

Notice for TAIYO YUDEN Products

Please read this notice before using the TAIYO YUDEN products.



REMINDERS

Product Information in this Catalog

Product information in this catalog is as of March 2023. All of the contents specified herein and production status of the products listed in this catalog are subject to change without notice due to technical improvement of our products, etc. Therefore, please check for the latest information carefully before practical application or use of our products.

Please note that TAIYO YUDEN shall not be in any way responsible for any damages and defects in products or equipment incorporating our products, which are caused under the conditions other than those specified in this catalog or individual product specification sheets.

Approval of Product Specifications

Please contact TAIYO YUDEN for further details of product specifications as the individual product specification sheets are available. When using our products, please be sure to approve our product specifications or make a written agreement on the product specification with TAIYO YUDEN in advance.

Pre-Evaluation in the Actual Equipment and Conditions

Please conduct validation and verification of our products in actual conditions of mounting and operating environment before using our products.

Limited Application

1. Equipment Intended for Use

The products listed in this catalog are intended for general-purpose and standard use in general electronic equipment for consumer (e.g., AV equipment, OA equipment, home electric appliances, office equipment, information and communication equipment including, without limitation, mobile phone, and PC) and other equipment specified in this catalog or the individual product specification sheets, or the equipment approved separately by TAIYO YUDEN.

TAIYO YUDEN has the product series intended for use in the following equipment. Therefore, when using our products for these equipment, please check available applications specified in this catalog or the individual product specification sheets and use the corresponding products.

| Application | Product Series | | Quality Grade ^{*3} |
|-------------|--|---|-----------------------------|
| | Equipment ^{*1} | Category (Part Number Code ^{*2}) | |
| Automotive | Automotive Electronic Equipment (POWERTRAIN, SAFETY) | A | 1 |
| | Automotive Electronic Equipment (BODY & CHASSIS, INFOTAINMENT) | C | 2 |
| Industrial | Telecommunications Infrastructure and Industrial Equipment | B | 2 |
| Medical | Medical Devices classified as GHTF Class C (Japan Class III) | M | 2 |
| | Medical Devices classified as GHTF Classes A or B (Japan Classes I or II) | L | 3 |
| Consumer | General Electronic Equipment | S | 3 |
| | Only for Mobile Devices ^{*4} | E | 4 |

^{*Notes:} 1. Based on the general specifications required for electronic components for such equipment, which are recognized by TAIYO YUDEN, the use of each product series for the equipment is recommended. Please be sure to contact TAIYO YUDEN before using our products for equipment other than those covered by the product series.

2. On each of our part number, the 2nd code from the left is a code indicating the "Category" as shown in the above table. For details, please check the explanatory materials regarding the part numbering system of each of our products.

3. Each product series is assigned a "Quality Grade" from 1 to 4 in order of higher quality. Please do not incorporate a product into any equipment with a higher Quality Grade than the Quality Grade of such product without the prior written consent of TAIYO YUDEN.

4. The applications covered by this product series are limited to mobile devices (smartphone, tablet PC, smartwatch, handheld game console, etc.) among general electronic equipment for consumer. The design, specifications and operating environment, etc. differ from those of the product series for "General Electronic Equipment" (Category: S), so please check the individual product specification sheets for details. The product series for "General Electronic Equipment" (Category: S) can also be used for mobile devices.

2. Equipment Requiring Inquiry

Please be sure to contact TAIYO YUDEN for further information before using the products listed in this catalog for the following equipment (excluding intended equipment as specified in this catalog or the individual product specification sheets) which may cause loss of human life, bodily injury, serious property damage and/or serious public impact due to a failure or defect of the products and/or malfunction attributed thereto.

- (1) Transportation equipment (automotive powertrain control system, train control system, and ship control system, etc.)
- (2) Traffic signal equipment
- (3) Disaster prevention equipment, crime prevention equipment
- (4) Medical devices classified as GHTF Class C (Japan Class III)
- (5) Highly public information network equipment, data-processing equipment (telephone exchange, and base station, etc.)
- (6) Any other equipment requiring high levels of quality and/or reliability equal to the equipment listed above

3. Equipment Prohibited for Use

Please do not incorporate our products into the following equipment requiring extremely high levels of safety and/or reliability.

- (1) Aerospace equipment (artificial satellite, rocket, etc.)
- (2) Aviation equipment *1
- (3) Medical devices classified as GHTF Class D (Japan Class IV), implantable medical devices *2
- (4) Power generation control equipment (nuclear power, hydroelectric power, thermal power plant control system, etc.)
- (5) Undersea equipment (submarine repeating equipment, etc.)
- (6) Military equipment
- (7) Any other equipment requiring extremely high levels of safety and/or reliability equal to the equipment listed above

*Notes: 1. There is a possibility that our products can be used only for aviation equipment that does not directly affect the safe operation of aircraft (e.g., in-flight entertainment, cabin light, electric seat, cooking equipment) if such use meets requirements specified separately by TAIYO YUDEN. Please be sure to contact TAIYO YUDEN for further information before using our products for such aviation equipment.

2. Implantable medical devices contain not only internal unit which is implanted in a body, but also external unit which is connected to the internal unit.

4. Limitation of Liability

Please note that unless you obtain prior written consent of TAIYO YUDEN, TAIYO YUDEN shall not be in any way responsible for any damages incurred by you or third parties arising from use of the products listed in this catalog for any equipment that is not intended for use by TAIYO YUDEN, or any equipment requiring inquiry to TAIYO YUDEN or prohibited for use by TAIYO YUDEN as described above.

Safety Design

When using our products for high safety and/or reliability-required equipment or circuits, please fully perform safety and/or reliability evaluation. In addition, please install (i) systems equipped with a protection circuit and a protection device and/or (ii) systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault for a failsafe design to ensure safety.

Intellectual Property Rights

Information contained in this catalog is intended to convey examples of typical performances and/or applications of our products and is not intended to make any warranty with respect to the intellectual property rights or any other related rights of TAIYO YUDEN or any third parties nor grant any license under such rights.

Limited Warranty

Please note that the scope of warranty for our products is limited to the delivered our products themselves conforming to the product specifications specified in the individual product specification sheets, and TAIYO YUDEN shall not be in any way responsible for any damages resulting from a failure or defect in our products. Notwithstanding the foregoing, if there is a written agreement (e.g., supply and purchase agreement, quality assurance agreement) signed by TAIYO YUDEN and your company, TAIYO YUDEN will warrant our products in accordance with such agreement, provided, however, that our products shall be used for general-purpose and standard use in the equipment specified in this catalog or the individual product specification sheets.

TAIYO YUDEN's Official Sales Channel

The contents of this catalog are applicable to our products which are purchased from our sales offices or authorized distributors (hereinafter "TAIYO YUDEN's official sales channel"). Please note that the contents of this catalog are not applicable to our products purchased from any seller other than TAIYO YUDEN's official sales channel.

Caution for Export

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

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

Wire-wound Ferrite Power Inductors LSQN/LSQPA series

for General Electronic Equipment for Consumer

Code in front of Series have been extracted from Part number, which describes the segment of products, such as kinds and characteristics.

