



## **SMT inductors**

SIMID series, SIMID 1812-T

**Series/Type:**            **B82432T**  
**Date:**                    March 2008

SMD

Size 1812 (EIA) or 4532 (IEC)

Rated inductance 1  $\mu\text{H}$  to 1000  $\mu\text{H}$

Rated current 70 mA to 1300 mA



**Construction**

- Upright ferrite drum core
- Laser-welded winding
- Flame-retardant molding

**Features**

- Temperature range up to 150 °C
- High current handling capability
- Qualified to AEC-Q200
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020C
- RoHS-compatible

**Applications**

- Filtering of supply voltages, coupling, decoupling
- DC/DC converters
- Automotive electronics (e.g. single-wire bus systems)
- Telecommunications
- Industrial electronics

**Terminals**

- Base material CuSn6
- Layer composition Cu, Ag, Sn (lead-free)<sup>1)</sup>
- Electro-plated

**Marking**

- Marking on component:  
Manufacturer and letter "T",  
L value (in  $\mu\text{H}$ ), tolerance of L value (coded),  
date of manufacture (YWWD)
- Minimum data on reel:  
Manufacturer, ordering code, L value, quantity, date of packing

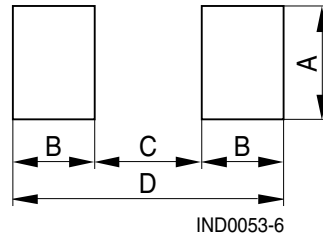
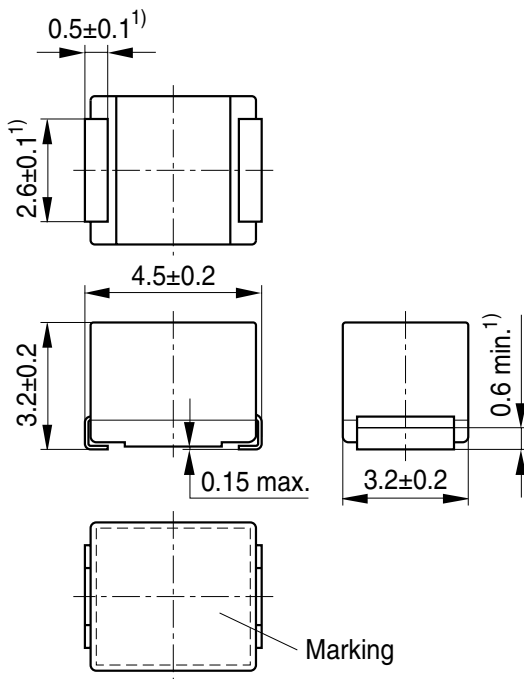
**Delivery mode and packing unit**

- 12-mm blister tape, wound on 330-mm  $\varnothing$  reel
- Packing unit: 2500 pcs./reel

<sup>1)</sup> Ni-barrier-plated terminals on request (B82432T\*50).

