

Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

REMINDERS

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- 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.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

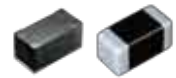
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WOUND CHIP INDUCTORS (LB SERIES)



REFLOW

FEATURES

LB-series are Wound Chip Inductors having wide line-up, which are suitable for any circuit designs.

- LBC series has large rated current. They contribute to the miniaturization of the power supply circuit.
- LBR series has low DC resistance. They contribute to the miniaturization of the power supply circuit.
- LBMF series has a low loss characteristic.

APPLICATIONS

- They are suitable for an anti-noise measure on the power supply circuit of DSC, DVC, HDD, LCD-TV, mobile phones, PC, game equipments, various communication equipments and etc..

OPERATING TEMP.

- -40 ~ 105°C (Including-self-generated heat)

ORDERING CODE

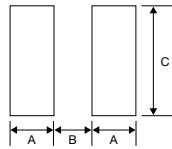
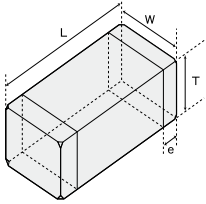
LB \triangle 2 0 1 2 T 1 0 0 \triangle \triangle \triangle \triangle \triangle

1 2 3 4 5 6 7 8

| | | | | | | | | | | | | | |
|-------------|---------------------|----------------------------|----------|-------------|-------------|---------------------------------|-----|-----------------------------|-----|----------------|-------------------|-------------------------------------|--------------------------|
| 1 Type | | 3 External Dimensions (mm) | | 4 Packaging | | 5 Nominal Inductance (μ H) | | 6 Inductance Tolerances (%) | | 7 Special code | | 8 Internal code | |
| LB | Wound chip inductor | 1608 (0603) | 1.6×0.8 | T | Tape & Reel | example | | K | ±10 | \triangle | Standard products | \triangle \triangle \triangle | Standard Products |
| 2 Shape | | 2012 (0805) | 2.0×1.25 | | | 1R0 | 1 | M | ±20 | R | Low Rdc type | | \triangle =Blank space |
| \triangle | Standard products | 2016 (0806) | 2.0×1.6 | | | 100 | 10 | | | | | | |
| C | High current | 2518 (1007) | 2.5×1.8 | | | 101 | 100 | | | | | | |
| R | Low Rdc | 3218 (1207) | 3.2×1.8 | | | *R=decimal point | | | | | | | |
| MF | Low loss | 3225 (1210) | 3.2×2.5 | | | | | | | | | | |

EXTERNAL DIMENSIONS/STANDARD QUANTITY

EXTERNAL DIMENSIONS



Unit : mm

| TYPE | A | B | C |
|--------|------|-----|------|
| 1608 | 0.55 | 0.7 | 0.9 |
| MF1608 | 0.55 | 0.7 | 1.0 |
| 2012 | 0.60 | 1.0 | 1.45 |
| 2016 | 0.60 | 1.0 | 1.8 |
| 2518 | 0.60 | 1.5 | 2.0 |
| 3218 | 0.85 | 1.7 | 2.0 |
| 3225 | 0.85 | 1.7 | 2.7 |

Surface Mounting

- Mounting and soldering conditions should be checked beforehand.
- Applicable soldering process to those products is reflow soldering only.
- Recommended Land Patterns

| Type | L | W | T | e | Standard Quantity [pcs] | |
|------------------------------|--------------------------|---------------------------|---------------------------|----------------------------|-------------------------|---------------|
| | | | | | Paper Tape | Embossed Tape |
| LB1608 | 1.6±0.1 (0.063±0.004) | 0.8±0.1 (0.031±0.004) | 0.8±0.1 (0.031±0.004) | 0.35±0.15 (0.014±0.006) | 4000 | — |
| LBMF1608 | 1.6±0.2 (0.063±0.008) | 0.8±0.2 (0.031±0.008) | 0.8±0.2 (0.031±0.008) | 0.45±0.15 (0.016±0.006) | — | 3000 |
| LB2012 LBC2012 LBR2012 | 2.0±0.2 (0.079±0.008) | 1.25±0.2 (0.049±0.008) | 1.25±0.2 (0.049±0.008) | 0.5±0.2 (0.020±0.008) | — | 3000 |
| LB2016 LBC2016 | 2.0±0.2 (0.079±0.008) | 1.6±0.2 (0.063±0.008) | 1.6±0.2 (0.063±0.008) | 0.5±0.2 (0.020±0.008) | — | 2000 |
| LB2518 LBC2518 LBR2518 | 2.5±0.2 (0.098±0.008) | 1.8±0.2 (0.071±0.008) | 1.8±0.2 (0.071±0.008) | 0.5±0.2 (0.020±0.008) | — | 2000 |
| LB3218 | 3.2±0.2 (0.128±0.008) | 1.8±0.2 (0.071±0.008) | 1.8±0.2 (0.071±0.008) | 0.6±0.2 (0.024±0.008) | — | 2000 |
| LBC3225 | 3.2±0.2 (0.128±0.008) | 2.5±0.2 (0.098±0.008) | 2.5±0.2 (0.098±0.008) | 0.6±0.3 (0.024±0.012) | — | 1000 |

Unit : mm (inch)

