



## **SMT inductors**

**SIMID series, SIMID 0603-C**

**Series/Type:**            **B82496C**

**Date:**                    **October 2012**

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### 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 Al<sub>2</sub>O<sub>3</sub> ceramic with Cu layer
- Layer composition Ni, Sn (lead-free)
- Electro-plated

### Marking

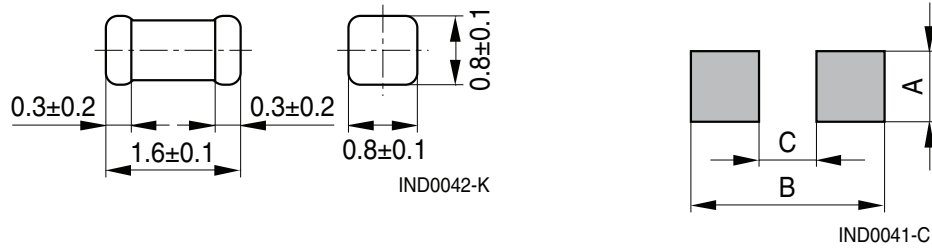
- No marking on component
- Minimum data on reel:  
Manufacturer, ordering code, L value,  
quantity, date of packing

### 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

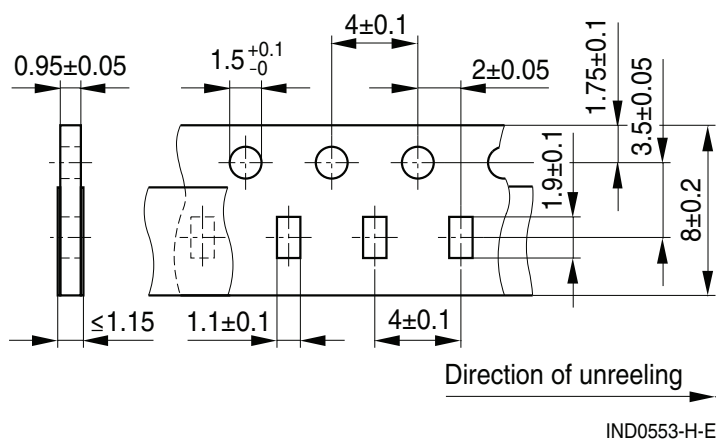


| A        | B        | C        |
|----------|----------|----------|
| 0.8 ±0.1 | 2.3 ±0.3 | 0.9 ±0.1 |

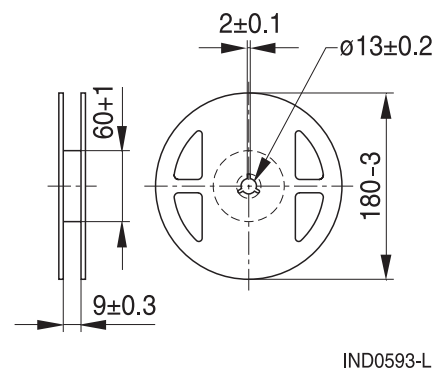
Dimensions in mm

## Taping and packing

Cardboard tape



Reel



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 $\leq 15$ K at rated temperature                                         |
| Self-resonance frequency $f_{res,min}$ | 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<br>Wetting of soldering area $\geq 95\%$<br>(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<br>Packaged: -25 °C ... +40 °C, $\leq 75\%$ RH                                                     |
| Weight                                 | Approx. 4 mg                                                                                                                   |

**SMD**
**Characteristics and ordering codes**

| L <sub>R</sub><br>nH | Tolerance                  | Q <sub>min</sub> | Q <sub>typ</sub><br>(at<br>800 MHz) | f <sub>L</sub> ; f <sub>Q</sub><br>MHz | I <sub>R</sub><br>mA | R <sub>max</sub><br>Ω | f <sub>res,min</sub><br>GHz | Ordering code <sup>1)2)</sup><br>(reel packing) |
|----------------------|----------------------------|------------------|-------------------------------------|----------------------------------------|----------------------|-----------------------|-----------------------------|-------------------------------------------------|
| 1.0                  | ±0.3 nH ≙ A<br>±0.2 nH ≙ Z | 7                | 60                                  | 100                                    | 1800                 | 0.02                  | 16                          | B82496C3109+000                                 |
| 1.2                  |                            | 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                  | ±5% ≙ J<br>±0.2 nH ≙ Z     | 14               | 40                                  | 100                                    | 1100                 | 0.065                 | 8                           | B82496C3399+000                                 |
| 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                   | ±5% ≙ J<br>±2% ≙ G         | 14               | 40                                  | 100                                    | 600                  | 0.20                  | 5                           | B82496C3100+000                                 |
| 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<sub>R</sub> on request.