### SMD

### Dimensional drawing and layout recommendation



| A   | B   | C   | D   |
|-----|-----|-----|-----|
| 3.6 | 1.3 | 3.2 | 5.8 |

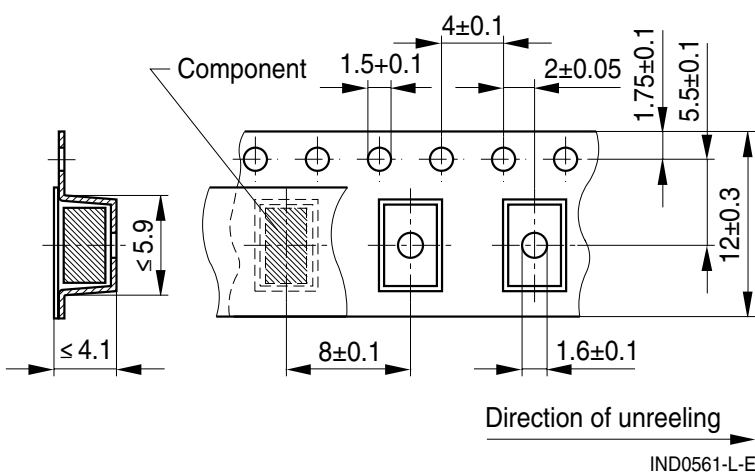
1) Soldering area

IND0083-T-E

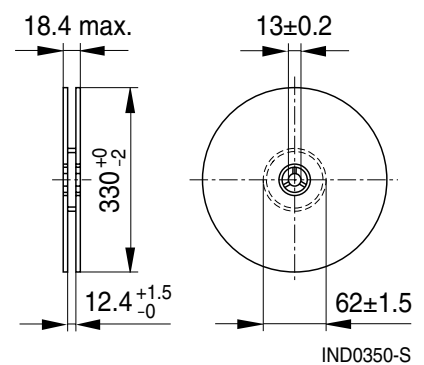
Dimensions in mm

### Taping and packing

#### Blister tape



#### Reel



Dimensions in mm

# Technical data and measuring conditions

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Rated inductance $L_R$                 | Measured with impedance analyzer Agilent 4294A at frequency $f_L$ , 0.1 V, 20 °C                                                      |
| Q factor $Q_{min}$                     | Measured with impedance analyzer Agilent 4294A at frequency $f_Q$ , 20 °C                                                             |
| 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 $\leq 40$ 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 $\pm$ 5) °C, (5 $\pm$ 0.3) s<br>Wetting of soldering area $\geq 90\%$<br>(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<br>Packaged: -25 °C ... +40 °C, $\leq 75\%$ RH                                                            |
| Weight                                 | Approx. 130 mg                                                                                                                        |

# Characteristics and ordering codes

| $L_R$<br>$\mu H$ | Tolerance               | $Q_{min}$ | $f_L; f_Q$<br>MHz | $I_R$<br>mA | $R_{max}$<br>$\Omega$ | $f_{res,min}$<br>MHz | Ordering code <sup>1)</sup> |
|------------------|-------------------------|-----------|-------------------|-------------|-----------------------|----------------------|-----------------------------|
| 1.0              | $\pm 10\% \triangleq K$ | 10        | 7.96              | 1300        | 0.08                  | 110                  | B82432T1102K000             |
| 1.2              |                         | 10        | 7.96              | 1200        | 0.10                  | 100                  | B82432T1122K000             |
| 1.5              |                         | 10        | 7.96              | 1150        | 0.11                  | 80                   | B82432T1152K000             |
| 1.8              |                         | 10        | 7.96              | 1050        | 0.13                  | 70                   | B82432T1182K000             |
| 2.2              |                         | 10        | 7.96              | 1000        | 0.15                  | 60                   | B82432T1222K000             |
| 2.7              |                         | 10        | 7.96              | 950         | 0.17                  | 55                   | B82432T1272K000             |
| 3.3              |                         | 10        | 7.96              | 900         | 0.19                  | 50                   | B82432T1332K000             |
| 3.9              |                         | 10        | 7.96              | 850         | 0.20                  | 45                   | B82432T1392K000             |
| 4.7              |                         | 10        | 7.96              | 800         | 0.22                  | 40                   | B82432T1472K000             |
| 5.6              |                         | 10        | 7.96              | 750         | 0.26                  | 38                   | B82432T1562K000             |
| 6.8              |                         | 10        | 7.96              | 700         | 0.30                  | 36                   | B82432T1682K000             |
| 8.2              |                         | 10        | 7.96              | 670         | 0.33                  | 30                   | B82432T1822K000             |



1) For Ni-barrier-plated terminals replace the last two digits "00" by "50".