AVAILABLE INDUCTANCE RANGE

| Type | LB1608 | LBMF1608 | LB2012 | LBC2012 | LBR2012 | LB2016 | LBC2016 | LB2518 | LBC2518 | LBR2518 | LB3218 | LBC3225 | |
|-----------------------|--------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|---------------------|---------------------|----------------------|
| Range | | | | | | | | | | | | | |
| Inductance [μ H] | 1 | 160 1 μ H 0.17 | 230 1 μ H 0.09 | 405 1 μ H 0.15 | 620 1 μ H 0.19 | 400 1 μ H 0.07 | 490 1 μ H 0.09 | 690 1 μ H 0.1 | 665 1 μ H 0.06 | 775 1 μ H 0.08 | 960 1 μ H 0.045 | 1075 1 μ H 0.06 | 1100 1 μ H 0.055 |
| | 10 | 70 0.55 | 80 0.36 | 120 0.7 | 200 1.2 | 150 0.36 | 155 0.5 | 245 0.82 | 165 0.25 | 375 0.36 | 235 0.19 | 340 0.25 | 540 0.133 |
| | 100 | 60 0.7 | 35 2.5 | 45 7.0 | 90 5.8 | 50 4.0 | 40 4.5 | 75 8.0 | 60 2.1 | 125 3.70 | 80 1.89 | 140 2.40 | 150 1.4 |
| | 1000 | 10 μ H | 47 μ H | 100 μ H | 47 μ H | 100 μ H | 100 μ H | 100 μ H | 1000 μ H | 45 28.0 | 100 μ H | 1000 μ H | 100 μ H |

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PART NUMBERS

● 1608(0603) TYPE

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|----------------------|------------------------------------|---|-------------------------|---------------------------|
| LB 1608T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.17 | 160 | 7.96 |
| LB 1608T2R2M | 2.2 | | 80 | 0.33 | 115 | |
| LB 1608T4R7M | 4.7 | | 45 | 0.55 | 70 | |
| LB 1608T8R2M | 8.2 | | 32 | 0.70 | 60 | |
| LB 1608T100M | 10 | | 32 | 0.70 | 60 | 2.52 |

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LBMF1608T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.09 | 230 | 7.96 |
| LBMF1608T2R2M | 2.2 | | 80 | 0.17 | 160 | |
| LBMF1608T3R3M | 3.3 | | 60 | 0.22 | 130 | |
| LBMF1608T4R7M | 4.7 | | 45 | 0.24 | 110 | |
| LBMF1608T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 32 | 0.36 | 80 | 2.52 |
| LBMF1608T220□ | 22 | | 16 | 1.00 | 50 | |
| LBMF1608T470□ | 47 | | 11 | 2.50 | 35 | |

□ Please specify the Inductance tolerance code (K or M)

● 2012(0805) TYPE

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LB 2012T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.15 | 405 | 7.96 |
| LB 2012T2R2M | 2.2 | | 80 | 0.23 | 260 | |
| LB 2012T3R3M | 3.3 | | 55 | 0.30 | 235 | |
| LB 2012T4R7M | 4.7 | | 45 | 0.40 | 190 | |
| LB 2012T6R8M | 6.8 | | 38 | 0.47 | 135 | |
| LB 2012T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 32 | 0.7 | 120 | 2.52 |
| LB 2012T100□R | 10 | | 32 | 0.5 | 120 | |
| LB 2012T150□ | 15 | | 28 | 1.3 | 100 | |
| LB 2012T220□ | 22 | | 16 | 1.7 | 80 | |
| LB 2012T470□ | 47 | | 11 | 3.7 | 60 | |
| LB 2012T680□ | 68 | | 10 | 6.0 | 50 | |
| LB 2012T101□ | 100 | | 8 | 7.0 | 45 | |

□ Please specify the Inductance tolerance code (K or M)

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LB C2012T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.19 | 620 | 7.96 |
| LB C2012T2R2M | 2.2 | | 70 | 0.33 | 430 | |
| LB C2012T4R7M | 4.7 | | 45 | 0.5 | 295 | |
| LB C2012T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 40 | 1.2 | 200 | 2.52 |
| LB C2012T220□ | 22 | | 16 | 3.7 | 130 | |
| LB C2012T470□ | 47 | | 11 | 5.8 | 90 | |

□ Please specify the Inductance tolerance code (K or M)

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LB R2012T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.07 | 400 | 7.96 |
| LB R2012T2R2M | 2.2 | | 80 | 0.13 | 260 | |
| LB R2012T4R7M | 4.7 | | 45 | 0.24 | 200 | |
| LB R2012T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 32 | 0.36 | 150 | 2.52 |
| LB R2012T220□ | 22 | | 16 | 1 | 100 | |
| LB R2012T470□ | 47 | | 11 | 1.7 | 75 | |
| LB R2012T101□ | 100 | | 8 | 4 | 50 | |

□ Please specify the Inductance tolerance code (K or M)

