

SMT inductors

SIMID series, SIMID 0603-C

Series/Type: B82496C

Date: May 2024

Not Recommended for New Design

SMD
Size 0603 (EIA) and/or 1608 (IEC)
Rated inductance 1 ... 220 nH
Rated current 110 ... 1800 mA

Construction

- Copper-plated ceramic core
- Laser-cut winding, epoxy-coated

Features

- Temperature range up to +150 °C
- High resonance frequency
- Close inductance tolerance
- Free of polarization effect
- High mechanical stability
- Qualified to AEC-Q200
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- RoHS-compatible

Applications

Resonant circuits, impedance matching for

- Multimedia
- Car access systems
- Wireless communication systems
- TPMS (Tire Pressure Monitoring System)
- GPS (Global Positioning System)
- Digital cameras

Terminals

- Base material Al₂O₃ ceramic with Cu layer
- Layer composition Ni, Sn (lead-free)
- Electro-plated

Marking

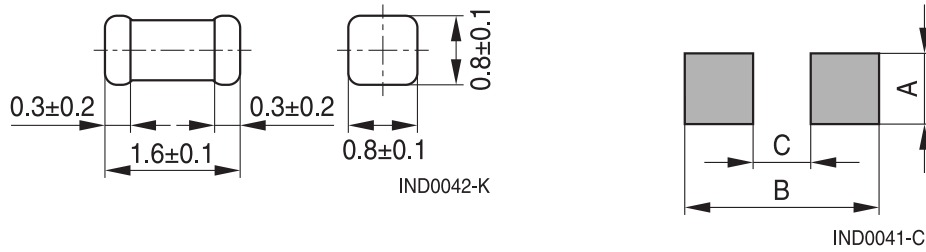
- No marking on component
- Minimum data on reel:
Manufacturer, ordering code, L value,
quantity, date of packing

Delivery mode and packing unit

- 8-mm cardboard tape, wound on 180-mm ∅ reel
- Packing unit: 4000 pcs./reel

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Dimensional drawing and layout recommendation

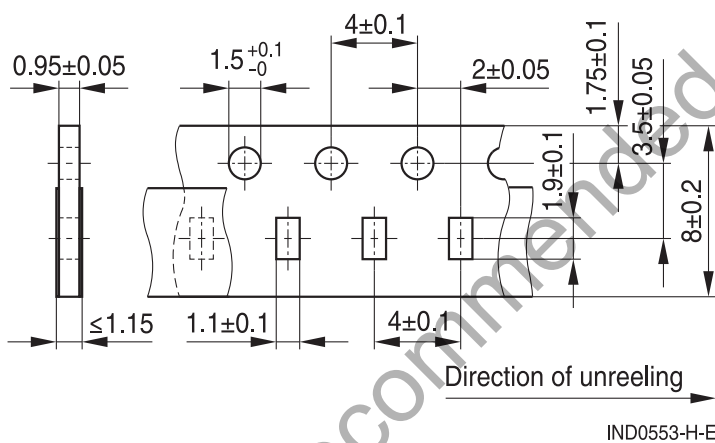


| A | B | C |
|----------|----------|----------|
| 0.8 ±0.1 | 2.3 ±0.3 | 0.9 ±0.1 |

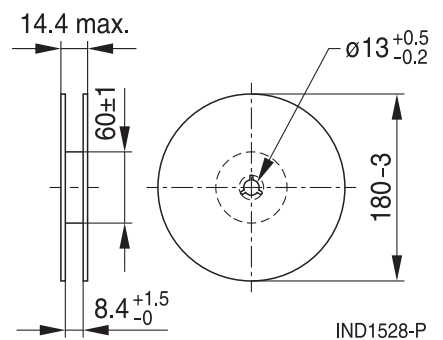
Dimensions in mm

Taping and packing

Cardboard tape



Reel



Dimensions in mm

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Technical data and measuring conditions