REFLOW

PART NUMBER

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| L | S | Q | N | A | 2 | 0 | 1 | 2 | 1 | 2 | T | 1 | 0 | 0 | M | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | | | | | | | | | |

①Series

| Code (1)(2)(3)(4) | |
|----------------------|---|
| LSQN | Wire-wound Ferrite Power Inductor for General Electronic Equipment for Consumer |
| LSQP | Wire-wound Ferrite Power Inductor for General Electronic Equipment for Consumer |

(1) Product Group

| Code | |
|------|-----------|
| L | Inductors |

(2) Category

| Code | Recommended equipment | Quality Grade |
|------|--|---------------|
| S | General Electronic Equipment for Consumer | 3 |

②Features

| Code | Feature |
|------|---|
| A | 5-surface electrode (Ag-resin × Sn-plate) |
| B | L-shape electrode (Ag-resin × Sn-plate) |

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 |
| 2518 | 2518 (1007) | 2.5 × 1.8 |
| 3225 | 3225 (1210) | 3.2 × 2.5 |

④Dimensions (T)

| Code | Dimensions (T) [mm] |
|------|---------------------|
| 08 | 0.8 |
| 09 | 0.9 |
| 12 | 1.25 |
| 16 | 1.6 |
| 18 | 1.8 |
| 25 | 2.5 |

(3) Type

| Code | |
|------|--------------------------------------|
| Q | Ferrite Wire-wound (Horizontal type) |

(4) Features, Characteristics

| Code | |
|------|--------------------------|
| N | Standard Power choke |
| P | High current power choke |

⑤Packaging

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

⑥Nominal inductance

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

※R=Decimal point

⑦Inductance tolerance

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

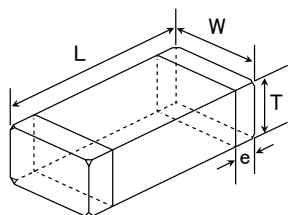
⑧Special code

| Code | Special code |
|------|--------------|
| R | Low Rdc type |

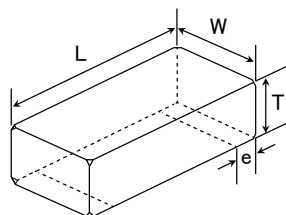
⑨Internal code

STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY

5-surface electrode



L-shape electrode

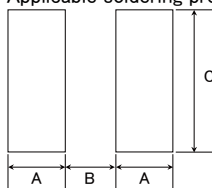


Recommended Land Patterns

Surface Mounting

•Mounting and soldering conditions should be checked beforehand.

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



| Type | A | B | C |
|-------|------|-----|------|
| B1608 | 0.55 | 0.7 | 1.0 |
| A2012 | 0.60 | 1.0 | 1.45 |
| A2016 | 0.60 | 1.0 | 1.8 |
| A2518 | 0.60 | 1.5 | 2.0 |
| A3225 | 0.85 | 1.7 | 2.7 |

Unit: mm

| Type | L | W | T | e | Standard quantity[pcs] | |
|---------|--------------------------|---------------------------|---------------------------|----------------------------|------------------------|---------------|
| | | | | | Paper tape | Embossed tape |
| B160808 | 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 |
| A201209 | 2.0±0.2 (0.079±0.008) | 1.25±0.2 (0.049±0.008) | 0.9±0.1 (0.035±0.004) | 0.5±0.2 (0.020±0.008) | 4000 | — |
| A201212 | 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 |
| A201616 | 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 |
| A251818 | 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 |
| A322525 | 3.2±0.2 (0.126±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)

PART NUMBER

1608 (0603) type

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|----------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQNB160808T1R0M | CBMF1608T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.09 | 290 | 770 | 7.96 |
| LSQNB160808T2R2M | CBMF1608T2R2M | RoHS | 2.2 | $\pm 20\%$ | 80 | 0.17 | 190 | 560 | 7.96 |
| LSQNB160808T3R3M | CBMF1608T3R3M | RoHS | 3.3 | $\pm 20\%$ | 60 | 0.22 | 170 | 500 | 7.96 |
| LSQNB160808T4R7M | CBMF1608T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.24 | 145 | 470 | 7.96 |
| LSQNB160808T100K | CBMF1608T100K | RoHS | 10 | $\pm 10\%$ | 32 | 0.36 | 115 | 380 | 2.52 |
| LSQNB160808T100M | CBMF1608T100M | RoHS | 10 | $\pm 20\%$ | 32 | 0.36 | 115 | 380 | 2.52 |
| LSQNB160808T220K | CBMF1608T220K | RoHS | 22 | $\pm 10\%$ | 16 | 1.0 | 70 | 230 | 2.52 |
| LSQNB160808T220M | CBMF1608T220M | RoHS | 22 | $\pm 20\%$ | 16 | 1.0 | 70 | 230 | 2.52 |
| LSQNB160808T470K | CBMF1608T470K | RoHS | 47 | $\pm 10\%$ | 11 | 2.5 | 50 | 140 | 2.52 |
| LSQNB160808T470M | CBMF1608T470M | RoHS | 47 | $\pm 20\%$ | 11 | 2.5 | 50 | 140 | 2.52 |

2012 (0805) type

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|-------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|----------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQNA201212T1R0M | CB 2012T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.15 | 500 | 900 | 7.96 |
| LSQNA201212T2R2M | CB 2012T2R2M | RoHS | 2.2 | $\pm 20\%$ | 80 | 0.23 | 410 | 770 | 7.96 |
| LSQNA201212T3R3M | CB 2012T3R3M | RoHS | 3.3 | $\pm 20\%$ | 55 | 0.30 | 330 | 650 | 7.96 |
| LSQNA201212T4R7M | CB 2012T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.40 | 300 | 580 | 7.96 |
| LSQNA201212T6R8M | CB 2012T6R8M | RoHS | 6.8 | $\pm 20\%$ | 38 | 0.47 | 250 | 540 | 7.96 |
| LSQNA201212T100K | CB 2012T100K | RoHS | 10 | $\pm 10\%$ | 32 | 0.70 | 190 | 440 | 2.52 |
| LSQNA201212T100M | CB 2012T100M | RoHS | 10 | $\pm 20\%$ | 32 | 0.70 | 190 | 440 | 2.52 |
| LSQNA201212T100KR | CB 2012T100KR | RoHS | 10 | $\pm 10\%$ | 32 | 0.50 | 200 | 520 | 2.52 |
| LSQNA201212T100MR | CB 2012T100MR | RoHS | 10 | $\pm 20\%$ | 32 | 0.50 | 200 | 520 | 2.52 |
| LSQNA201212T150K | CB 2012T150K | RoHS | 15 | $\pm 10\%$ | 28 | 1.3 | 170 | 320 | 2.52 |
| LSQNA201212T150M | CB 2012T150M | RoHS | 15 | $\pm 20\%$ | 28 | 1.3 | 170 | 320 | 2.52 |
| LSQNA201212T220K | CB 2012T220K | RoHS | 22 | $\pm 10\%$ | 16 | 1.7 | 135 | 280 | 2.52 |
| LSQNA201212T220M | CB 2012T220M | RoHS | 22 | $\pm 20\%$ | 16 | 1.7 | 135 | 280 | 2.52 |
| LSQNA201212T470K | CB 2012T470K | RoHS | 47 | $\pm 10\%$ | 11 | 3.7 | 90 | 190 | 2.52 |
| LSQNA201212T470M | CB 2012T470M | RoHS | 47 | $\pm 20\%$ | 11 | 3.7 | 90 | 190 | 2.52 |
| LSQNA201212T680K | CB 2012T680K | RoHS | 68 | $\pm 10\%$ | 10 | 6.0 | 70 | 140 | 2.52 |
| LSQNA201212T680M | CB 2012T680M | RoHS | 68 | $\pm 20\%$ | 10 | 6.0 | 70 | 140 | 2.52 |
| LSQNA201212T101K | CB 2012T101K | RoHS | 100 | $\pm 10\%$ | 8 | 7.0 | 60 | 130 | 0.796 |
| LSQNA201212T101M | CB 2012T101M | RoHS | 100 | $\pm 20\%$ | 8 | 7.0 | 60 | 130 | 0.796 |