● 2016(0806) TYPE

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) ($\pm 30\%$) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LB 2016T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.09 | 490 | 7.96 |
| LB 2016T1R5M | 1.5 | | 80 | 0.11 | 380 | |
| LB 2016T2R2M | 2.2 | | 70 | 0.13 | 375 | |
| LB 2016T3R3M | 3.3 | | 55 | 0.20 | 285 | |
| LB 2016T4R7M | 4.7 | | 45 | 0.25 | 225 | |
| LB 2016T6R8M | 6.8 | | 38 | 0.35 | 200 | |
| LB 2016T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 32 | 0.50 | 155 | 2.52 |
| LB 2016T150□ | 15 | | 28 | 0.70 | 130 | |
| LB 2016T220□ | 22 | | 16 | 1.0 | 105 | |
| LB 2016T330□ | 33 | | 14 | 1.7 | 85 | |
| LB 2016T470□ | 47 | | 11 | 2.4 | 70 | |
| LB 2016T680□ | 68 | | 10 | 3.0 | 55 | |
| LB 2016T101□ | 100 | | 8 | 4.5 | 40 | |

□ Please specify the Inductance tolerance code (K or M)

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PART NUMBERS

| Ordering code | Inductance (μH) | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) (±30%) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------|----------------------|------------------------------------|--------------------------|-------------------------|---------------------------|
| LB C2016T1R0M | 1.0 | ±20% | 100 | 0.1 | 690 | 7.96 |
| LB C2016T1R5M | 1.5 | | 80 | 0.15 | 600 | |
| LB C2016T2R2M | 2.2 | | 70 | 0.2 | 520 | |
| LB C2016T3R3M | 3.3 | | 55 | 0.27 | 410 | |
| LB C2016T4R7M | 4.7 | | 45 | 0.37 | 355 | |
| LB C2016T6R8M | 6.8 | | 38 | 0.59 | 290 | |
| LB C2016T100□ | 10 | ±10% ±20% | 32 | 0.82 | 245 | 2.52 |
| LB C2016T150□ | 15 | | 28 | 1.2 | 200 | |
| LB C2016T220□ | 22 | | 16 | 1.8 | 165 | |
| LB C2016T330□ | 33 | | 14 | 2.8 | 135 | |
| LB C2016T470□ | 47 | | 11 | 4.3 | 110 | |
| LB C2016T680□ | 68 | | 10 | 7 | 95 | |
| LB C2016T101□ | 100 | | 8 | 8 | 75 | |
| | | | | | | |

□Please specify the Inductance tolerance code (K or M)

2518(1007) TYPE

| Ordering code | Inductance (μH) | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) (±30%) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------|----------------------|------------------------------------|--------------------------|-------------------------|---------------------------|
| LB 2518T1R0M | 1.0 | ±20% | 100 | 0.06 | 665 | 7.96 |
| LB 2518T1R5M | 1.5 | | 80 | 0.07 | 405 | |
| LB 2518T2R2M | 2.2 | | 68 | 0.09 | 340 | |
| LB 2518T3R3M | 3.3 | | 54 | 0.11 | 280 | |
| LB 2518T4R7M | 4.7 | | 46 | 0.13 | 240 | |
| LB 2518T4R7MR | 4.7 | | 46 | 0.10 | 235 | |
| LB 2518T6R8M | 6.8 | 38 | 0.15 | 195 | 2.52 | |
| LB 2518T100□ | 10 | ±10% ±20% | 30 | 0.25 | | 165 |
| LB 2518T150□ | 15 | | 23 | 0.32 | | 145 |
| LB 2518T220□ | 22 | | 19 | 0.50 | | 115 |
| LB 2518T330□ | 33 | | 15 | 0.70 | | 95 |
| LB 2518T470□ | 47 | | 12 | 0.95 | | 85 |
| LB 2518T680□ | 68 | | 9.5 | 1.50 | | 70 |
| LB 2518T101□ | 100 | | 9 | 2.10 | | 60 |
| LB 2518T151□ | 150 | | 7 | 3.20 | 45 | |
| LB 2518T221□ | 220 | | 5.5 | 4.50 | 40 | |
| LB 2518T331□ | 330 | | 4.5 | 7.00 | 30 | |
| LB 2518T471□ | 470 | | 3.5 | 10 | 25 | |
| LB 2518T681□ | 680 | | 3 | 17 | 20 | |
| LB 2518T102□ | 1000 | | 2.4 | 24 | 15 | |
| | | | | | | 0.796 |
| | | | | | 0.252 | |

□Please specify the Inductance tolerance code (K or M)

