 2. PCB Design

|                          |                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions              | <p>◆Land pattern design</p> <p>1. Please refer to a recommended land pattern.</p>                                                                                                           |
| Technical considerations | <p>◆Land pattern design</p> <p>Surface Mounting</p> <p>1. The conditions of the picking and placing should be checked in advance.</p> <p>2. The products are only for reflow soldering.</p> |

### 3. Considerations for automatic placement

|                          |                                                                                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions              | <p>◆Adjustment of mounting machine</p> <p>1. Excessive physical impact should not be imposed on the products for picking and placing onto the PC boards.</p> <p>2. Mounting and soldering conditions should be checked in advance.</p> |
| Technical considerations | <p>◆Adjustment of mounting machine</p> <p>The products might be broken if too much stress is given for the picking and placing.</p>                                                                                                    |

### 4. Soldering

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions              | <p>◆Reflow soldering</p> <p>1. Please apply our recommended soldering conditions on the specification as much as possible.</p> <p>2. The products are only for reflow soldering.</p> <p>3. Please do not give any stress to a product until it returns in room temperature after reflow soldering.</p> <p>◆Lead free soldering</p> <p>1. Please check the adhesion, the solder temperature, the solderability and the shape of solder filet if the solder that is not in the specification is used.</p> <p>◆Recommended conditions for using a soldering iron (NR10050 Type)</p> <p>Touch a soldering iron to the land pattern not to the product directly.</p> <p>The temperature of a soldering iron is less than 350degC.</p> <p>The soldering is for 3 seconds or less.</p> |
| Technical considerations | <p>◆Reflow soldering</p> <p>1. The product might break or might make the tombstoning, if the soldering conditions are too far from our recommended conditions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 5. Cleaning

|                          |                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------|
| Precautions              | <p>◆Cleaning conditions</p> <p>1. Please don't wash by the ultra-sonic waves.</p>               |
| Technical considerations | <p>◆Cleaning conditions</p> <p>1. Washing by the ultra-sonic waves might break the product.</p> |

| 6. Handling              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions              | <ul style="list-style-type: none"> <li>◆Handling               <ol style="list-style-type: none"> <li>1. Keep the product away from any magnets.</li> </ol> </li> <li>◆Cutting the PC boards               <ol style="list-style-type: none"> <li>1. Please don't give any stress of the bending or the twisting for the cutting process of PC boards.</li> <li>2. Please don't give any shock and stress to the products in transportation.</li> </ol> </li> <li>◆Mechanical considerations               <ol style="list-style-type: none"> <li>1. Please don't give too much shock to the product.</li> <li>2. Please don't give any shock and stress to the products in transportation.</li> </ol> </li> <li>◆The stress for picking and placing               <ol style="list-style-type: none"> <li>1. Please don't give any shock into an exposed ferrite core.</li> </ol> </li> <li>◆Packing               <ol style="list-style-type: none"> <li>1. Please don't pile the packing boxes up as much as possible.</li> </ol> </li> </ul> |
| Technical considerations | <ul style="list-style-type: none"> <li>◆Handling               <ol style="list-style-type: none"> <li>1. There is a case that a characteristic varies with magnetic influence.</li> </ol> </li> <li>◆Cutting the PC boards               <ol style="list-style-type: none"> <li>1. Please don't give the bending stress or the twisting stress to the products because they might break in such cases.</li> </ol> </li> <li>◆Mechanical considerations               <ol style="list-style-type: none"> <li>1. The mechanical shock might break the products.</li> <li>2. The products might break depending on the handling in transportation.</li> </ol> </li> <li>◆Pick-up pressure               <ol style="list-style-type: none"> <li>1. The electrical characteristics of the products might be shifted by too much physical shock and stress.</li> </ol> </li> <li>◆Packing               <ol style="list-style-type: none"> <li>1. The products and the tape might break, if the packing boxes are piled up.</li> </ol> </li> </ul>    |
| 7. Storage conditions    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Precautions              | <ul style="list-style-type: none"> <li>◆Storage               <ol style="list-style-type: none"> <li>1. The packing boxes can be kept at the ambient which the temperature is from 0 to 40degC and the humidity is less than 70%.</li> <li>2. The ambient temperature of less than 30degC is recommended not to get the tape and the solderability worse.</li> <li>3. Please solder the products by a half year after they have been shipped.</li> </ol>               Otherwise please use them after checking the solderability in advance.             </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Technical considerations | <ul style="list-style-type: none"> <li>◆Storage               <ol style="list-style-type: none"> <li>1. The ambient of high temperature or high humidity might accelerate to make the solderability and the tape worse.</li> </ol> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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