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQPA201212T1R0M | CB C2012T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.19 | 700 | 840 | 7.96 |
| LSQPA201212T2R2M | CB C2012T2R2M | RoHS | 2.2 | $\pm 20\%$ | 70 | 0.33 | 530 | 640 | 7.96 |
| LSQPA201212T4R7M | CB C2012T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.50 | 360 | 520 | 7.96 |
| LSQPA201212T100K | CB C2012T100K | RoHS | 10 | $\pm 10\%$ | 40 | 1.2 | 240 | 340 | 2.52 |
| LSQPA201212T100M | CB C2012T100M | RoHS | 10 | $\pm 20\%$ | 40 | 1.2 | 240 | 340 | 2.52 |
| LSQPA201212T220K | CB C2012T220K | RoHS | 22 | $\pm 10\%$ | 16 | 3.7 | 170 | 190 | 2.52 |
| LSQPA201212T220M | CB C2012T220M | RoHS | 22 | $\pm 20\%$ | 16 | 3.7 | 170 | 190 | 2.52 |
| LSQPA201212T470K | CB C2012T470K | RoHS | 47 | $\pm 10\%$ | 11 | 5.8 | 120 | 150 | 2.52 |
| LSQPA201212T470M | CB C2012T470M | RoHS | 47 | $\pm 20\%$ | 11 | 5.8 | 120 | 150 | 2.52 |

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQNA201209T1R0M | CB L2012T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.15 | 620 | 950 | 0.1 |
| LSQNA201209T2R2M | CB L2012T2R2M | RoHS | 2.2 | $\pm 20\%$ | 80 | 0.39 | 440 | 590 | 0.1 |
| LSQNA201209T4R7M | CB L2012T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.66 | 275 | 490 | 0.1 |
| LSQNA201209T100M | CB L2012T100M | RoHS | 10 | $\pm 20\%$ | 32 | 1.0 | 205 | 370 | 0.1 |
| LSQNA201209T220M | CB L2012T220M | RoHS | 22 | $\pm 20\%$ | 23 | 2.1 | 150 | 250 | 0.1 |
| LSQNA201209T470M | CB L2012T470M | RoHS | 47 | $\pm 20\%$ | 11 | 4.2 | 100 | 140 | 0.1 |

※) 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 by 40°C. (at 20°C)

※) The rated current value is following either Idc1 or Idc2, which is the lower one.

PART NUMBER

2016 (0806) type

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQNA201616T1R0M | CB 2016T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.09 | 600 | 1,100 | 7.96 |
| LSQNA201616T1R5M | CB 2016T1R5M | RoHS | 1.5 | $\pm 20\%$ | 80 | 0.11 | 550 | 1,000 | 7.96 |
| LSQNA201616T2R2M | CB 2016T2R2M | RoHS | 2.2 | $\pm 20\%$ | 70 | 0.13 | 510 | 1,000 | 7.96 |
| LSQNA201616T3R3M | CB 2016T3R3M | RoHS | 3.3 | $\pm 20\%$ | 55 | 0.20 | 400 | 800 | 7.96 |
| LSQNA201616T4R7M | CB 2016T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.25 | 340 | 740 | 7.96 |
| LSQNA201616T6R8M | CB 2016T6R8M | RoHS | 6.8 | $\pm 20\%$ | 38 | 0.35 | 300 | 600 | 7.96 |
| LSQNA201616T100K | CB 2016T100K | RoHS | 10 | $\pm 10\%$ | 32 | 0.50 | 250 | 520 | 2.52 |
| LSQNA201616T100M | CB 2016T100M | RoHS | 10 | $\pm 20\%$ | 32 | 0.50 | 250 | 520 | 2.52 |
| LSQNA201616T150K | CB 2016T150K | RoHS | 15 | $\pm 10\%$ | 28 | 0.70 | 210 | 440 | 2.52 |
| LSQNA201616T150M | CB 2016T150M | RoHS | 15 | $\pm 20\%$ | 28 | 0.70 | 210 | 440 | 2.52 |
| LSQNA201616T220K | CB 2016T220K | RoHS | 22 | $\pm 10\%$ | 16 | 1.0 | 165 | 370 | 2.52 |
| LSQNA201616T220M | CB 2016T220M | RoHS | 22 | $\pm 20\%$ | 16 | 1.0 | 165 | 370 | 2.52 |
| LSQNA201616T330K | CB 2016T330K | RoHS | 33 | $\pm 10\%$ | 14 | 1.7 | 130 | 270 | 2.52 |
| LSQNA201616T330M | CB 2016T330M | RoHS | 33 | $\pm 20\%$ | 14 | 1.7 | 130 | 270 | 2.52 |
| LSQNA201616T470K | CB 2016T470K | RoHS | 47 | $\pm 10\%$ | 11 | 2.4 | 110 | 240 | 2.52 |
| LSQNA201616T470M | CB 2016T470M | RoHS | 47 | $\pm 20\%$ | 11 | 2.4 | 110 | 240 | 2.52 |
| LSQNA201616T680K | CB 2016T680K | RoHS | 68 | $\pm 10\%$ | 10 | 3.0 | 90 | 210 | 2.52 |
| LSQNA201616T680M | CB 2016T680M | RoHS | 68 | $\pm 20\%$ | 10 | 3.0 | 90 | 210 | 2.52 |
| LSQNA201616T101K | CB 2016T101K | RoHS | 100 | $\pm 10\%$ | 8 | 4.5 | 70 | 170 | 0.796 |
| LSQNA201616T101M | CB 2016T101M | RoHS | 100 | $\pm 20\%$ | 8 | 4.5 | 70 | 170 | 0.796 |

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQPA201616T1R0M | CB C2016T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.10 | 1,100 | 1,100 | 7.96 |
| LSQPA201616T1R5M | CB C2016T1R5M | RoHS | 1.5 | $\pm 20\%$ | 80 | 0.15 | 1,000 | 1,000 | 7.96 |
| LSQPA201616T2R2M | CB C2016T2R2M | RoHS | 2.2 | $\pm 20\%$ | 70 | 0.20 | 750 | 720 | 7.96 |
| LSQPA201616T3R3M | CB C2016T3R3M | RoHS | 3.3 | $\pm 20\%$ | 55 | 0.27 | 600 | 610 | 7.96 |
| LSQPA201616T4R7M | CB C2016T4R7M | RoHS | 4.7 | $\pm 20\%$ | 45 | 0.37 | 550 | 530 | 7.96 |
| LSQPA201616T6R8M | CB C2016T6R8M | RoHS | 6.8 | $\pm 20\%$ | 38 | 0.59 | 450 | 450 | 7.96 |
| LSQPA201616T100K | CB C2016T100K | RoHS | 10 | $\pm 10\%$ | 32 | 0.82 | 380 | 350 | 2.52 |
| LSQPA201616T100M | CB C2016T100M | RoHS | 10 | $\pm 20\%$ | 32 | 0.82 | 380 | 350 | 2.52 |
| LSQPA201616T150K | CB C2016T150K | RoHS | 15 | $\pm 10\%$ | 28 | 1.2 | 300 | 300 | 2.52 |
| LSQPA201616T150M | CB C2016T150M | RoHS | 15 | $\pm 20\%$ | 28 | 1.2 | 300 | 300 | 2.52 |
| LSQPA201616T220K | CB C2016T220K | RoHS | 22 | $\pm 10\%$ | 16 | 1.8 | 250 | 240 | 2.52 |
| LSQPA201616T220M | CB C2016T220M | RoHS | 22 | $\pm 20\%$ | 16 | 1.8 | 250 | 240 | 2.52 |
| LSQPA201616T330K | CB C2016T330K | RoHS | 33 | $\pm 10\%$ | 14 | 2.8 | 220 | 220 | 2.52 |
| LSQPA201616T330M | CB C2016T330M | RoHS | 33 | $\pm 20\%$ | 14 | 2.8 | 220 | 220 | 2.52 |
| LSQPA201616T470K | CB C2016T470K | RoHS | 47 | $\pm 10\%$ | 11 | 4.3 | 150 | 150 | 2.52 |
| LSQPA201616T470M | CB C2016T470M | RoHS | 47 | $\pm 20\%$ | 11 | 4.3 | 150 | 150 | 2.52 |
| LSQPA201616T680K | CB C2016T680K | RoHS | 68 | $\pm 10\%$ | 10 | 7.0 | 130 | 130 | 2.52 |
| LSQPA201616T680M | CB C2016T680M | RoHS | 68 | $\pm 20\%$ | 10 | 7.0 | 130 | 130 | 2.52 |
| LSQPA201616T101K | CB C2016T101K | RoHS | 100 | $\pm 10\%$ | 8 | 8.0 | 110 | 110 | 0.796 |
| LSQPA201616T101M | CB C2016T101M | RoHS | 100 | $\pm 20\%$ | 8 | 8.0 | 110 | 110 | 0.796 |

※) 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 by 40°C. (at 20°C)

※) The rated current value is following either Idc1 or Idc2, which is the lower one.