| Ordering code | Inductance (μH) | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) (±30%) | Rated current (mA) max. | Measuring frequency (MHz) |
|----------------|-----------------|----------------------|------------------------------------|--------------------------|-------------------------|---------------------------|
| LB C2518T1R0M | 1.0 | ±20% | 100 | 0.08 | 775 | 7.96 |
| LB C2518T1R0MR | 1.0 | | 100 | 0.065 | 890 | |
| LB C2518T1R5M | 1.5 | | 80 | 0.11 | 730 | |
| LB C2518T2R2M | 2.2 | | 68 | 0.13 | 630 | |
| LB C2518T3R3M | 3.3 | | 54 | 0.16 | 560 | |
| LB C2518T4R7M | 4.7 | | 41 | 0.2 | 510 | |
| LB C2518T6R8M | 6.8 | 38 | 0.3 | 420 | 2.52 | |
| LB C2518T100□ | 10 | ±10% ±20% | 30 | 0.36 | | 375 |
| LB C2518T150□ | 15 | | 23 | 0.65 | | 285 |
| LB C2518T220□ | 22 | | 19 | 0.77 | | 250 |
| LB C2518T330□ | 33 | | 15 | 1.5 | | 185 |
| LB C2518T470□ | 47 | | 12 | 1.9 | | 165 |
| LB C2518T680□ | 68 | | 9.5 | 2.8 | | 140 |
| LB C2518T101□ | 100 | | 9 | 3.7 | | 125 |
| LB C2518T151□ | 150 | | 7 | 6.1 | 95 | |
| LB C2518T221□ | 220 | | 5.5 | 8.4 | 80 | |
| LB C2518T331□ | 330 | | 4.5 | 12.3 | 65 | |
| LB C2518T471□ | 470 | | 3.5 | 22 | 50 | |
| LB C2518T681□ | 680 | | 3 | 28 | 45 | |
| | | | | | | 0.796 |

□Please specify the Inductance tolerance code (K or M)

| Ordering code | Inductance (μH) | Inductance Tolerance | Self-resonant frequency (MHz) min. | DC Resistance (Ω) (±30%) | Rated current (mA) max. | Measuring frequency (MHz) |
|---------------|-----------------|----------------------|------------------------------------|--------------------------|-------------------------|---------------------------|
| LB R2518T1R0M | 1.0 | ±20% | 100 | 0.045 | 960 | 7.96 |
| LB R2518T2R2M | 2.2 | | 68 | 0.07 | 480 | |
| LB R2518T4R7M | 4.7 | | 45 | 0.1 | 345 | |
| LB R2518T100□ | 10 | ±10% ±20% | 30 | 0.19 | 235 | 2.52 |
| LB R2518T220□ | 22 | | 19 | 0.44 | 175 | |
| LB R2518T470□ | 47 | | 11 | 0.84 | 120 | |
| LB R2518T101□ | 100 | | 9 | 1.89 | 80 | |
| | | | | | | 0.796 |

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PART NUMBERS

● 3218(1297) TYPE

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency [MHz] min. | DC Resistance [Ω] ($\pm 30\%$) | Rated current [mA] max. | Measuring frequency [MHz] | |
|---------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|-------|
| LB 3218T1R0M | 1.0 | $\pm 20\%$ | 100 | 0.06 | 1075 | 7.96 | |
| LB 3218T1R5M | 1.5 | | 80 | 0.07 | 860 | | |
| LB 3218T2R2M | 2.2 | | 68 | 0.09 | 775 | | |
| LB 3218T3R3M | 3.3 | | 54 | 0.11 | 560 | | |
| LB 3218T4R7M | 4.7 | | 41 | 0.13 | 550 | | |
| LB 3218T6R8M | 6.8 | | 40 | 0.17 | 380 | | |
| LB 3218T100□ | 10 | $\pm 10\%$ $\pm 20\%$ | 30 | 0.25 | 340 | 2.52 | |
| LB 3218T150□ | 15 | | 25 | 0.32 | 300 | | |
| LB 3218T220□ | 22 | | 19 | 0.49 | 255 | | |
| LB 3218T330□ | 33 | | 15 | 0.75 | 215 | | |
| LB 3218T470□ | 47 | | 12 | 0.92 | 205 | | |
| LB 3218T680□ | 68 | | 11 | 1.49 | 145 | | |
| LB 3218T101□ | 100 | | 8 | 2.40 | 140 | 0.796 | |
| LB 3218T151□ | 150 | | 7 | 3.20 | 105 | | |
| LB 3218T221□ | 220 | | 5 | 5.40 | 80 | | |
| LB 3218T331□ | 330 | | 4 | 7.00 | 65 | | |
| LB 3218T471□ | 470 | | 3.5 | 14.0 | 54 | | |
| LB 3218T681□ | 680 | | 3 | 17.0 | 45 | | |
| LB 3218T102□ | 1000 | | 2.4 | 27.0 | 39 | | 0.252 |

□ Please specify the Inductance tolerance code(K or M)

● 3225(1210) TYPE

| Ordering code | Inductance [μ H] | Inductance Tolerance | Self-resonant frequency [MHz] min. | DC Resistance [Ω] ($\pm 30\%$) | Rated current [mA] max. | Measuring frequency [MHz] |
|----------------|-----------------------|--------------------------|------------------------------------|---|-------------------------|---------------------------|
| LB C3225T1R0MR | 1.0 | $\pm 20\%$ | 250 | 0.055 | 1100 | 0.1 |
| LB C3225T1R5MR | 1.5 | | 220 | 0.060 | 1000 | |
| LB C3225T2R2MR | 2.2 | | 190 | 0.080 | 930 | |
| LB C3225T3R3MR | 3.3 | | 160 | 0.095 | 820 | |
| LB C3225T4R7MR | 4.7 | | 70 | 0.100 | 680 | |
| LB C3225T6R8MR | 6.8 | | 50 | 0.120 | 620 | |
| LB C3225T100□R | 10 | $\pm 10\%$ $\pm 20\%$ | 23 | 0.133 | 540 | |
| LB C3225T150□R | 15 | | 20 | 0.195 | 420 | |
| LB C3225T220□R | 22 | | 17 | 0.270 | 330 | |
| LB C3225T330□R | 33 | | 13 | 0.410 | 300 | |
| LB C3225T470□R | 47 | | 10 | 0.670 | 220 | |
| LB C3225T680□R | 68 | | 8 | 1.00 | 190 | |
| LB C3225T101□R | 100 | | 6 | 1.40 | 150 | |

