



SMT inductors

SIMID series, SIMID 0603-C

Series/Type: **B82496C**
Date: March 2008

SIMID 0603-C

SMD

Size 0603 (EIA) and/or 1608 (IEC)
Rated inductance 1 nH to 220 nH
Rated current 110 mA to 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 020C
- 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

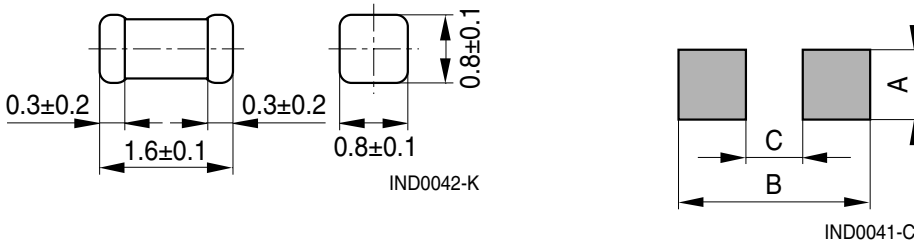
- No marking on component
- Minimum data on reel:
Manufacturer, ordering code, L value,
quantity, date of packing

Delivery mode and packing unit

- 8-mm cardboard tape, wound on 180-mm Ø reel
- Bulk case on request
- Packing unit: 4000 pcs./reel

SMD

Dimensional drawing and layout recommendation

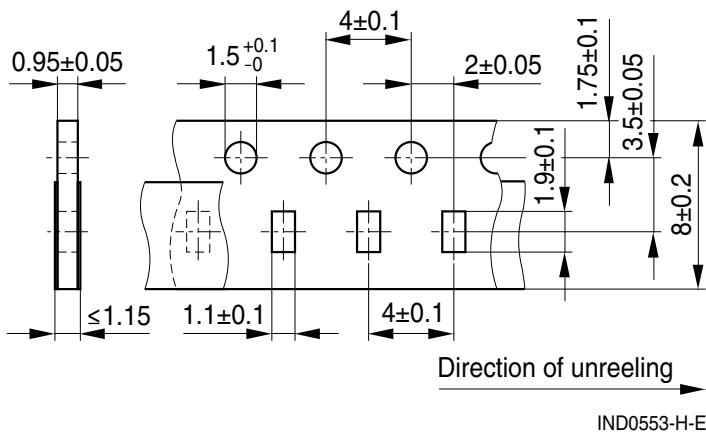


| A | B | C |
|---------------|---------------|---------------|
| 0.8 ± 0.1 | 2.3 ± 0.3 | 0.9 ± 0.1 |

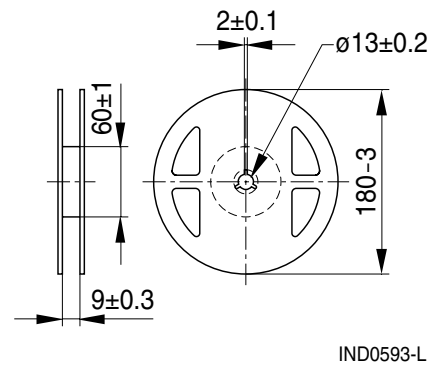
Dimensions in mm

Taping and packing

Cardboard tape



Reel



IND0593-L

Dimensions in mm

SMD
Technical data and measuring conditions

| | |
|--|--|
| Rated inductance L_R | Measured with impedance analyzer Agilent 4291A and test fixture Agilent 16196A 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, 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 $f_{\text{res},\min}$ | Measured with network analyzer Agilent 8720D, 20 °C |
| DC resistance R_{max} | Measured at 20 °C |
| Solderability (lead-free) | Sn95.5Ag3.8Cu0.7: (245 \pm 5) °C, (5 \pm 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 020C) |
| 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 |

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⁾²⁾ (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 | | $\pm 5\% \triangleq \text{J}$ $\pm 0.2 \text{ nH} \triangleq \text{Z}$ | 14 | 40 | 100 | 1100 | 0.065 | 8 |
| 4.7 | 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 | $\pm 5\% \triangleq \text{J}$ $\pm 2\% \triangleq \text{G}$ | | 14 | 40 | 100 | 600 | 0.20 | 5 |
| 12 | | 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.

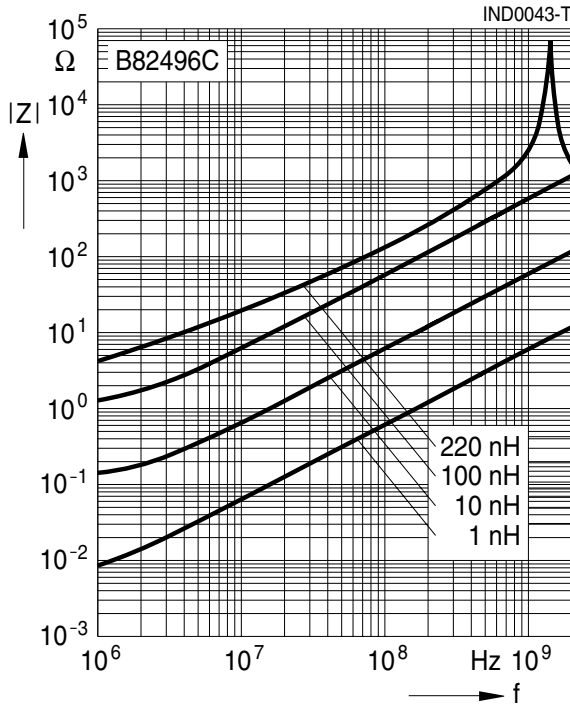
Sample kit available (see also chapter "Sample kits". Ordering code: B82496X001