PART NUMBER

● 2518(1007) type

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|-------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQNA251818T1R0M | CB 2518T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.06 | 1,200 | 1,500 | 7.96 |
| LSQNA251818T1R5M | CB 2518T1R5M | RoHS | 1.5 | $\pm 20\%$ | 80 | 0.07 | 650 | 1,400 | 7.96 |
| LSQNA251818T2R2M | CB 2518T2R2M | RoHS | 2.2 | $\pm 20\%$ | 68 | 0.09 | 510 | 1,300 | 7.96 |
| LSQNA251818T3R3M | CB 2518T3R3M | RoHS | 3.3 | $\pm 20\%$ | 54 | 0.11 | 440 | 1,200 | 7.96 |
| LSQNA251818T4R7MR | CB 2518T4R7MR | RoHS | 4.7 | $\pm 20\%$ | 46 | 0.10 | 310 | 1,200 | 7.96 |
| LSQNA251818T4R7M | CB 2518T4R7M | RoHS | 4.7 | $\pm 20\%$ | 46 | 0.13 | 340 | 1,100 | 7.96 |
| LSQNA251818T6R8M | CB 2518T6R8M | RoHS | 6.8 | $\pm 20\%$ | 38 | 0.15 | 270 | 930 | 7.96 |
| LSQNA251818T100K | CB 2518T100K | RoHS | 10 | $\pm 10\%$ | 30 | 0.25 | 250 | 820 | 2.52 |
| LSQNA251818T100M | CB 2518T100M | RoHS | 10 | $\pm 20\%$ | 30 | 0.25 | 250 | 820 | 2.52 |
| LSQNA251818T150K | CB 2518T150K | RoHS | 15 | $\pm 10\%$ | 23 | 0.32 | 180 | 650 | 2.52 |
| LSQNA251818T150M | CB 2518T150M | RoHS | 15 | $\pm 20\%$ | 23 | 0.32 | 180 | 650 | 2.52 |
| LSQNA251818T220K | CB 2518T220K | RoHS | 22 | $\pm 10\%$ | 19 | 0.50 | 165 | 580 | 2.52 |
| LSQNA251818T220M | CB 2518T220M | RoHS | 22 | $\pm 20\%$ | 19 | 0.50 | 165 | 580 | 2.52 |
| LSQNA251818T330K | CB 2518T330K | RoHS | 33 | $\pm 10\%$ | 15 | 0.70 | 130 | 460 | 2.52 |
| LSQNA251818T330M | CB 2518T330M | RoHS | 33 | $\pm 20\%$ | 15 | 0.70 | 130 | 460 | 2.52 |
| LSQNA251818T470K | CB 2518T470K | RoHS | 47 | $\pm 10\%$ | 12 | 0.95 | 110 | 420 | 2.52 |
| LSQNA251818T470M | CB 2518T470M | RoHS | 47 | $\pm 20\%$ | 12 | 0.95 | 110 | 420 | 2.52 |
| LSQNA251818T680K | CB 2518T680K | RoHS | 68 | $\pm 10\%$ | 9.5 | 1.5 | 70 | 310 | 2.52 |
| LSQNA251818T680M | CB 2518T680M | RoHS | 68 | $\pm 20\%$ | 9.5 | 1.5 | 70 | 310 | 2.52 |
| LSQNA251818T101K | CB 2518T101K | RoHS | 100 | $\pm 10\%$ | 9.0 | 2.1 | 60 | 260 | 0.796 |
| LSQNA251818T101M | CB 2518T101M | RoHS | 100 | $\pm 20\%$ | 9.0 | 2.1 | 60 | 260 | 0.796 |
| LSQNA251818T151K | CB 2518T151K | RoHS | 150 | $\pm 10\%$ | 7.0 | 3.2 | 55 | 210 | 0.796 |
| LSQNA251818T151M | CB 2518T151M | RoHS | 150 | $\pm 20\%$ | 7.0 | 3.2 | 55 | 210 | 0.796 |
| LSQNA251818T221K | CB 2518T221K | RoHS | 220 | $\pm 10\%$ | 5.5 | 4.5 | 50 | 180 | 0.796 |
| LSQNA251818T221M | CB 2518T221M | RoHS | 220 | $\pm 20\%$ | 5.5 | 4.5 | 50 | 180 | 0.796 |
| LSQNA251818T331K | CB 2518T331K | RoHS | 330 | $\pm 10\%$ | 4.5 | 7.0 | 40 | 140 | 0.796 |
| LSQNA251818T331M | CB 2518T331M | RoHS | 330 | $\pm 20\%$ | 4.5 | 7.0 | 40 | 140 | 0.796 |
| LSQNA251818T471K | CB 2518T471K | RoHS | 470 | $\pm 10\%$ | 3.5 | 10 | 35 | 120 | 0.796 |
| LSQNA251818T471M | CB 2518T471M | RoHS | 470 | $\pm 20\%$ | 3.5 | 10 | 35 | 120 | 0.796 |
| LSQNA251818T681K | CB 2518T681K | RoHS | 680 | $\pm 10\%$ | 3.0 | 17 | 30 | 90 | 0.796 |
| LSQNA251818T681M | CB 2518T681M | RoHS | 680 | $\pm 20\%$ | 3.0 | 17 | 30 | 90 | 0.796 |
| LSQNA251818T102K | CB 2518T102K | RoHS | 1000 | $\pm 10\%$ | 2.4 | 24 | 25 | 75 | 0.252 |
| LSQNA251818T102M | CB 2518T102M | RoHS | 1000 | $\pm 20\%$ | 2.4 | 24 | 25 | 75 | 0.252 |

