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EPCOS

# SMT inductors

## SIMID series, SIMID 0805-B

**Series/Type:** **B82498B**

Date: March 2008

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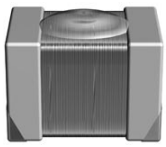
EPCOS

# SMT inductors, SIMID series B82498B

## SIMID 0805-B

SMD

**Size 0805 (EIA) and/or 2012 (IEC)**
**Rated inductance 2.7 nH to 4700 nH**
**Rated current 90 mA to 1000 mA**



### Construction

- Cubic coil with ceramic core
- Winding partially plastic-sealed
- Winding ends welded to terminals

### Features

- High Q factor
- High resonance frequency
- Close inductance tolerance
- Suitable for lead-free reflow soldering
- RoHS-compatible

### Applications

Resonant circuits, impedance matching for
- Antenna amplifiers
- Multimedia
- Car access systems
- TPMS (Tire Pressure Monitoring System)
- Wireless communication systems
- GPS (Global Positioning System)

### Terminals

- Base material $Al_2O_3$ ceramic or ferrite
- Thick-film coating of Ag/Pd/Pt

### Marking

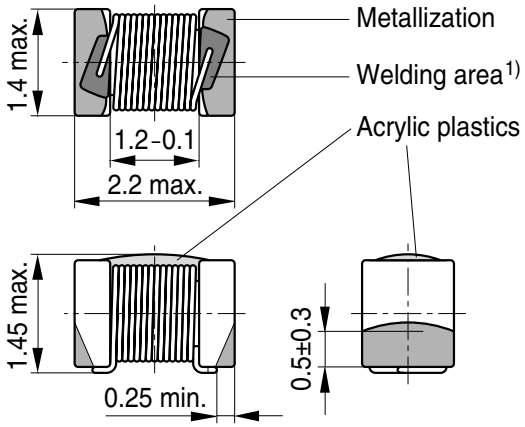
- No marking on component
- Minimum data on reel:
  Manufacturer, ordering code, L value,
  quantity, date of packing

### Delivery mode and packing unit

- 8-mm blister tape, wound on 180-mm ∅ reel
- Packing unit: 3000 pcs./reel

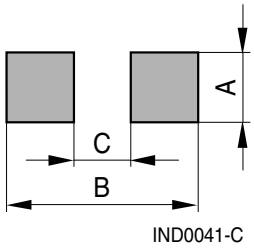
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## Dimensional drawing and layout recommendation




1) This area (30% of contact area) should not be used to assess solderability

IND0047-U-E



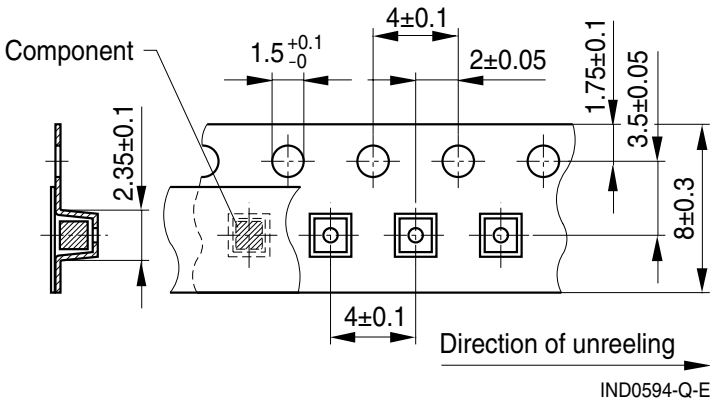

IND0041-C

| A | B | C |
|---|---|---|
| 1.1 ± 0.2 | 3.4 ± 0.4 | 1.1 ± 0.1 |

Dimensions in mm

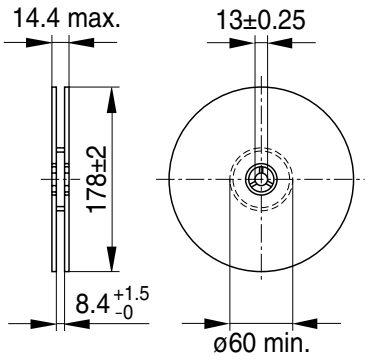
## Taping and packing

Blister tape




IND0594-Q-E

Reel




IND0581-C

Dimensions in mm

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## Technical data and measuring conditions