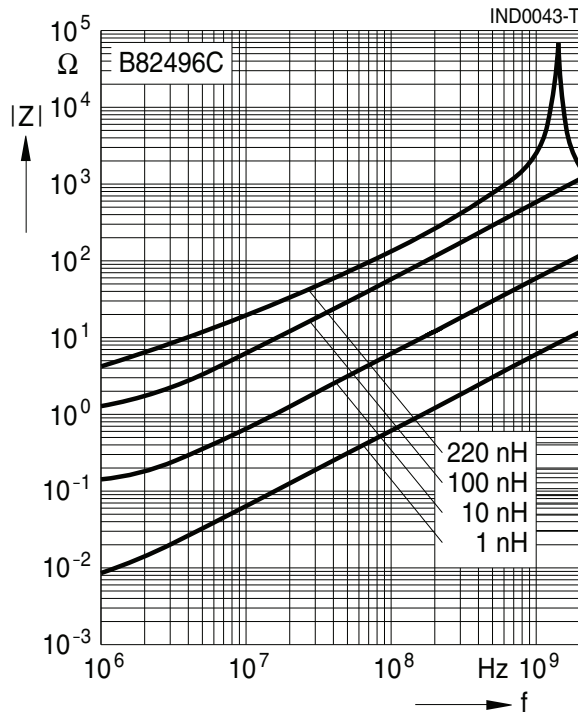
Sample kit available (see also chapter "Sample kits". Ordering code: B82496X001

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

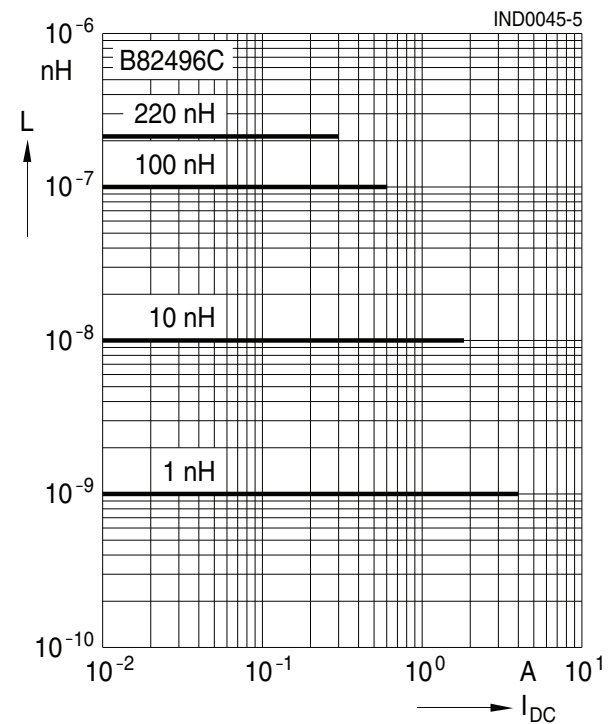
2) For bulk case the last digit has to be a »1«. Example: B82496C3109A001

**SMD**

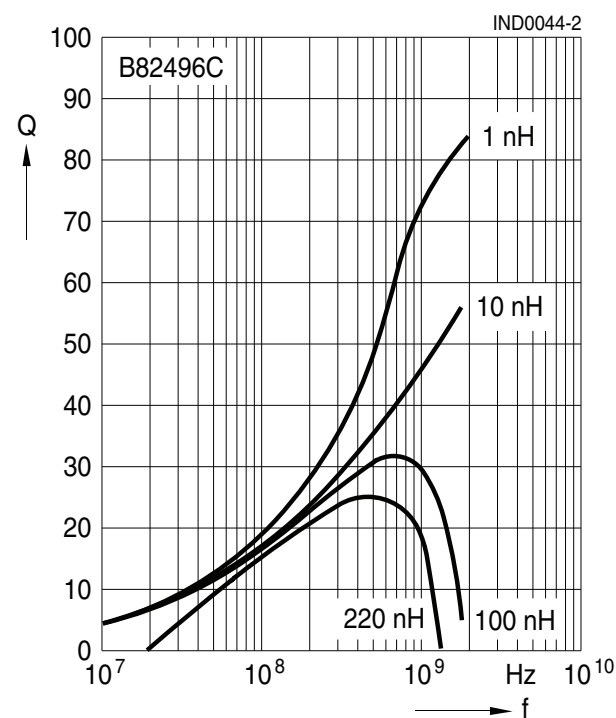
**Impedance  $|Z|$  versus frequency  $f$**   
measured with impedance analyzer  
Agilent 4291A/16196A, typical values at +20 °C



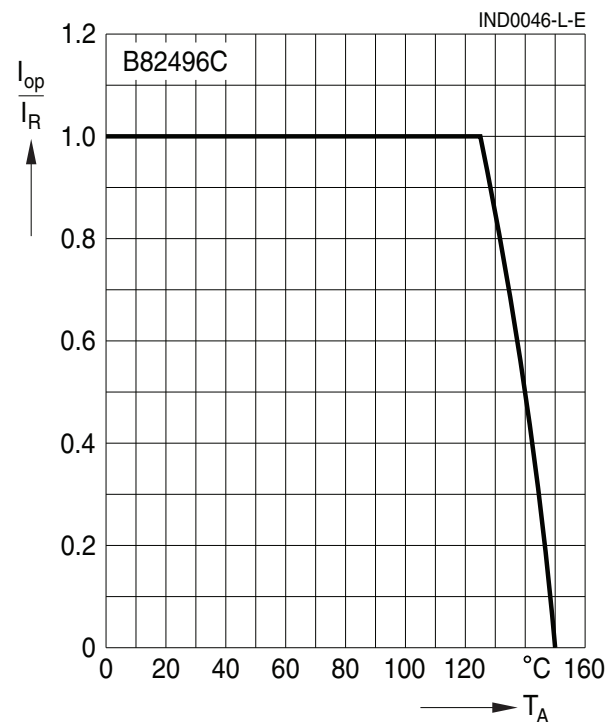
**Inductance  $L$  versus DC load current  $I_{DC}$**   
measured with LCR meter Agilent 4275A,  
typical values at +20 °C



**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.

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 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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