| | |
|--|--|
| Rated inductance L_R | Measured with impedance analyzer Agilent 4291A and test fixture Agilent 16196A or equivalent at frequency f_L , 0.1 V, +20 °C |
| Q factor Q_{min} , Q_{typ} | Measured with impedance analyzer Agilent 4291A and test fixture Agilent 16196A or equivalent, Q_{min} measured at frequency f_Q , +20 °C |
| Rated temperature T_R | +125 °C |
| Rated current I_R | Maximum permissible DC with a temperature increase of ≤ 15 K at rated temperature |
| Self-resonance frequency $f_{res,min}$ | Measured with network analyzer Agilent 8720D or equivalent, +20 °C |
| DC resistance R_{max} | Measured at +20 °C |
| Solderability (lead-free) | Sn95.5Ag3.8Cu0.7: +(245 ±5) °C, (5 ±0.3) s Wetting of soldering area $\geq 95\%$ (based on IEC 60068-2-58) |
| Resistance to soldering heat | +260 °C, 40 s (as referenced in JEDEC J-STD 020D) |
| Climatic category | 55/150/56 (to IEC 60068-1) |
| Storage conditions | Mounted: -55 °C ... +150 °C Packaged: -25 °C ... +40 °C, $\leq 75\%$ RH |
| Weight | Approx. 4 mg |

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Characteristics and ordering codes

| L_R nH | Tolerance | Q_{\min} | Q_{typ} (at 800 MHz) | $f_L; f_Q$ MHz | I_R mA | R_{\max} Ω | $f_{\text{res, min}}$ GHz | Ordering code ¹⁾ (reel packing) |
|-------------|--|------------|-------------------------------------|-------------------|-------------|------------------------|------------------------------|---|
| 1.0 | $\pm 0.3 \text{ nH} \triangleq \text{A}$ | 7 | 60 | 100 | 1800 | 0.02 | 16 | B82496C3109+000 |
| 1.2 | $\pm 0.2 \text{ nH} \triangleq \text{Z}$ | 8 | 60 | 100 | 1800 | 0.025 | 15 | B82496C3129+000 |
| 1.5 | | 8 | 50 | 100 | 1500 | 0.03 | 13 | B82496C3159+000 |
| 1.8 | | 12 | 50 | 100 | 1500 | 0.033 | 12 | B82496C3189+000 |
| 2.2 | | 14 | 50 | 100 | 1500 | 0.035 | 10 | B82496C3229+000 |
| 2.7 | | 14 | 40 | 100 | 1400 | 0.04 | 10 | B82496C3279+000 |
| 3.3 | | 14 | 40 | 100 | 1200 | 0.06 | 9 | B82496C3339+000 |
| 3.9 | $\pm 5\% \triangleq \text{J}$ | 14 | 40 | 100 | 1100 | 0.065 | 8 | B82496C3399+000 |
| 4.7 | $\pm 0.2 \text{ nH} \triangleq \text{Z}$ | 14 | 40 | 100 | 800 | 0.10 | 7 | B82496C3479+000 |
| 5.6 | | 14 | 40 | 100 | 700 | 0.15 | 6 | B82496C3569+000 |
| 6.8 | | 14 | 40 | 100 | 700 | 0.15 | 6 | B82496C3689+000 |
| 8.2 | | 14 | 40 | 100 | 650 | 0.18 | 6 | B82496C3829+000 |
| 10 | $\pm 5\% \triangleq \text{J}$ | 14 | 40 | 100 | 600 | 0.20 | 5 | B82496C3100+000 |
| 12 | $\pm 2\% \triangleq \text{G}$ | 14 | 40 | 100 | 450 | 0.35 | 5 | B82496C3120+000 |
| 15 | | 14 | 40 | 100 | 420 | 0.40 | 4.5 | B82496C3150+000 |
| 18 | | 14 | 40 | 100 | 400 | 0.45 | 4.0 | B82496C3180+000 |
| 22 | | 14 | 40 | 100 | 380 | 0.50 | 4.0 | B82496C3220+000 |
| 27 | | 14 | 35 | 100 | 360 | 0.55 | 3.0 | B82496C3270+000 |
| 33 | | 14 | 35 | 100 | 350 | 0.60 | 3.0 | B82496C3330+000 |
| 39 | | 14 | 35 | 100 | 300 | 0.80 | 2.5 | B82496C3390+000 |
| 47 | | 14 | 35 | 100 | 270 | 0.95 | 2.5 | B82496C3470+000 |
| 56 | | 14 | 35 | 100 | 250 | 1.2 | 2.5 | B82496C3560+000 |
| 68 | | 14 | 35 | 100 | 230 | 1.3 | 2.0 | B82496C3680+000 |
| 82 | | 14 | 35 | 100 | 220 | 1.5 | 2.0 | B82496C3820+000 |
| 100 | | 14 | 30 | 100 | 200 | 1.8 | 1.8 | B82496C3101+000 |
| 120 | | 5 | 30 | 25.2 | 160 | 3.0 | 1.8 | B82496C3121+000 |
| 150 | | 5 | 30 | 25.2 | 130 | 5.0 | 1.6 | B82496C3151+000 |
| 180 | | 4 | 25 | 25.2 | 120 | 6.0 | 1.4 | B82496C3181+000 |
| 220 | | 4 | 25 | 25.2 | 110 | 7.0 | 1.3 | B82496C3221+000 |

Special versions on request.