| | |
|---|---|
| Rated inductance $L_R$ | Measured with RF LCR meter Agilent 4286A and test fixture Agilent 16193A at frequency $f_L$, 0.1 V, 20 °C |
| Q factor $Q_{min}$, $Q_{typ}$ | Measured with RF LCR meter Agilent 4286A and test fixture Agilent 16193A, 20 °C<br>$Q_{min}$ measured at frequency $f_Q$ |
| Rated temperature $T_R$ | 85 °C |
| Rated current $I_R$ | Maximum permissible DC with inductance decrease $\Delta L/L_0 \leq 10\%$ and temperature increase of ≤ 20 K at rated temperature |
| Self-resonance frequency $f_{res,min}$ | Measured with network analyzer Agilent 8753D, 20 °C |
| DC resistance $R_{max}$ | Measured at 20 °C |
| Solderability (lead-free) | Sn95.5Ag3.8Cu0.7: (245 ±5) °C, (5 ±0.3) s<br>Wetting of soldering area ≥ 90%<br>(based on IEC 60068-2-58) |
| Resistance to soldering heat | 260 °C, 20 s (as referenced in JEDEC J-STD 020C) |
| Climatic category | 55/125/56 (to IEC 60068-1) |
| Storage conditions | Mounted: –55 °C … +125 °C<br>Packaged: –25 °C … +40 °C, ≤ 75% RH |
| Weight | Approx. 8.5 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 | $f_{res,min}$ MHz | Ordering code |
|---|---|---|---|---|---|---|---|---|
| Core material: ceramic | | | | | | | | |
| 2.7 | ±10% ≙ K | 20 | 50 | 250 | 1000 | 0.03 | 6000 | B82498B3279M000 |
| 5.6 | ±20% ≙ M | 25 | 60 | 250 | 900 | 0.04 | 6000 | B82498B3569M000 |
| 6.8 | | 30 | 70 | 250 | 800 | 0.05 | 5500 | B82498B3689K000 |
| 8.2 | | 35 | 75 | 250 | 700 | 0.06 | 5000 | B82498B3829M000 |
| 10 | ±5% ≙ J | 40 | 80 | 250 | 700 | 0.06 | 4500 | B82498B3100J000 |
| 12 | | 40 | 85 | 250 | 700 | 0.06 | 4000 | B82498B3120J000 |
| 15 | | 40 | 85 | 250 | 670 | 0.07 | 3500 | B82498B3150J000 |
| 18 | | 45 | 90 | 250 | 670 | 0.07 | 3300 | B82498B3180J000 |
| 22 | | 45 | 85 | 250 | 600 | 0.09 | 2600 | B82498B3220J000 |
| 27 | | 50 | 90 | 250 | 600 | 0.09 | 2500 | B82498B3270J000 |

Closer tolerances on request.

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## Characteristics and ordering codes