# Characteristics and ordering codes

| L <sub>R</sub><br>μH | Tolerance  | Q <sub>min</sub> | 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>MHz | Ordering code <sup>1)</sup> |
|----------------------|------------|------------------|----------------------------------------|----------------------|-----------------------|-----------------------------|-----------------------------|
| 10                   | ± 10 % △ K | 10               | 2.52                                   | 650                  | 0.35                  | 25                          | B82432T1103K000             |
| 12                   |            | 10               | 2.52                                   | 630                  | 0.45                  | 23                          | B82432T1123K000             |
| 15                   |            | 10               | 2.52                                   | 600                  | 0.50                  | 20                          | B82432T1153K000             |
| 18                   |            | 10               | 2.52                                   | 550                  | 0.60                  | 18                          | B82432T1183K000             |
| 22                   |            | 10               | 2.52                                   | 450                  | 0.70                  | 15                          | B82432T1223K000             |
| 27                   |            | 10               | 2.52                                   | 430                  | 1.00                  | 14                          | B82432T1273K000             |
| 33                   |            | 10               | 2.52                                   | 400                  | 1.20                  | 13                          | B82432T1333K000             |
| 39                   |            | 10               | 2.52                                   | 380                  | 1.30                  | 12                          | B82432T1393K000             |
| 47                   |            | 10               | 2.52                                   | 350                  | 1.35                  | 11                          | B82432T1473K000             |
| 56                   |            | 10               | 2.52                                   | 300                  | 2.00                  | 10                          | B82432T1563K000             |
| 68                   |            | 10               | 2.52                                   | 250                  | 2.50                  | 8.0                         | B82432T1683K000             |
| 82                   |            | 10               | 2.52                                   | 220                  | 3.00                  | 7.0                         | B82432T1823K000             |
| 100                  |            | 20               | 0.796                                  | 200                  | 3.50                  | 6.5                         | B82432T1104K000             |
| 120                  |            | 20               | 0.796                                  | 180                  | 4.50                  | 6.3                         | B82432T1124K000             |
| 150                  |            | 20               | 0.796                                  | 160                  | 6.00                  | 6.1                         | B82432T1154K000             |
| 180                  |            | 20               | 0.796                                  | 140                  | 7.00                  | 5.5                         | B82432T1184K000             |
| 220                  |            | 20               | 0.796                                  | 130                  | 7.50                  | 4.5                         | B82432T1224K000             |
| 270                  |            | 20               | 0.796                                  | 120                  | 10.5                  | 4.3                         | B82432T1274K000             |
| 330                  |            | 20               | 0.796                                  | 120                  | 11.0                  | 4.1                         | B82432T1334K000             |
| 390                  |            | 20               | 0.796                                  | 110                  | 13.0                  | 3.9                         | B82432T1394K000             |
| 470                  |            | 20               | 0.796                                  | 100                  | 15.0                  | 3.5                         | B82432T1474K000             |
| 560                  |            | 20               | 0.796                                  | 90                   | 20.0                  | 3.0                         | B82432T1564K000             |
| 680                  |            | 20               | 0.796                                  | 80                   | 23.0                  | 2.6                         | B82432T1684K000             |
| 820                  |            | 20               | 0.796                                  | 80                   | 27.0                  | 2.4                         | B82432T1824K000             |
| 1000                 |            | 20               | 0.252                                  | 70                   | 30.0                  | 2.3                         | B82432T1105K000             |

Closer tolerances on request.

Higher currents possible at temperatures <T<sub>R</sub> on request.

Sample kit available. Ordering code: B82432X001

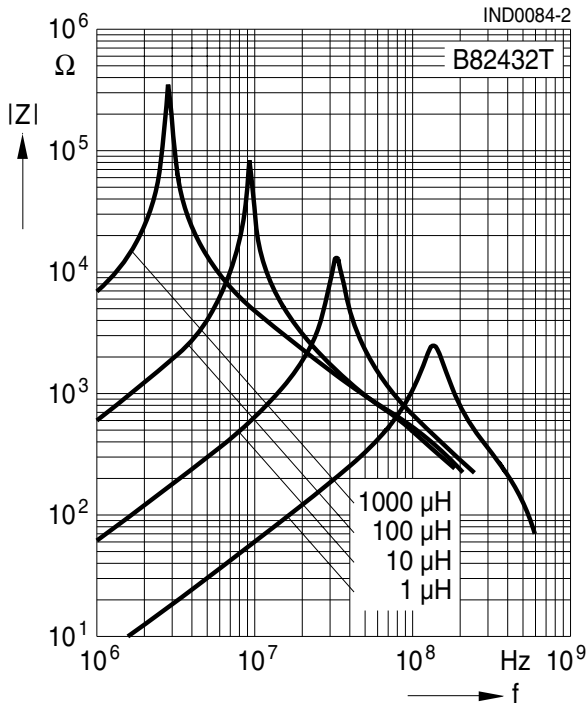
For more information refer to chapter "Sample kits".

1) For Ni-barrier-plated terminals replace the last two digits of ordering code "00" by "50".