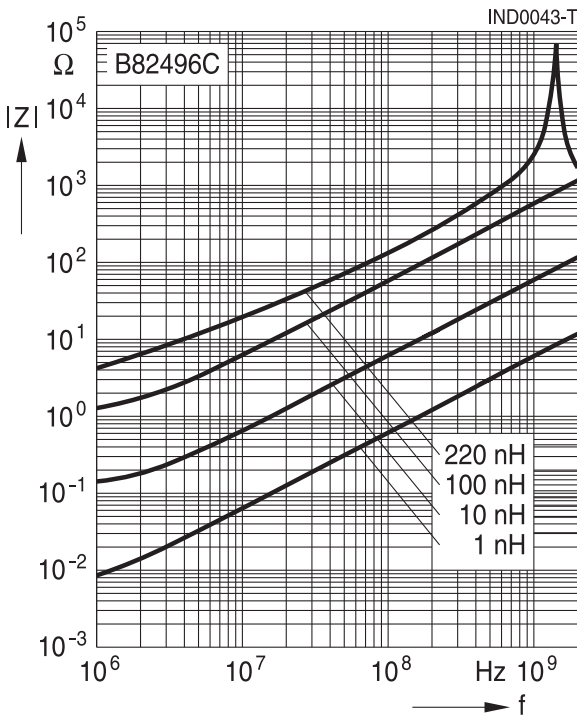
Higher currents possible at temperatures $< T_R$ on request.

Sample kit available (see also chapter "Sample kits". Ordering code: B82496X001

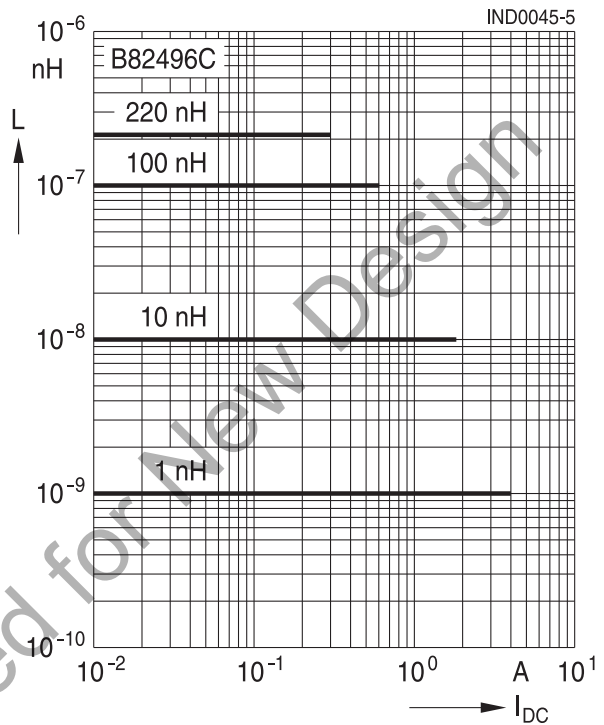
1) Replace the + by the code letter for the required inductance tolerance.

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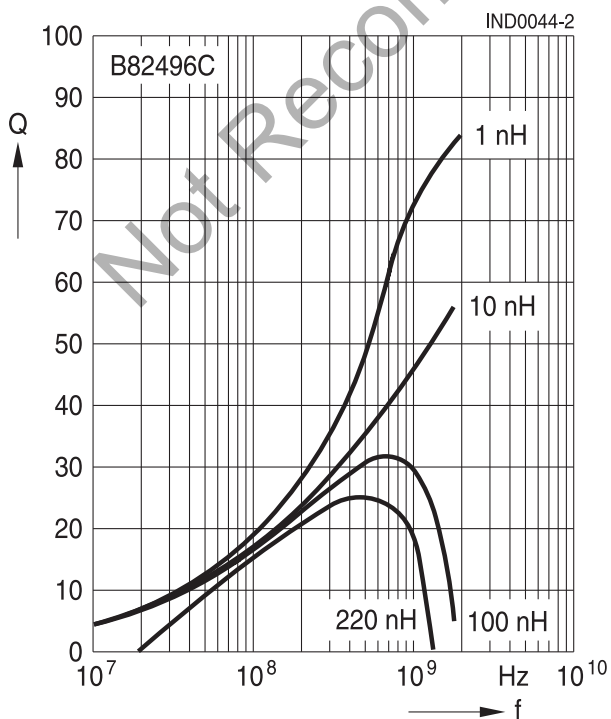
Impedance $|Z|$ versus frequency f
 measured with impedance analyzer
 Agilent 4291A/16196A, typical values at +20 °C