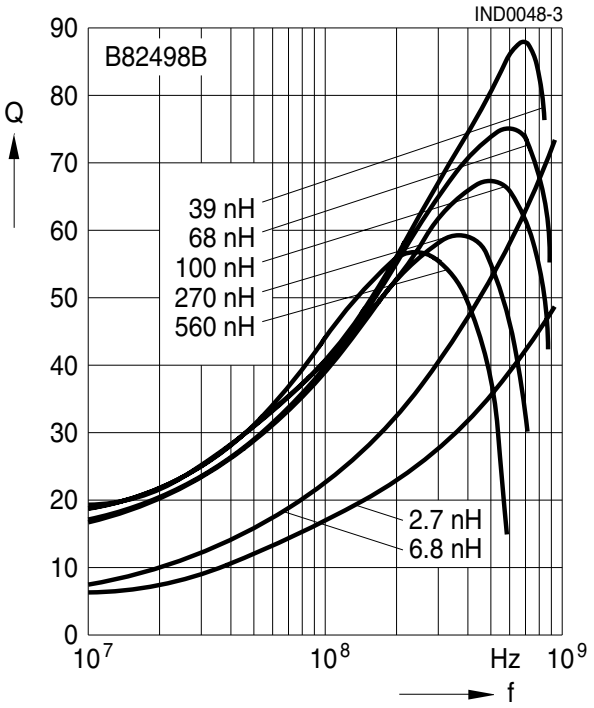
| $L_R$ nH | Tolerance | $Q_{min}$ | $Q_{typ}$ (at 800 MHz) | $f_L$; $f_Q$ MHz | $I_R$ mA | $R_{max}$ Ω | $f_{res,min}$ MHz | Ordering code[1)] |
|---|---|---|---|---|---|---|---|---|
| Core material: ceramic | | | | | | | | |
| 33 | ±5% ≙ J | 45 | 80 | 250 | 520 | 0.12 | 2150 | B82498B3330J000 |
| 39 | | 50 | 90 | 250 | 560 | 0.10 | 2050 | B82498B3390J000 |
| 47 | | 45 | 85 | 200 | 500 | 0.13 | 1900 | B82498B3470J000 |
| 56 | ±2% ≙ G | 45 | 60 | 200 | 480 | 0.14 | 1700 | B82498B3560+000 |
| 68 | ±5% ≙ J | 45 | 60 | 200 | 410 | 0.19 | 1550 | B82498B3680+000 |
| 82 | | 40 | 60 | 150 | 390 | 0.21 | 1430 | B82498B3820+000 |
| 100 | | 40 | 50 | 150 | 350 | 0.26 | 1310 | B82498B3101+000 |
| 120 | | 40 | 45 | 150 | 270 | 0.44 | 1210 | B82498B3121+000 |
| 150 | | 35 | 40 | 100 | 270 | 0.44 | 1120 | B82498B3151+000 |
| 180 | | 35 | 30 | 100 | 260 | 0.47 | 1030 | B82498B3181+000 |
| 220 | | 35 | — | 100 | 240 | 0.55 | 950 | B82498B3221+000 |
| 270 | | 35 | — | 100 | 180 | 1.0 | 870 | B82498B3271+000 |
| 330 | | 35 | — | 100 | 180 | 1.0 | 800 | B82498B3331+000 |
| 390 | | 35 | — | 100 | 130 | 1.9 | 730 | B82498B3391+000 |
| 470 | | 35 | — | 100 | 115 | 2.4 | 660 | B82498B3471+000 |
| 560 | | 35 | — | 100 | 100 | 3.2 | 600 | B82498B3561+000 |
| Core material: ferrite | | | | | | | | |
| 680 | ±2% ≙ G | 20 | — | 25.2 | 250 | 0.50 | 450 | B82498B1681+000 |
| 820 | ±5% ≙ J | 20 | — | 25.2 | 240 | 0.55 | 400 | B82498B1821+000 |
| 1000 | | 20 | — | 7.96 | 250 | 0.50 | 350 | B82498B1102+000 |
| 1200 | | 20 | — | 7.96 | 220 | 0.65 | 300 | B82498B1122+000 |
| 1500 | | 20 | — | 7.96 | 200 | 0.75 | 250 | B82498B1152+000 |
| 1800 | | 20 | — | 7.96 | 190 | 0.85 | 250 | B82498B1182+000 |
| 2200 | | 20 | — | 7.96 | 130 | 1.7 | 200 | B82498B1222+000 |
| 2700 | | 20 | — | 7.96 | 120 | 2.0 | 200 | B82498B1272+000 |
| 3300 | | 20 | — | 7.96 | 100 | 3.3 | 200 | B82498B1332+000 |
| 3900 | | 20 | — | 7.96 | 95 | 3.6 | 150 | B82498B1392+000 |
| 4700 | | 20 | — | 7.96 | 90 | 3.8 | 150 | B82498B1472+000 |

Closer tolerances on request.