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQPA251818T1R0M | CB C2518T1R0M | RoHS | 1.0 | $\pm 20\%$ | 100 | 0.08 | 1,000 | 1,200 | 7.96 |
| LSQPA251818T1R5M | CB C2518T1R5M | RoHS | 1.5 | $\pm 20\%$ | 80 | 0.11 | 950 | 1,190 | 7.96 |
| LSQPA251818T2R2M | CB C2518T2R2M | RoHS | 2.2 | $\pm 20\%$ | 68 | 0.13 | 890 | 1,100 | 7.96 |
| LSQPA251818T3R3M | CB C2518T3R3M | RoHS | 3.3 | $\pm 20\%$ | 54 | 0.16 | 730 | 1,020 | 7.96 |
| LSQPA251818T4R7M | CB C2518T4R7M | RoHS | 4.7 | $\pm 20\%$ | 41 | 0.20 | 680 | 920 | 7.96 |
| LSQPA251818T6R8M | CB C2518T6R8M | RoHS | 6.8 | $\pm 20\%$ | 38 | 0.30 | 550 | 740 | 7.96 |
| LSQPA251818T100K | CB C2518T100K | RoHS | 10 | $\pm 10\%$ | 30 | 0.36 | 480 | 680 | 2.52 |
| LSQPA251818T100M | CB C2518T100M | RoHS | 10 | $\pm 20\%$ | 30 | 0.36 | 480 | 680 | 2.52 |
| LSQPA251818T150K | CB C2518T150K | RoHS | 15 | $\pm 10\%$ | 23 | 0.65 | 350 | 500 | 2.52 |
| LSQPA251818T150M | CB C2518T150M | RoHS | 15 | $\pm 20\%$ | 23 | 0.65 | 350 | 500 | 2.52 |
| LSQPA251818T220K | CB C2518T220K | RoHS | 22 | $\pm 10\%$ | 19 | 0.77 | 320 | 460 | 2.52 |
| LSQPA251818T220M | CB C2518T220M | RoHS | 22 | $\pm 20\%$ | 19 | 0.77 | 320 | 460 | 2.52 |
| LSQPA251818T330K | CB C2518T330K | RoHS | 33 | $\pm 10\%$ | 15 | 1.5 | 270 | 320 | 2.52 |
| LSQPA251818T330M | CB C2518T330M | RoHS | 33 | $\pm 20\%$ | 15 | 1.5 | 270 | 320 | 2.52 |
| LSQPA251818T470K | CB C2518T470K | RoHS | 47 | $\pm 10\%$ | 12 | 1.9 | 240 | 290 | 2.52 |
| LSQPA251818T470M | CB C2518T470M | RoHS | 47 | $\pm 20\%$ | 12 | 1.9 | 240 | 290 | 2.52 |
| LSQPA251818T680K | CB C2518T680K | RoHS | 68 | $\pm 10\%$ | 9.5 | 2.8 | 200 | 200 | 2.52 |
| LSQPA251818T680M | CB C2518T680M | RoHS | 68 | $\pm 20\%$ | 9.5 | 2.8 | 200 | 200 | 2.52 |
| LSQPA251818T101K | CB C2518T101K | RoHS | 100 | $\pm 10\%$ | 9.0 | 3.7 | 160 | 170 | 0.796 |
| LSQPA251818T101M | CB C2518T101M | RoHS | 100 | $\pm 20\%$ | 9.0 | 3.7 | 160 | 170 | 0.796 |
| LSQPA251818T151K | CB C2518T151K | RoHS | 150 | $\pm 10\%$ | 7.0 | 6.1 | 140 | 130 | 0.796 |
| LSQPA251818T151M | CB C2518T151M | RoHS | 150 | $\pm 20\%$ | 7.0 | 6.1 | 140 | 130 | 0.796 |
| LSQPA251818T221K | CB C2518T221K | RoHS | 220 | $\pm 10\%$ | 5.5 | 8.4 | 115 | 110 | 0.796 |
| LSQPA251818T221M | CB C2518T221M | RoHS | 220 | $\pm 20\%$ | 5.5 | 8.4 | 115 | 110 | 0.796 |
| LSQPA251818T331K | CB C2518T331K | RoHS | 330 | $\pm 10\%$ | 4.5 | 12.3 | 100 | 90 | 0.796 |
| LSQPA251818T331M | CB C2518T331M | RoHS | 330 | $\pm 20\%$ | 4.5 | 12.3 | 100 | 90 | 0.796 |
| LSQPA251818T471K | CB C2518T471K | RoHS | 470 | $\pm 10\%$ | 3.5 | 22 | 80 | 70 | 0.796 |
| LSQPA251818T471M | CB C2518T471M | RoHS | 470 | $\pm 20\%$ | 3.5 | 22 | 80 | 70 | 0.796 |
| LSQPA251818T681K | CB C2518T681K | RoHS | 680 | $\pm 10\%$ | 3.0 | 28 | 65 | 60 | 0.796 |
| LSQPA251818T681M | CB C2518T681M | RoHS | 680 | $\pm 20\%$ | 3.0 | 28 | 65 | 60 | 0.796 |

※) 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 by 40°C. (at 20°C)

※) The rated current value is following either Idc1 or Idc2, which is the lower one.

PART NUMBER

3225(1210) type

| New part number | Old part number (for reference) | EHS | Nominal inductance [μ H] | Inductance tolerance | Self-resonant frequency [MHz] (min.) | DC Resistance [Ω] ($\pm 30\%$) | Rated current ※) [mA] | | Measuring frequency [MHz] |
|-------------------|------------------------------------|------|----------------------------------|----------------------|--|--|----------------------------|-------------------------------------|------------------------------|
| | | | | | | | Saturation current Idc1 | Temperature rise current Idc2 | |
| LSQPA322525T1R0MR | CB C3225T1R0MR | RoHS | 1.0 | $\pm 20\%$ | 250 | 0.055 | 2,000 | 1,440 | 0.1 |
| LSQPA322525T1R5MR | CB C3225T1R5MR | RoHS | 1.5 | $\pm 20\%$ | 220 | 0.060 | 2,000 | 1,310 | 0.1 |
| LSQPA322525T2R2MR | CB C3225T2R2MR | RoHS | 2.2 | $\pm 20\%$ | 190 | 0.080 | 2,000 | 1,130 | 0.1 |
| LSQPA322525T3R3MR | CB C3225T3R3MR | RoHS | 3.3 | $\pm 20\%$ | 160 | 0.095 | 2,000 | 1,040 | 0.1 |
| LSQPA322525T4R7MR | CB C3225T4R7MR | RoHS | 4.7 | $\pm 20\%$ | 70 | 0.100 | 1,250 | 1,010 | 0.1 |
| LSQPA322525T6R8MR | CB C3225T6R8MR | RoHS | 6.8 | $\pm 20\%$ | 50 | 0.120 | 950 | 940 | 0.1 |
| LSQPA322525T100KR | CB C3225T100KR | RoHS | 10 | $\pm 10\%$ | 23 | 0.133 | 900 | 900 | 0.1 |
| LSQPA322525T100MR | CB C3225T100MR | RoHS | 10 | $\pm 20\%$ | 23 | 0.133 | 900 | 900 | 0.1 |
| LSQPA322525T150KR | CB C3225T150KR | RoHS | 15 | $\pm 10\%$ | 20 | 0.195 | 730 | 850 | 0.1 |
| LSQPA322525T150MR | CB C3225T150MR | RoHS | 15 | $\pm 20\%$ | 20 | 0.195 | 730 | 850 | 0.1 |
| LSQPA322525T220KR | CB C3225T220KR | RoHS | 22 | $\pm 10\%$ | 17 | 0.27 | 620 | 780 | 0.1 |
| LSQPA322525T220MR | CB C3225T220MR | RoHS | 22 | $\pm 20\%$ | 17 | 0.27 | 620 | 780 | 0.1 |
| LSQPA322525T330KR | CB C3225T330KR | RoHS | 33 | $\pm 10\%$ | 13 | 0.41 | 500 | 570 | 0.1 |
| LSQPA322525T330MR | CB C3225T330MR | RoHS | 33 | $\pm 20\%$ | 13 | 0.41 | 500 | 570 | 0.1 |
| LSQPA322525T470KR | CB C3225T470KR | RoHS | 47 | $\pm 10\%$ | 10 | 0.67 | 390 | 480 | 0.1 |
| LSQPA322525T470MR | CB C3225T470MR | RoHS | 47 | $\pm 20\%$ | 10 | 0.67 | 390 | 480 | 0.1 |
| LSQPA322525T680KR | CB C3225T680KR | RoHS | 68 | $\pm 10\%$ | 8.0 | 1.0 | 320 | 410 | 0.1 |
| LSQPA322525T680MR | CB C3225T680MR | RoHS | 68 | $\pm 20\%$ | 8.0 | 1.0 | 320 | 410 | 0.1 |
| LSQPA322525T101KR | CB C3225T101KR | RoHS | 100 | $\pm 10\%$ | 6.0 | 1.4 | 270 | 340 | 0.1 |
| LSQPA322525T101MR | CB C3225T101MR | RoHS | 100 | $\pm 20\%$ | 6.0 | 1.4 | 270 | 340 | 0.1 |
| LSQPA322525T221KR | CB C3225T221KR | RoHS | 220 | $\pm 10\%$ | 3.0 | 2.5 | 190 | 190 | 0.1 |
| LSQPA322525T221MR | CB C3225T221MR | RoHS | 220 | $\pm 20\%$ | 3.0 | 2.5 | 190 | 190 | 0.1 |
| LSQPA322525T821KR | CB C3225T821KR | RoHS | 820 | $\pm 10\%$ | 1.8 | 12 | 110 | 110 | 0.1 |
| LSQPA322525T821MR | CB C3225T821MR | RoHS | 820 | $\pm 20\%$ | 1.8 | 12 | 110 | 110 | 0.1 |
| LSQPA322525T102KR | CB C3225T102KR | RoHS | 1000 | $\pm 10\%$ | 1.6 | 13 | 100 | 100 | 0.1 |
| LSQPA322525T102MR | CB C3225T102MR | RoHS | 1000 | $\pm 20\%$ | 1.6 | 13 | 100 | 100 | 0.1 |

※) 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 by 40°C. (at 20°C)

※) The rated current value is following either Idc1 or Idc2, which is the lower one.

