SMT inductors

SIMID series, SIMID 0603-C

Series/Type: **B82496C**

Date: March 2008

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 Al_2O_3 ceramic with Cu layer
- Layer composition Ni, Sn (lead-free)
- Electro-plated

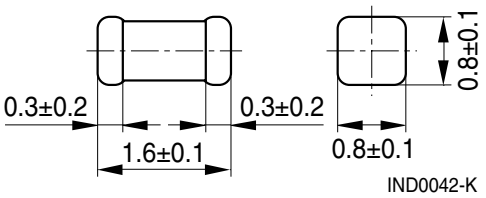
Marking

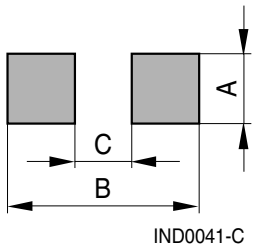
- No marking on component
- Minimum data on reel: Manufacturer, ordering code, L value, quantity, date of packing

Delivery mode and packing unit

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

Dimensional drawing and layout recommendation



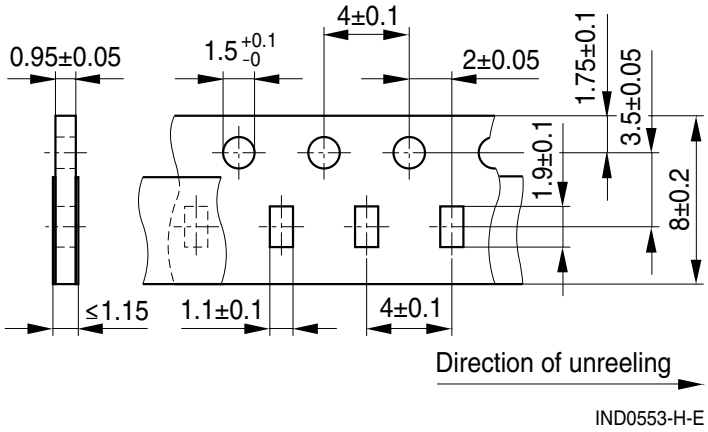


Dimensions in mm

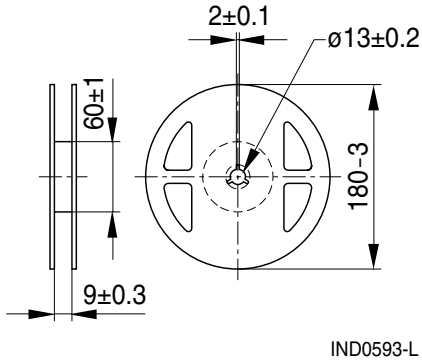
A	B	C
0.8 ± 0.1	2.3 ± 0.3	0.9 ± 0.1

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 ≤ 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 ±5) °C, (5 ±0.3) s Wetting of soldering area ≥ 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, ≤ 75% RH
Weight	Approx. 4 mg

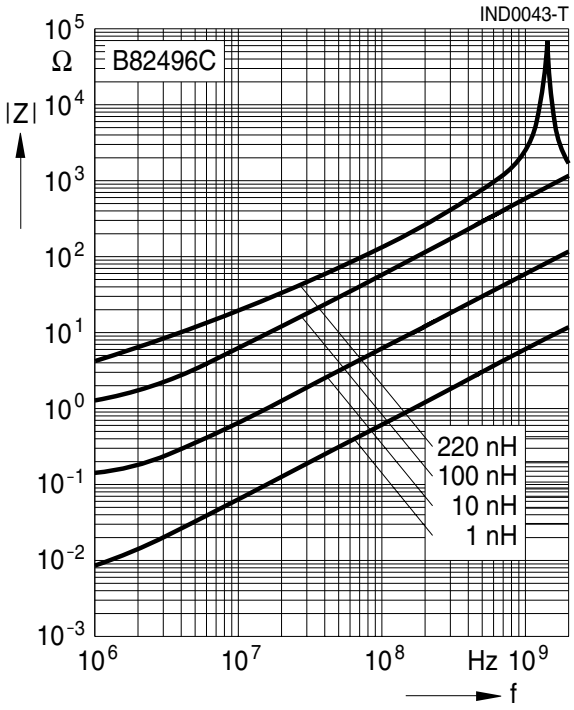
Characteristics and ordering codes

L_R nH	Tolerance	Q_{min}	Q_{typ} (at 800 MHz)	f_L; f_Q MHz	I_R mA	R_{max} Ω	$f_{res,min}$ GHz	Ordering code[1)2)] (reel packing)
1.0	±0.3 nH ≙ A	7	60	100	1800	0.02	16	B82496C3109+000
1.2	±0.2 nH ≙ 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	±5% ≙ J	14	40	100	1100	0.065	8	B82496C3399+000
4.7	±0.2 nH ≙ 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	±5% ≙ J	14	40	100	600	0.20	5	B82496C3100+000
12	±2% ≙ 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