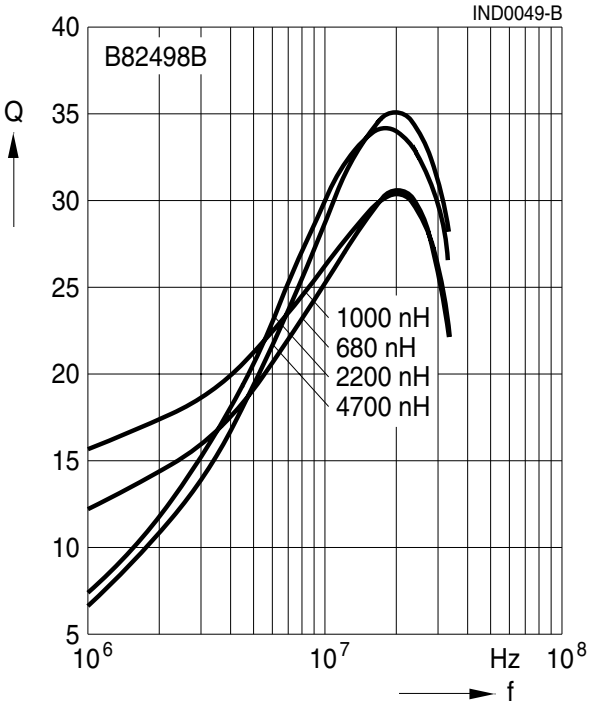
1) Replace the + by the code letter for the required inductance tolerance.

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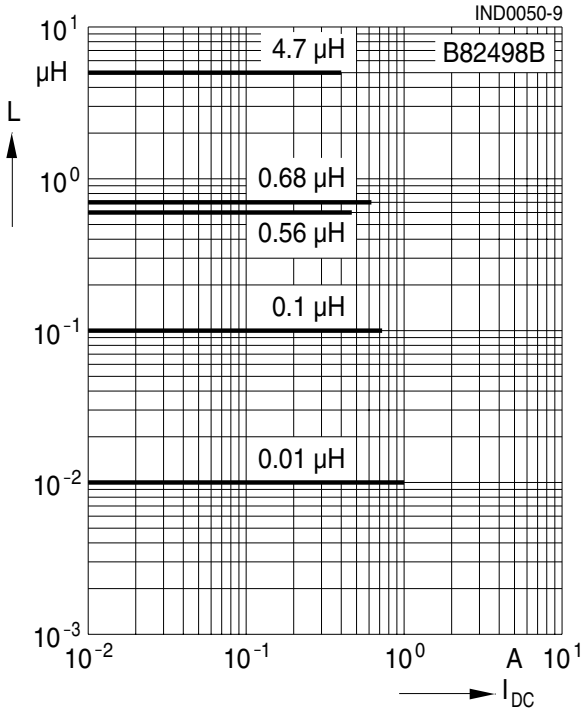
**Q factor versus frequency f (ceramic core)**
measured with RF LCR meter
Agilent 4286A, typical values at 20 °C



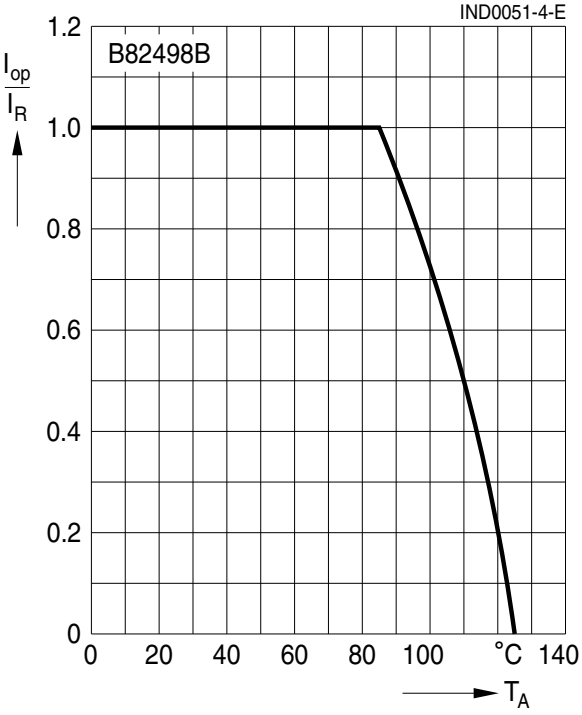

**Q factor versus frequency f (ferrite core)**
measured with RF LCR meter
Agilent 4286A, typical values at 20 °C




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




**Current derating $I_{op}/I_R$**
**versus ambient temperature $T_A$**
(rated temperature $T_R$ = 85 °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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2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified.** In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.

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