Wire-wound Ferrite Inductors LSQB/LSQC/LSQE/LLQB/LLQC/LLQE/LMQB/LMQC/LMQE/
LBQB/LBQC/LBQE series
Wire-wound Ferrite Power Inductors LSQN/LSQPA/LLQN/LLQPA/LMQN/LMQPA/
LBQN/LBQPA series
Wire-wound Ferrite Inductors for Signal Lines LSQM/LLQM/LMQM/LBQM series

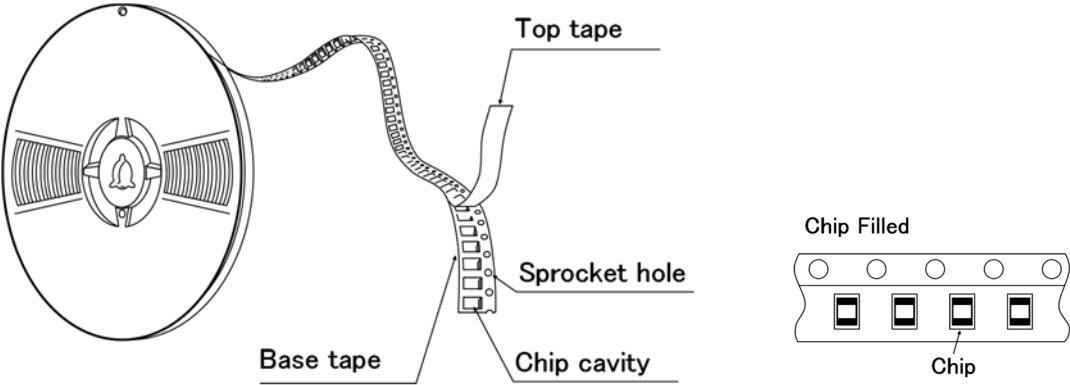
■ PACKAGING

① Minimum Quantity

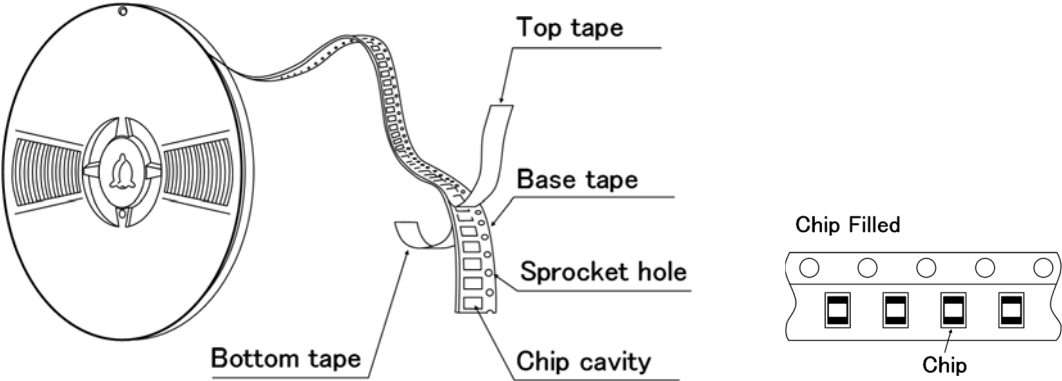
| Type | Standard Quantity [pcs] | |
|---------|-------------------------|---------------|
| | Paper Tape | Embossed Tape |
| A322525 | — | 1000 |
| A321818 | — | 2000 |
| A251818 | — | 2000 |
| B201616 | — | 2000 |
| A201616 | — | 2000 |
| A201212 | — | 3000 |
| A201209 | 4000 | — |
| A160808 | 4000 | — |
| B160808 | — | 3000 |

② Tape material

● Embossed tape

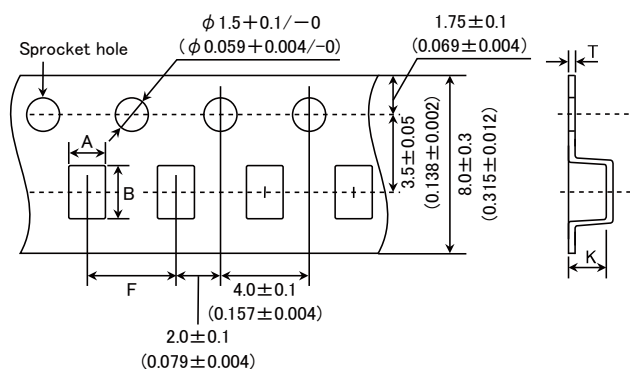


● Card board carrier tape



③ Taping Dimensions

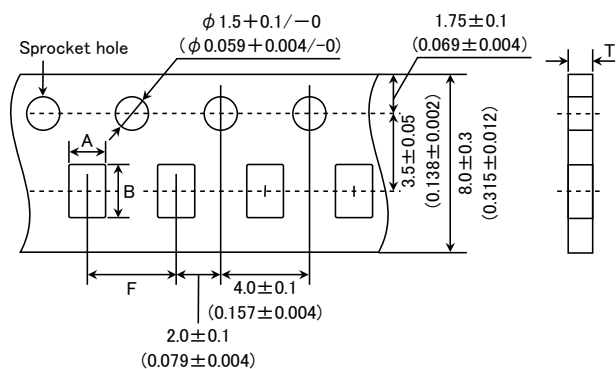
● Embossed Tape (0.315 inches wide)



| Type | Chip cavity | | Insertion pitch | Tape thickness | |
|---------|---|---|--|--|---|
| | A | B | F | T | K |
| B201616 | 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. (0.075max.) |
| A322525 | 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. (0.157max.) |
| A321818 | 2.1 ± 0.1 (0.083 ± 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) | 2.2max. (0.087max.) |
| A251818 | 2.15 ± 0.1 (0.085 ± 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) | 2.2max. (0.087max.) |
| A201616 | 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. (0.075max.) |
| A201212 | 1.45 ± 0.1 (0.057 ± 0.004) | 2.25 ± 0.1 (0.089 ± 0.004) | 4.0 ± 0.1 (0.157 ± 0.004) | 0.25 ± 0.05 (0.010 ± 0.002) | 1.45max. (0.057max.) |
| B160808 | 1.1 ± 0.1 (0.043 ± 0.004) | 1.9 ± 0.1 (0.075 ± 0.004) | 4.0 ± 0.1 (0.157 ± 0.004) | 0.25 ± 0.05 (0.010 ± 0.002) | 1.2max. (0.047max.) |

Unit : mm (inch)

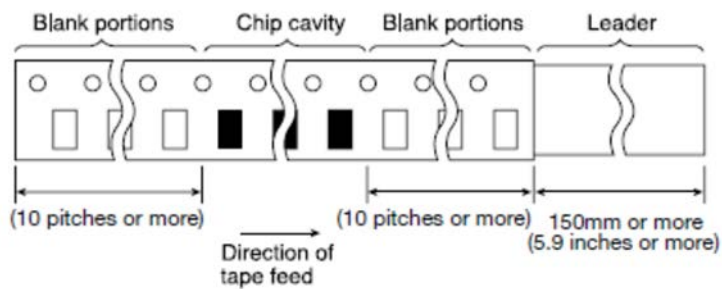
● Card board carrier tape (0.315 inches wide)