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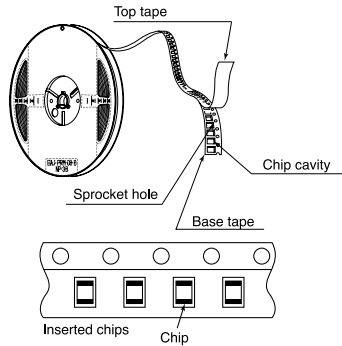
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① Minimum Quantity

| Type | Standard Quantity [pcs] | |
|--|-------------------------|---------------|
| | Papar Tape | Embossed Tape |
| LBC3225/CBC3225 | — | 1000 |
| LB3218 | — | 2000 |
| LBR2518/LBC2518/LB251/CB2518/CBC2518/LEM2520 | — | 2000 |
| LBM2016/LBC2016/LB2016/CB2016/CBC2016 | — | 2000 |
| LB2012/LBC2012/LBR202/CB2012/CBC2012 | — | 3000 |
| CBL2012 | 4000 | — |
| LB1608 | 4000 | — |
| LBMF1608/CBMF1608 | — | 3000 |

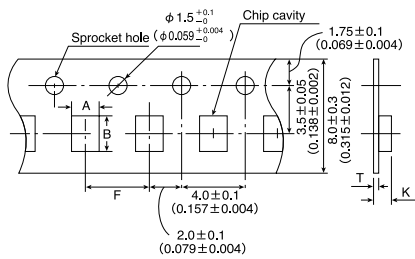
② Tape material

- Embossed tape



③ Taping Dimensions

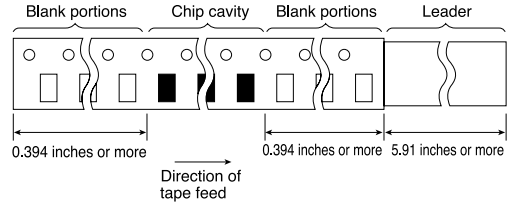
- Embossed Tape (0.315 inches wide)
- Card board carrier tape (0.315 inches wide)



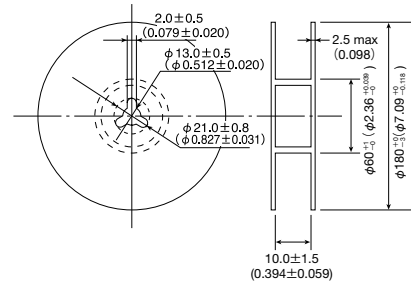
| Type | Chip cavity | | Insertion pitch F | Tape thickness | |
|---|---------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------------------------|
| | A | B | | T | K |
| LBM 2016 | 1.75 ± 0.1 (0.069±0.004) | 2.1 ± 0.1 (0.083±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 1.9max. (0.074) |
| LEM 2520 | 2.3 ± 0.1 (0.091±0.004) | 2.7 ± 0.1 (0.106±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 2.1 ± 0.1 (0.083±0.004) |
| LBC3225/ CBC3225 | 2.8 ± 0.1 (0.110±0.004) | 3.5 ± 0.1 (0.138±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 4.0max. (0.157) |
| LB3218 | 2.1 ± 0.1 (0.084±0.004) | 3.5 ± 0.1 (0.014±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 2.2max. (0.086) |
| LB2518 / CB2518 LBC2518 / CBC2518 LBR2518 | 2.15 ± 0.1 (0.085±0.004) | 2.7 ± 0.1 (0.107±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 2.2max. (0.086) |
| LB2016/ CB2016 LBC2016 / CBC2016 | 1.75 ± 0.1 (0.069±0.004) | 2.1 ± 0.1 (0.083±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.3 ± 0.05 (0.012±0.002) | 1.9max. (0.074) |
| LB2012 / CB2012 LBC2012 / CBC2012 LBR2012 | 1.45 ± 0.1 (0.058±0.004) | 2.25 ± 0.1 (0.09±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.25 ± 0.05 (0.010±0.002) | 1.45max. (0.057) |
| CBL2012 | 1.55 ± 0.1 (0.061±0.004) | 2.3 ± 0.1 (0.091±0.004) | 4.0 ± 0.1 (0.157±0.004) | 1.1max. (0.044) | 1.1max. (0.044) |
| LB1608 | 1.0 ± 0.1 (0.059±0.004) | 1.8 ± 0.1 (0.072±0.004) | 4.0 ± 0.1 (0.157±0.004) | 1.1max. (0.044) | 1.1max. (0.044) |
| LBMF1608 / CBMF1608 | 1.1 ± 0.1 (0.04±0.004) | 1.9 ± 0.1 (0.076±0.004) | 4.0 ± 0.1 (0.157±0.004) | 0.25 ± 0.05 (0.010±0.002) | 1.2max. (0.047) |

Unit : mm (inch)