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

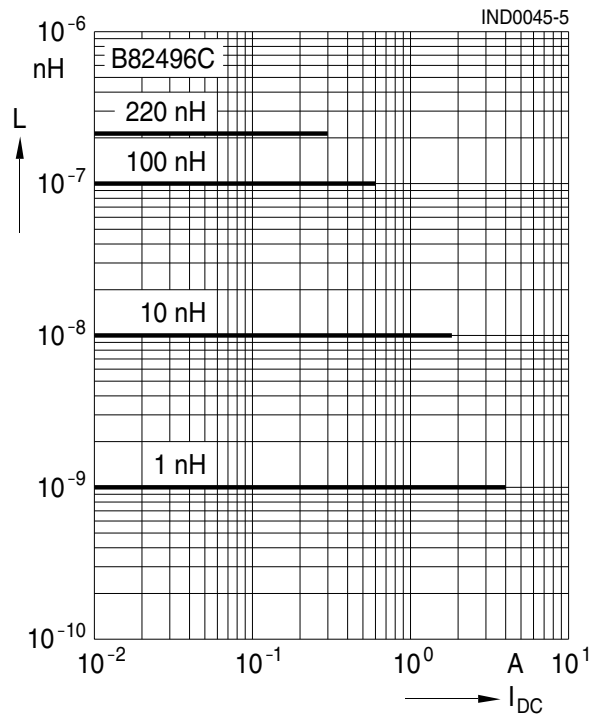
2) For bulk case the last digit has to be a »1«. Example: B82496C3109A001

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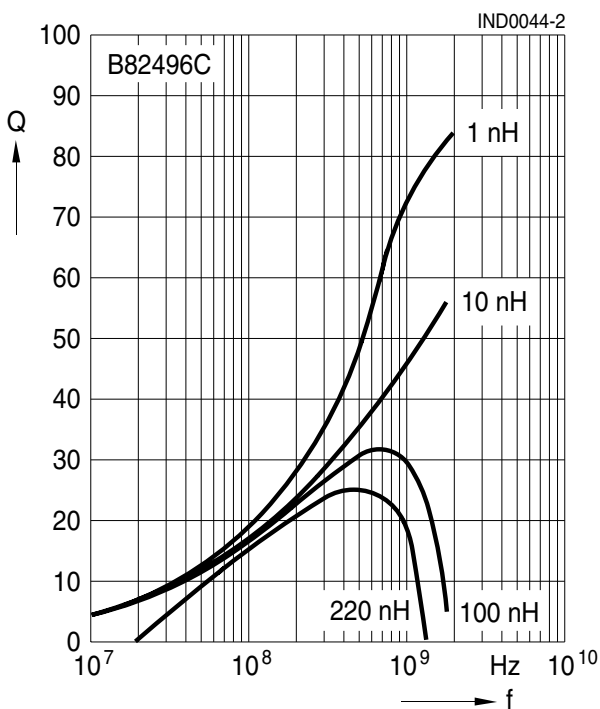
Impedance $|Z|$ versus frequency f
measured with impedance analyzer
Agilent 4291A/16196A, typical values at 20 °C



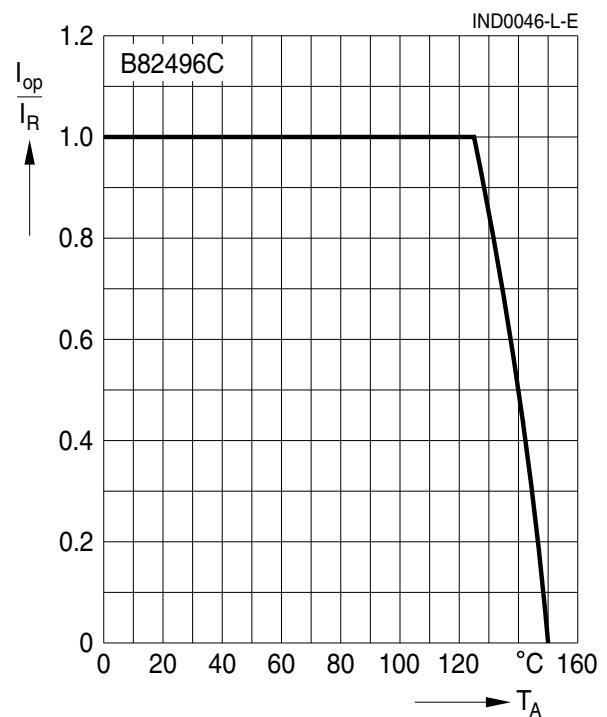
Inductance L versus DC load current I_{DC}
measured with LCR meter Agilent 4275A,
typical values at 20 °C



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) and in the data sheets.
 - Particular attention should be paid to the derating curves given there.
 - 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. In particular, it is possible for washing varnish agent residues to have a negative effect in the long-term on wire insulation.
- The following points must be observed if the components are potted in customer applications:
 - Many potting 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 material used attacks or destroys the wire insulation, plastics or glue.
 - The effect of the potting material can change the high-frequency behaviour of the components.
- Ferrites are sensitive to direct impact. This can cause the core material to flake, or lead to breakage of the core.
- 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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