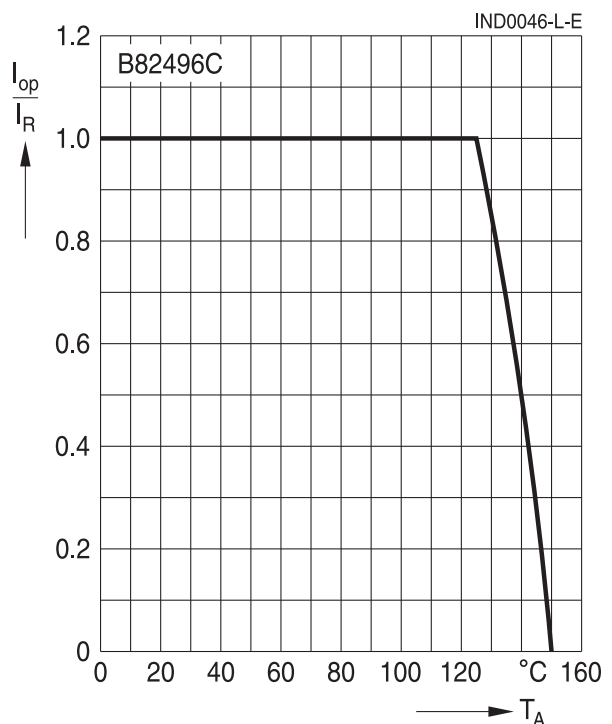
Inductance L versus DC load current I_{DC}
 measured with LCR meter Agilent 4275A,
 typical values at +20 °C



Q factor versus frequency f
 measured with impedance analyzer
 Agilent 4291A/16196A, typical values at +20 °C



Current derating I_{op}/I_R
versus ambient temperature T_A
 (rated temperature $T_R = +125$ °C)



Cautions and warnings

- Please note the recommendations in our Inductors data book (latest edition), online catalogs and in the data sheets.
 - Particular attention should be paid to the derating curves, if given. Derating applies in the case the ambient temperature in application exceeds the rated temperature of the component.
 - Ensure the operation temperature of the component in application not to exceed the maximum specified value or the upper climatic category temperature.
 - The soldering conditions should also be observed. Temperatures quoted in relation to wave soldering refer to the pin, not the housing.
- If the components are to be washed varnished it is necessary to check whether the washing varnish agent that is used has a negative effect on the wire insulation, any plastics that are used, or on glued joints. It is possible for washing varnish agent residues to have a negative effect in the long-term on wire insulation.

Washing processes may damage the product due to the possible static or cyclic mechanical loads (e.g., ultrasonic cleaning). They may cause cracks to develop on the product and its parts, which might lead to reduced reliability or lifetime.
- The following points must be observed if the components are potted, sealed, or varnished in customer applications:
 - Many potting, sealing, or varnishing materials shrink as they harden. They therefore exert a pressure on the plastic housing or core. This pressure can have a deleterious effect on electrical properties, and in extreme cases can damage the core or plastic housing mechanically.
 - It is necessary to check whether the potting, sealing or varnishing materials used attack or destroy the wire insulation, plastics, or glue.
 - The effect of the potting, sealing, or varnishing materials may change the high-frequency behavior of the components.
- Magnetic core materials such as ferrites are sensitive to direct impact. This can cause the core material to flake or lead to breakage of the magnetic core material.
- Any type of tension or pressure on the product may result in damage and affect its functionality and reliability.
 - The products are only to be attached to fixings or mounting holes provided for this purpose in accordance with the data sheet.
 - If additional mechanical forces are applied to the component, e.g., application of gap pads, it is necessary to check whether they attack or destroy any part of the component.
 - It is not permitted for the product specified in the data sheet to assume a mechanical function in the final application.
- Inductance value can drop if external metallic or magnetic parts will be put close to the coil or into the air gap of the coil or core or magnetic material.
- Even for customer-specific products, conclusive validation of the component in the circuit can only be carried out by the customer.

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Important notes

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Not Recommended for New Design