④ Leader and Blank Portion

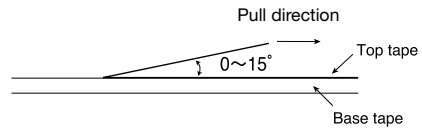


⑤ Reel Size



⑥ Top Tape Strength

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



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RELIABILITY DATA

| 1. Operating temperature Range | |
|--------------------------------|--|
| LB, LBC, LBR, LBMF Series | -40~+105°C (Including self-generated heat) |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | |
| LEM Series | -40~+85°C |

| 2. Storage | |
|--|-----------|
| LB, LBC, LBR, LBMF Series | -40~+85°C |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 Please refer the term of "7. storage conditions" in precautions. | |

| 3. Rated Current | |
|---|--------------------------------|
| LB, LBC, LBR, LBMF Series | Within the specified tolerance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 LEM Series The maximum DC value having inductance decrease within 10% and temperature increase within 20°C by the application of DC bias. | |

| 4. Inductance | |
|--|--------------------------------|
| LB, LBC, LBR, LBMF Series | Within the specified tolerance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 LEM Series Measuring equipment : LCR Meter (HP4285A+42851A or its equivalent) Measuring frequency : Specified frequency LB·LBC·LBR·CB·CBC·CBL·LBMF·CBMF·LBM Series Measuring equipment : LCR Meter (HP4285A or its equivalent) | |

| 5. Q | |
|--|--------------------------------|
| LB, LBC, LBR, LBMF Series | Within the specified tolerance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 LEM Series Measuring equipment : LCR Meter (HP4285A+42851A or its equivalent) Measuring frequency : Specified frequency LBM Series Measuring equipment : LCR Meter (HP4285A or its equivalent) | |

| 6. DC Resisitance | |
|--|--------------------------------|
| LB, LBC, LBR, LBMF Series | Within the specified tolerance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 Measuring equipment : DC Ohmmeter (HIOKI 3227 or its equivalent) | |

| 7. Self-Resonant Frequency | |
|--|--------------------------------|
| LB, LBC, LBR, LBMF Series | Within the specified tolerance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| 【Test Methods and Remarks】 Measuring equipment : Impedance analyzer (HP4291A or its equivalent) | |

| 8. Temperature Characteristic | |
|---|--------------------------------|
| LBM2016 LEM2520 | Inductance change: Within ±5% |
| LB1608 LB2012 LBR2012 CB2012 CBL2012 LB2016 CB2016 LB2518 LBR2518 CB2518 LBC3225 CBC3225 | Inductance change: Within ±20% |
| LBMF1608 CBMF1608 LBC2016 CBC2016 LBC2518 CBC2518 LB3218 | Inductance change: Within ±25% |
| LBC2012 CBC2012 | Inductance change: Within ±35% |

【Test Methods and Remarks】
 Change of maximum inductance deviation in step 1-5

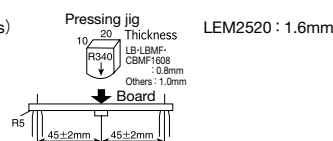
| Step | 1 | 2 | 3 | 4 | 5 |
|------------------|----|-----|----------------------------|-------------------------------------|----|
| Temperature (°C) | 20 | -40 | 20 (Reference temperature) | +85 (Maximum operating temperature) | 20 |

| Step | 1 | 2 | 3 | 4 | 5 |
|------------------|----|-----|----------------------------|-------------------------------------|----|
| Temperature (°C) | 20 | -25 | 20 (Reference temperature) | +85 (Maximum operating temperature) | 20 |

| 9. Resistance to Flexure of Substrate | |
|---------------------------------------|------------|
| LB, LBC, LBR, LBMF Series | No damage. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |

【Test Methods and Remarks】
 Warp : 2mm (LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF Series)
 3mm (LEM2520)

Test substrate: Board according to JIS C0051



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RELIABILITY DATA

| 10.Body Strength | |
|---|--|
| LB, LBC, LBR, LBMF Series | No damage. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| [Test Methods and Remarks] | |
| LB·LBC·LBR·CB·CBC·CBL·LBM·LEM2520 | Applied force : 10N Duration : 10sec. |
| LB1608·LBMF1608·CBMF1608 | Applied force : 5N Duration : 10sec. |
| 11.Adhesion of terminal electrode | |
| LB, LBC, LBR, LBMF Series | No abnormality. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| [Test Methods and Remarks] | |
| LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF·LEM2520 | Applied force : 10N to X and Y directions Duration : 5 sec. Test substrate : Printed board |
| LB1608·CBMF1608·LBMF1608 | Applied force : 5N to X and Y directions Duration : 5 sec. Test substrate : Printed board |
| 12.Resistance to vibration | |
| LB, LBC, LBR, LBMF Series | Inductance change:Within±10% No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | Inductance change:Within±5% No significant abnormality in appearance. |
| [Test Methods and Remarks] | |
| LEM·LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF : According to JIS C5102 clause 8.2. | |
| Vibration type : A | |
| Directions : 2 hrs each in X, Y and Z directions. Total : 6 hrs | |
| Frequency range : 10 to 55 to 10 Hz (1min.) | |
| Amplitude : 1.5mm | |
| Mounting method : Soldering onto printed board | |
| Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. | |
| LEM : Recovery | |
| At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs. | |
| 13.Drop test | |
| LB, LBC, LBR, LBMF Series | Inductance change:Within±5% No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | |
| LEM Series | |
| [Test Methods and Remarks] | |
| LEM : | |
| Acceleration : 980m/sec ² | |
| Duration : 6msec | |
| Number of times : 6 sides × 3 times | |
| Mounting method : Soldering onto printed board | |
| Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. | |
| LEM : Recovery | |
| At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs. | |
| 14.Solderability | |
| LB, LBC, LBR, LBMF Series | At least 90% of surface of terminal electrode is covered by new |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| [Test Methods and Remarks] | |
| LEM : | |
| Solder temperature : 230±5°C | |
| Duration : 5±0.5sec. | |
| Flux : Methanol solution with 25% of colophony | |
| LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF : | Solder temperature : 245±5°C |
| | Duration : 5±0.5sec |
| | Flux : Methanol solution with 25% of colophony |