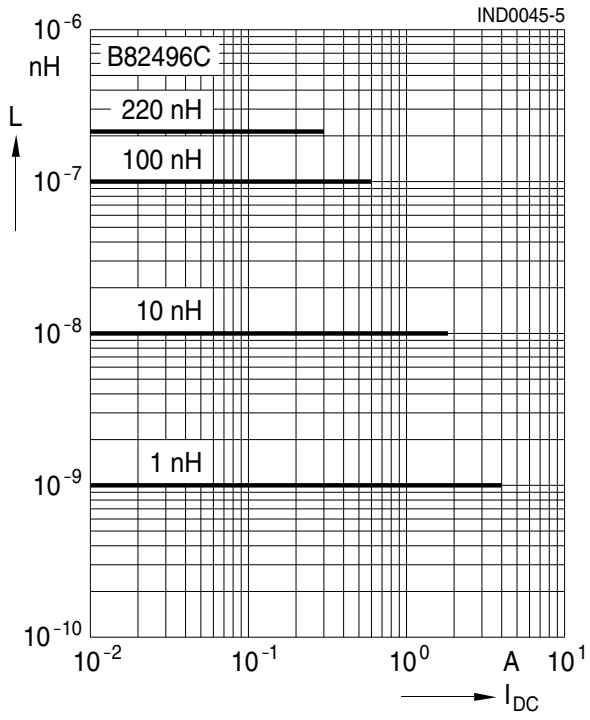
Special versions on request.
Higher currents possible at temperatures $<T_R$ on request.
Sample kit available (see also chapter “Sample kits”. Ordering code: B82496X001

1) Replace the + by the code letter for the required inductance tolerance.
2) For bulk case the last digit has to be a »1«. Example: B82496C3109A001

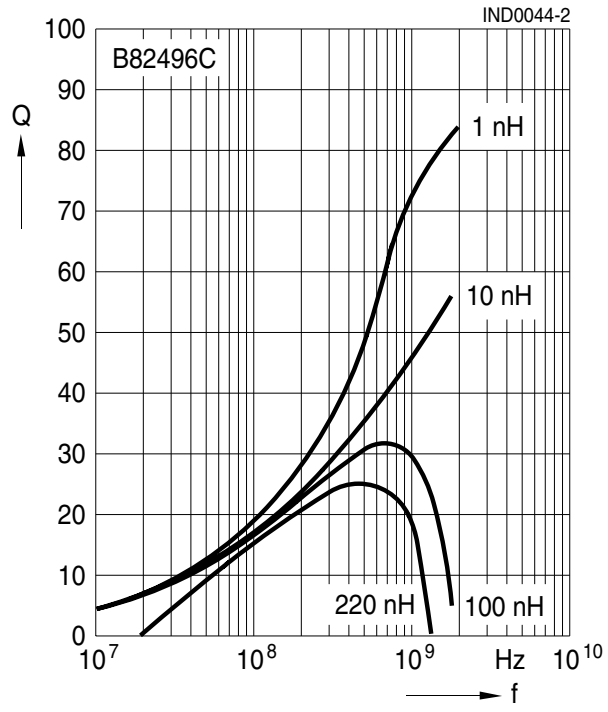
Impedance |Z| versus frequency f
measured with impedance analyzer
Agilent 4291A/16196A, typical values at 20 °C



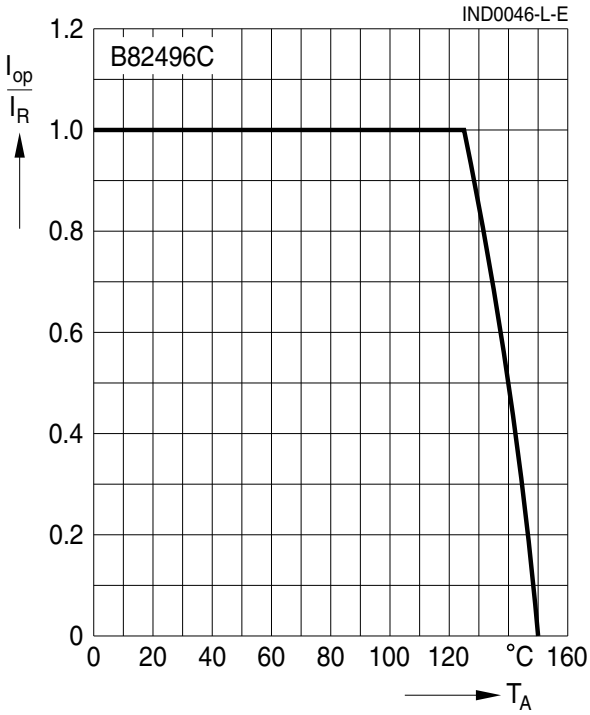
Inductance L versus DC load current I_{DC}
measured with LCR meter Agilent 4275A,
typical values at 20 °C



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.

Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application.**

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