### SMD

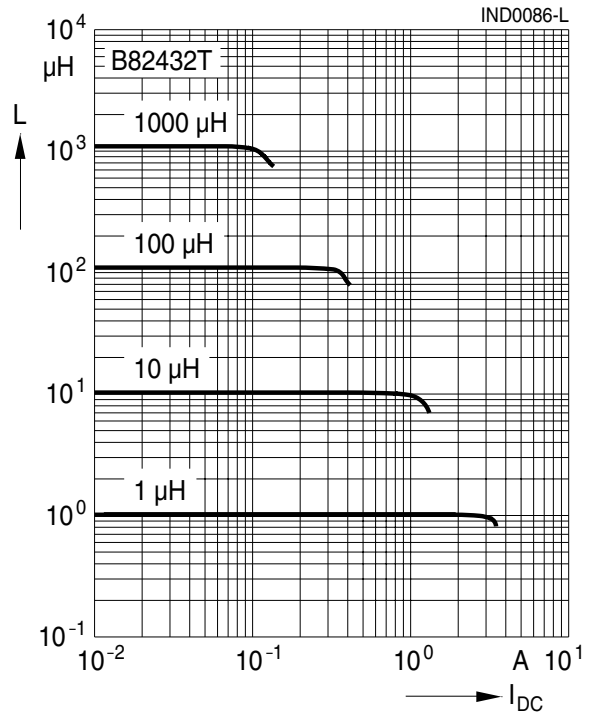
#### Impedance $|Z|$ versus frequency $f$

measured with impedance analyzer Agilent 4294A/test fixture 16193A, typical values at 20 °C



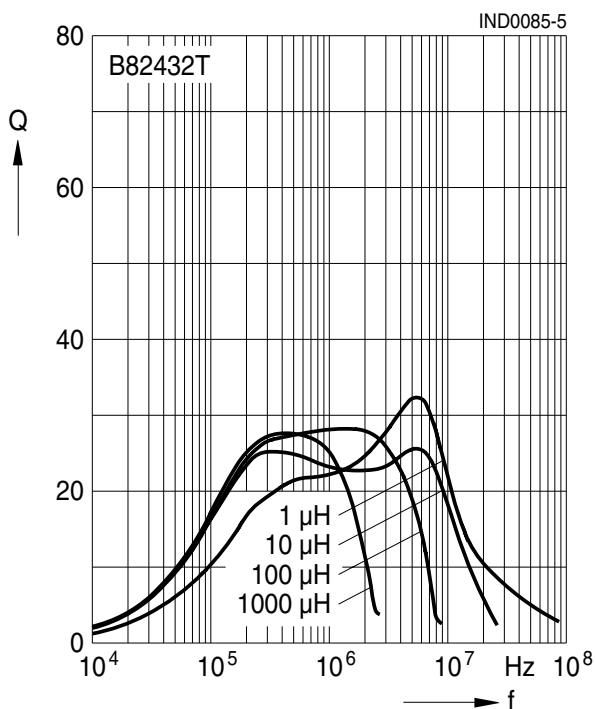
#### Inductance $L$ versus DC load current $I_{DC}$

measured with LCR meter Agilent 4275A, typical values at 20 °C



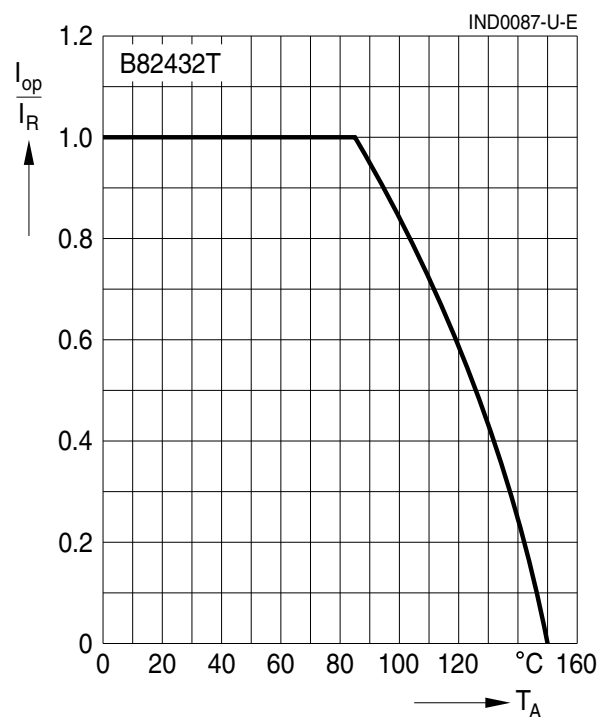
#### Q factor versus frequency $f$

measured with impedance analyzer Agilent 4294A/test fixture 16193A, 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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