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RELIABILITY DATA

| | |
|-----------------------------|---|
| 15. Resistance to soldering | |
| LB, LBC, LBR, LBMF Series | Inductance change: Within $\pm 10\%$ |
| CB, CBC, CBL, CBMF Series | |
| LEM Series | Inductance change: Within $\pm 5\%$ |
| LEM2520 | No significant abnormality in appearance. |

[Test Methods and Remarks]

LEM :

Reflow condition 3 times of reflow over at $220 \pm 5^\circ\text{C}$ for 40sec. MAX, With Peak temperature at $240 \pm 5^\circ\text{C}$ for 5 sec. MAX. (Refer to a Profile of chart below.)

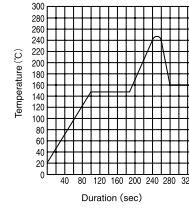
Flow condition

Solder temperature : $260 \pm 5^\circ\text{C}$

Duration : 10 ± 1 sec. Once

LB · LBC · LBR · CB · CBC · CBL · LBM · LBMF · CBMF :

3 times of reflow oven at 230°C MIN for 40sec. with peak temperature at 260°C for 5sec.



| | |
|---------------------------|--|
| 16. Resistance to solvent | |
| LB, LBC, LBR, LBMF Series | No significant abnormality in appearance |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |

[Test Methods and Remarks]

Solvent temperature : Room temperature

Type of solvent : Isopropyl alcohol

Cleaning conditions : 90s. Immersion and cleaning.

| | |
|---------------------------|---|
| 17. Thermal shock | |
| LB, LBC, LBR, LBMF Series | Inductance change: Within $\pm 10\%$ No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | Inductance change : Within $\pm 10\%$ Q → R12~4R7 : 30 min. 5R6~330 : 25 min. 390~820 : 20 min. 101 : 15 min. |

LEM Series

[Test Methods and Remarks]

LEM : Conditions for 1cycle

| Step | Temperature (°C) | Duration (min) |
|------|------------------|----------------|
| 1 | -40 | 30 |
| 2 | +85 | 30 |

Number of cycle : 100 cycle

Recovery : At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.

LB · LBC · LBR · CB · CBC · CBL · LBM · LBMF · CBMF : $-40 \sim +85^\circ\text{C}$, maintain times 30min. ,100 cycle

Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

| | |
|---------------------------|---|
| 18. Damp heat life test | |
| LB, LBC, LBR, LBMF Series | Inductance change: Within $\pm 10\%$ No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | Inductance change : Within $\pm 10\%$ Q → R12~4R7 : 30 min. 5R6~330 : 25 min. 390~820 : 20 min. 101 : 15 min. |

LEM Series

[Test Methods and Remarks]

Temperature : $60 \pm 2^\circ\text{C}$

Humidity : 90~95%RH

Duration : 1000 hrs

Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

LEM : Recovery

At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.

| | |
|---------------------------------------|---|
| 19. Loading under damp heat life test | |
| LB, LBC, LBR, LBMF Series | Inductance change: Within $\pm 10\%$ No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | Inductance change : Within $\pm 10\%$ Q → R12~4R7 : 30 min. 5R6~330 : 25 min. 390~820 : 20 min. 101 : 15 min. |

LEM Series

[Test Methods and Remarks]

Temperature : $60 \pm 2^\circ\text{C}$

Humidity : 90~95%RH

Duration : 1000 hrs

Applied current : Rated current

Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

LEM : Recovery

At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.