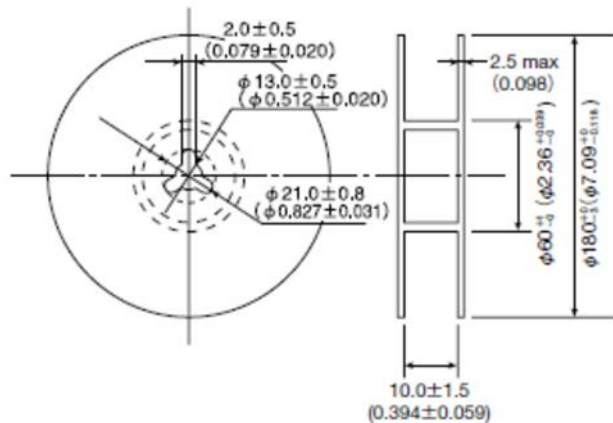
| Type | Chip cavity | | Insertion pitch | Tape thickness |
|---------|---|--|--|--|
| | A | B | F | T |
| A201209 | 1.55 ± 0.1 (0.061 ± 0.004) | 2.3 ± 0.1 (0.091 ± 0.004) | 4.0 ± 0.1 (0.157 ± 0.004) | 1.1max. (0.043max.) |
| A160808 | 1.0 ± 0.1 (0.039 ± 0.004) | 1.8 ± 0.1 (0.071 ± 0.004) | 4.0 ± 0.1 (0.157 ± 0.004) | 1.1max. (0.043max.) |

Unit : mm (inch)

④Leader and Blank Portion

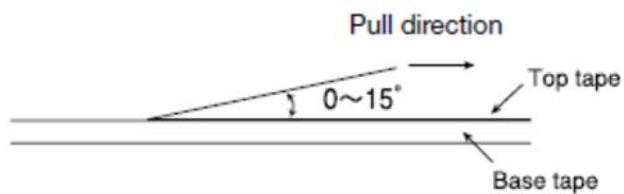


⑤Reel Size



⑥Top Tape Strength

The top tape requires a peel-off force 0.1 to 1.0N in the direction of the arrow as illustrated below.



Wire-wound Ferrite Inductors LSQB/LSQC/LSQE series
for General Electronic Equipment for Consumer

Wire-wound Ferrite Power Inductors LSQN/LSQPA series
for General Electronic Equipment for Consumer

Wire-wound Ferrite Inductors for Signal Lines LSQM series
for General Electronic Equipment for Consumer

Wire-wound Ferrite Inductors LLQB/LLQC/LLQE series
for Medical Devices classified as GHTF Classes A or B (Japan Classes I or II)

Wire-wound Ferrite Power Inductors LLQN/LLQPA series
for Medical Devices classified as GHTF Classes A or B (Japan Classes I or II)

Wire-wound Ferrite Inductors for Signal Lines LLQM series
for Medical Devices classified as GHTF Classes A or B (Japan Classes I or II)

■ RELIABILITY DATA

1. Operating temperature Range

| | |
|-----------------|--|
| Specified Value | −40~+105°C (Including self-generated heat) |
|-----------------|--|

2. Storage Temperature Range (after soldering)

| | |
|--------------------------|--|
| Specified Value | −40~+85°C |
| Test Methods and Remarks | Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors Please refer the term of "7. storage conditions" in precautions. |

3. Rated Current

| | |
|-----------------|--------------------------------|
| Specified Value | Within the specified tolerance |
|-----------------|--------------------------------|

4. Inductance

| | |
|--------------------------|--|
| Specified Value | Within the specified tolerance |
| Test Methods and Remarks | Measuring equipment : LCR Meter (HP4285A or its equivalent) Measuring frequency : Specified frequency |

5. Q

| | |
|--------------------------|--|
| Specified Value | Wire-wound Ferrite Inductors for Signal Lines: Within the specified tolerance |
| Test Methods and Remarks | Wire-wound Ferrite Inductors for Signal Lines: Measuring equipment : LCR Meter (HP4285A or its equivalent) Measuring frequency : Specified frequency |

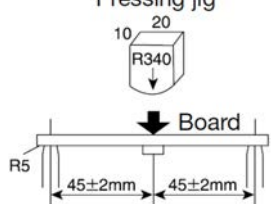
6. DC Resisistance

| | |
|--------------------------|--|
| Specified Value | Within the specified tolerance |
| Test Methods and Remarks | Measuring equipment : DC Ohmmeter (HIOKI 3227 or its equivalent) |

7. Self-Resonant Frequency

| | |
|--------------------------|--|
| Specified Value | Within the specified tolerance |
| Test Methods and Remarks | Measuring equipment : Impedance analyzer (HP4291A or its equivalent) |

| 8.Temperature Characteristic | | | | |
|--------------------------------------|---|-----------|-----------|-----------|
| Specified Value | LSQMB2016 | | | |
| | LLQMB2016 | | | |
| | LSQBA1608 | LSQBA2012 | LSQEA2012 | LSQNA2012 |
| | LSQNA2012 | LSQBA2016 | LSQNA2016 | LSQBA2518 |
| | LSQEA2518 | LSQNA2518 | LSQCA3225 | LSQPA3225 |
| | LLQBA2016 | LLQBA2012 | LLQEA2012 | LLQNA2012 |
| | LLQNA2012 | LLQBA2016 | LLQNA2016 | LLQBA2518 |
| | LLQEA2518 | LLQNA2518 | LLQCA3225 | LLQPA3225 |
| | LSQBB1608 | LSQNB1608 | LSQCA2016 | LSQPA2016 |
| | LSQCA2518 | LSQPA2518 | LSQBA3218 | |
| Inductance change : Within $\pm 5\%$ | | | | |
| Specified Value | LSQBB1608 LSQNB1608 LSQCA2016 LSQPA2016 | | | |
| | LSQCA2518 LSQPA2518 LSQBA3218 | | | |
| | LLQBB1608 LLQNB1608 LLQCA2016 LLQPA2016 | | | |
| | LLQCA2518 LLQPA2518 LLQBA3218 | | | |
| | LSQCA2012 LSQPA2012 | | | |
| | LLQCA2012 LLQPA2012 | | | |
| | Inductance change : Within $\pm 20\%$ | | | |
| | Inductance change : Within $\pm 25\%$ | | | |
| | Inductance change : Within $\pm 35\%$ | | | |
| | Inductance change : Within $\pm 35\%$ | | | |
| Test Methods and Remarks | Based on the inductance at 20°C and Measured at the ambient of $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$. | | | |

| 9.Rasistance to Flexure of Substrate | |
|--------------------------------------|---|
| Specified Value | No damage. |
| Test Methods and Remarks | <p>Warp : 2mm</p> <p>Test substrate : Glass epoxy-resin substrate</p> <p>Thickness : 1.0mm (1608 type:0.8mm)</p> <p>Pressing jig</p>  <p>Board</p> <p>45±2mm 45±2mm</p> |

| 10.Body Strength | |
|--------------------------|--|
| Specified Value | No damage. |
| Test Methods and Remarks | <p>Applied force : 10N (1608 type:5N)</p> <p>Duration : 10sec.</p> |

| 11.Adhesion of terminal electrode | | |
|-----------------------------------|---|-----------------|
| Specified Value | LB, LBC, LBR, LBMF Series | No abnormality. |
| | CB, CBC, CBL, CBMF Series | |
| | LBM Series | |
| Test Methods and Remarks | Applied force : 10N to X and Y directions(1608 type: 5N to X and Y directions) Duration : 5 sec. Test substrate : Printed board | |

| 12. Resistance to vibration | | | |
|---|--|--|---------------------------------------|
| Specified Value | Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors Inductance change : Within $\pm 10\%$ No significant abnormality in appearance. | | |
| | Wire-wound Ferrite Inductors for Signal Lines Inductance change : Within $\pm 5\%$ 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. | | |
| | Vibration Frequency | 10~55Hz | |
| | Total Amplitude | 1.5mm (May not exceed acceleration 196m/s ²) | |
| | Sweeping Method | 10Hz to 55Hz to 10Hz for 1min. | |
| | Time | X | For 2 hours on each X, Y, and Z axis. |
| | | Y | |
| Z | | | |
| Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. | | | |