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RELIABILITY DATA

| 20.High temperature life test | |
|--|--|
| LB, LBC, LBR, LBMF Series | Inductance change:Within±10% No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | Inductance change :Within±10% Q→ R12~4R7 : 30 min. 5R6~330 : 25 min. 390~820 : 20 min. 101 : 15 min. |
| LEM Series | |
| <p>【Test Methods and Remarks】 Temperature : 85±2°C Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. LEM : Recovery At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.</p> | |
| 21.Loading at high temperature life test | |
| LB, LBC, LBR, LBMF Series | Inductance change:Within±10% No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |
| | |
| <p>【Test Methods and Remarks】 Temperature : 85±2°C Duration : 1000 hrs Applied current : Rated current Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.</p> | |
| 22.Low temperature life test | |
| LB, LBC, LBR, LBMF Series | Inductance change:Within±10% No significant abnormality in appearance. |
| CB, CBC, CBL, CBMF Series | |
| LBM Series | Inductance change :Within±10% Q→ R12~4R7 : 30 min. 5R6~330 : 25 min. 390~820 : 20 min. 101 : 15 min. |
| LEM Series | |
| <p>【Test Methods and Remarks】 Temperature : -40±2°C Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. LEM : Recovery At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.</p> | |
| 23.Standard condition | |
| LB, LBC, LBR, LBMF Series | Standard test conditions Unless specified, Ambient temperature is 20±15°C and the Relative humidity is 65±20%. If there is any doubt about the test results, further measurement shall be had within the following limits: Ambient Temperature: 20±2°C Relative humidity: 65±5% Inductance value is based on our standard measurement systems. |
| CB, CBC, CBL, CBMF Series | |
| LBM, LEM Series | |

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PRECAUTIONS

LEM Type, LB Type, CB Type

1. Circuit Design

| | |
|-------------|--|
| Precautions | <p>◆Operating environment</p> <p>1. The products described in this specification are intended for use in general electronic equipment,(office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance.</p> |
|-------------|--|

2. PCB Design

| | |
|--------------------------|--|
| Precautions | <p>◆Land pattern design</p> <p>1. Please contact any of our offices for a land pattern, and refer to a recommended land pattern of a right figure or specifications.</p> |
| Technical considerations | <p>PRECAUTIONS [Recommended Land Patterns]</p> <ul style="list-style-type: none"> · Surface Mounting · Mounting and soldering conditions should be checked beforehand. · Applicable soldering process to those products is reflow soldering only. |

3. Considerations for automatic placement

| | |
|--------------------------|--|
| Precautions | <p>◆Adjustment of mounting machine</p> <p>1. Excessive impact load should not be imposed on the products when mounting onto the PC boards.</p> <p>2. Mounting and soldering conditions should be checked beforehand.</p> |
| Technical considerations | <p>1. When installing products, care should be taken not to apply distortion stress as it may deform the products.</p> |

4. Soldering

| | |
|--------------------------|---|
| Precautions | <p>◆Wave soldering (LEM Type only)</p> <p>1. For wave soldering, please apply conditions meeting the range of the specified conditions in our catalog or the relevant specifications.</p> <p>◆Reflow soldering (LB and CB Types)</p> <p>1. For reflow soldering with either leaded or lead-free solder, the profile specified in "point for controlling" is recommended.</p> <p>◆Reflow soldering (LEM)</p> <p>1. For reflow soldering, please apply conditions meeting the range of the specified conditions in our catalog or the relevant specifications.</p> <p>◆Recommended conditions for using a soldering iron</p> <p>1. Put the soldering iron on the land-pattern. Soldering iron's temperature - Below 350°C Duration-3 seconds or less. The soldering iron should not come in contact with inductor directly.</p> |
| Technical considerations | <p>◆Wave soldering (LEM Type only)</p> <p>1. Components can be damaged by excessive heat where soldering conditions exceed the specified range.</p> <p>◆Reflow soldering (LB and CB Types)</p> <p>1. Reflow profile</p> <p>◆Recommended conditions for using a soldering iron</p> <p>1. Components can be damaged by excessive heat where soldering conditions exceed the specified range.</p> |

5. Cleaning

| | |
|--------------------------|---|
| Precautions | <p>◆Cleaning conditions</p> <p>Washing by supersonic waves shall be avoided.</p> |
| Technical considerations | <p>◆Cleaning conditions</p> <p>If washed by supersonic waves, the products might be broken.</p> |

6. Handling

| | |
|--------------------------|--|
| Precautions | <p>◆Handling</p> <p>1. There is a case that a characteristic varies with magnetic influence.</p> <p>◆Breakaway PC boards (splitting along perforations)</p> <p>1. Planning pattern configurations and the position of products should be carefully performed to minimize stress.</p> <p>◆Mechanical considerations</p> <p>1. There is a case to be damaged by a mechanical shock.</p> |
| Technical considerations | <p>◆Handling</p> <p>1. Keep the inductors away from all magnets and magnetic objects.</p> <p>◆Breakaway PC boards (splitting along perforations)</p> <p>1. When splitting the PC board after mounting inductors, care should be taken not to give any stresses of deflection or twisting to the board.</p> <p>2. Board separation should not be done manually, but by using the appropriate devices.</p> <p>◆Mechanical considerations</p> <p>1. Please do not give the inductors any excessive mechanical shocks.</p> |

7. Storage conditions

| | |
|--------------------------|---|
| Precautions | <p>◆Storage</p> <p>1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/package materials may take place.</p> |
| Technical considerations | <p>◆Storage</p> <p>1. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled.</p> <ul style="list-style-type: none"> · Recommended conditions · Ambient temperature : 0~40°C / Humidity : Below 70% RH <p>The ambient temperature must be kept below 30°C even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, LE type inductors should be used within one year from the time of delivery.</p> <p>LB type : Should be used within 6 months from the time of delivery.</p> <p>LE type : In case of storage over 6 months, solderability shall be checked before actual usage.</p> |

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