| 13. Drop test | |
|-----------------|---|
| Specified Value | — |

| 14. Solderability | |
|--------------------------|---|
| Specified Value | At least 90% of surface of terminal electrode is covered by new |
| Test Methods and Remarks | Solder temperature : $245 \pm 5^\circ\text{C}$ Duration : $5 \pm 0.5\text{sec}$ Flux : Ethanol solution with 25% of colophony |

| 15. Resistance to soldering | |
|-----------------------------|--|
| Specified Value | Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors Inductance change : Within $\pm 10\%$ Wire-wound Ferrite Inductors for Signal Lines Inductance change : Within $\pm 5\%$ |
| Test Methods and Remarks | 3 times of reflow oven at 230°C MIN for 40sec. with peak temperature at 260°C for 5sec. Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |

| 16. Resistance to solvent | |
|---------------------------|---|
| Specified Value | — |
| Test Methods and Remarks | Solvent temperature : Room temperature Type of solvent : Isopropyl alcohol Cleaning conditions : 90s. Immersion and cleaning. |

| 17.Thermal shock | | | |
|--------------------------|---|------------------|----------------|
| Specified Value | Inductance change : Within±10% 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±3 | 30±3 |
| | 2 | Room temperature | Within 3 |
| | 3 | +85±2 | 30±3 |
| | 4 | Room temperature | Within 3 |
| | 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 | |
|--------------------------|---|
| Specified Value | Inductance change : Within $\pm 10\%$ No significant abnormality in appearance. |
| 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. |

| | |
|--|---|
| 19.Loading under damp heat life test | |
| Specified Value | Inductance change : Within $\pm 10\%$ No significant abnormality in appearance. |
| Test Methods and Remarks | Temperature : $60\pm 2^{\circ}\text{C}$ Humidity : $90\sim 95\%\text{RH}$ 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. |
| 20.High temperature life test | |
| Specified Value | Wire-wound Ferrite Power Inductors, Wire-wound Ferrite Inductors for Signal Lines : Inductance change : Within $\pm 10\%$ No significant abnormality in appearance. |
| Test Methods and Remarks | Temperature : $85\pm 2^{\circ}\text{C}$ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |
| 21.Loading at high temperature life test | |
| Specified Value | Wire-wound Ferrite Inductors: Inductance change : Within $\pm 10\%$ (3225 type: Within $\pm 20\%$) No significant abnormality in appearance. |
| Test Methods and Remarks | Temperature : $85\pm 2^{\circ}\text{C}$ 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. |
| 22.Low temperature life test | |
| Specified Value | Inductance change : Within $\pm 10\%$ No significant abnormality in appearance. |
| Test Methods and Remarks | Temperature : $-40\pm 2^{\circ}\text{C}$ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs. |
| 23.Standard condition | |
| Specified Value | Standard test conditions Unless specified, Ambient temperature is $20\pm 15^{\circ}\text{C}$ and the Relative humidity is $65\pm 20\%$. If there is any doubt about the test results, further measurement shall be had within the following limits: Ambient Temperature: $20\pm 2^{\circ}\text{C}$ Relative humidity: $65\pm 5\%$ Inductance value is based on our standard measurement systems. |

Wire-wound Ferrite Inductors LSQB/LSQC/LSQE/LLQB/LLQC/LLQE/LMQB/LMQC/LMQE/ LBQB/LBQC/LBQE series

Wire-wound Ferrite Power Inductors LSQN/LSQPA/LLQN/LLQPA/LMQN/LMQPA/ LBQN/LBQPA series

Wire-wound Ferrite Inductors for Signal Lines LSQM/LLQM/LMQM/LBQM series

■ PRECAUTIONS

1. Circuit Design

Precautions

- ◆ Verification of operating environment, electrical rating and performance
 1. A malfunction in medical equipment, spacecraft, nuclear reactors, etc. may cause serious harm to human life or have severe social ramifications. As such, any inductors to be used in such equipment may require higher safety and/or reliability considerations and should be clearly differentiated from components used in general purpose applications.
 2. When inductors are used in places where dew condensation develops and/or where corrosive gas such as hydrogen sulfide, sulfurous acid, or chlorine exists in the air, characteristic deterioration may occur. Please do not use inductors under such environmental conditions.
- ◆ Operating Current (Verification of Rated current)
 1. The operating current including inrush current for inductors must always be lower than their rated values.
 2. Do not apply current in excess of the rated value because the inductance may be reduced due to the magnetic saturation effect.
- ◆ Temperature rise

Temperature rise of power choke coil depends on the installation condition in end products.

Make sure that temperature rise of power choke coils in actual end products is within the specified temperature range.

2. PCB Design

Precautions

- ◆ Land pattern design
 1. Please contact any of our offices for a land pattern, and refer to a recommended land pattern of a right figure or specifications.

Technical considerations

- PRECAUTIONS**
【Recommended Land Patterns】
- 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

- ◆ Adjustment of mounting machine
 1. Excessive impact load should not be imposed on the products when mounting onto the PC boards.
 2. Mounting and soldering conditions should be checked beforehand.

Technical considerations

1. When installing products, care should be taken not to apply distortion stress as it may deform the products.

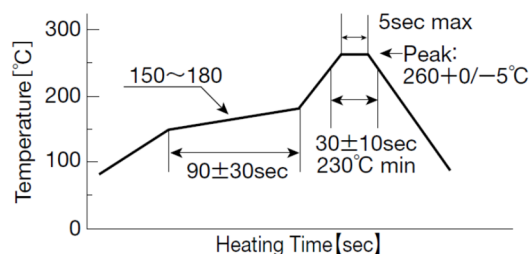
4. Soldering

Precautions

- ◆ Reflow soldering (Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors)
 1. For reflow soldering with either leaded or lead-free solder, the profile specified in "point for controlling" is recommended.
- ◆ Recommended conditions for using a soldering iron
 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.

Technical considerations

- ◆ Reflow soldering (Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors)
 1. Reflow profile



- ◆ Recommended conditions for using a soldering iron
 1. Components can be damaged by excessive heat where soldering conditions exceed the specified range.

| 5. Cleaning | |
|--------------------------|---|
| Precautions | <ul style="list-style-type: none"> ◆Cleaning conditions Washing by supersonic waves shall be avoided. |
| Technical considerations | <ul style="list-style-type: none"> ◆Cleaning conditions If washed by supersonic waves, the products might be broken. |
| 6. Handling | |
| Precautions | <ul style="list-style-type: none"> ◆Handling <ol style="list-style-type: none"> 1. Keep the inductors away from all magnets and magnetic objects. ◆Breakaway PC boards (splitting along perforations) <ol style="list-style-type: none"> 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. 2. Board separation should not be done manually, but by using the appropriate devices. ◆Mechanical considerations <ol style="list-style-type: none"> 1. Please do not give the inductors any excessive mechanical shocks. |
| Technical considerations | <ul style="list-style-type: none"> ◆Handling <ol style="list-style-type: none"> 1. There is a case that a characteristic varies with magnetic influence. ◆Breakaway PC boards (splitting along perforations) <ol style="list-style-type: none"> 1. Planning pattern configurations and the position of products should be carefully performed to minimize stress. ◆Mechanical considerations <ol style="list-style-type: none"> 1. There is a case to be damaged by a mechanical shock. |
| 7. Storage conditions | |
| Precautions | <ul style="list-style-type: none"> ◆Storage <ol style="list-style-type: none"> 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. <ul style="list-style-type: none"> ▪ Storage conditions <ul style="list-style-type: none"> Ambient temperature : 0~40°C Humidity : Below 70% RH ▪ The recommended ambient temperature is below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, product should be used within 6 months from the time of delivery. In case of storage over 6 months, solderability shall be checked before actual usage. |
| Technical considerations | <ul style="list-style-type: none"> ◆Storage <ol style="list-style-type: none"> 1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place. |