

## **SMT inductors**

SIMID series, SIMID 2220-T

**Series/Type:**            **B82442T**

**Date:**                    July 2016

## SMD

Size 2220 (EIA) or 5650 (IEC)  
 Rated inductance 1 ... 10000  $\mu$ H  
 Rated current 46 ... 3510 mA



### Construction

- Ferrite drum core
- Laser-welded winding
- Flame-retardant molding

### Features

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

### Applications

- Filtering of supply voltages, coupling, decoupling
- DC/DC converters/switch-mode power supplies
- Automotive electronics
- Telecommunications
- Consumer electronics
- Industrial electronics

### Terminals

- Base material CuSn6
- Layer composition Ni, Sn (lead-free)
- Electro-plated

### Marking

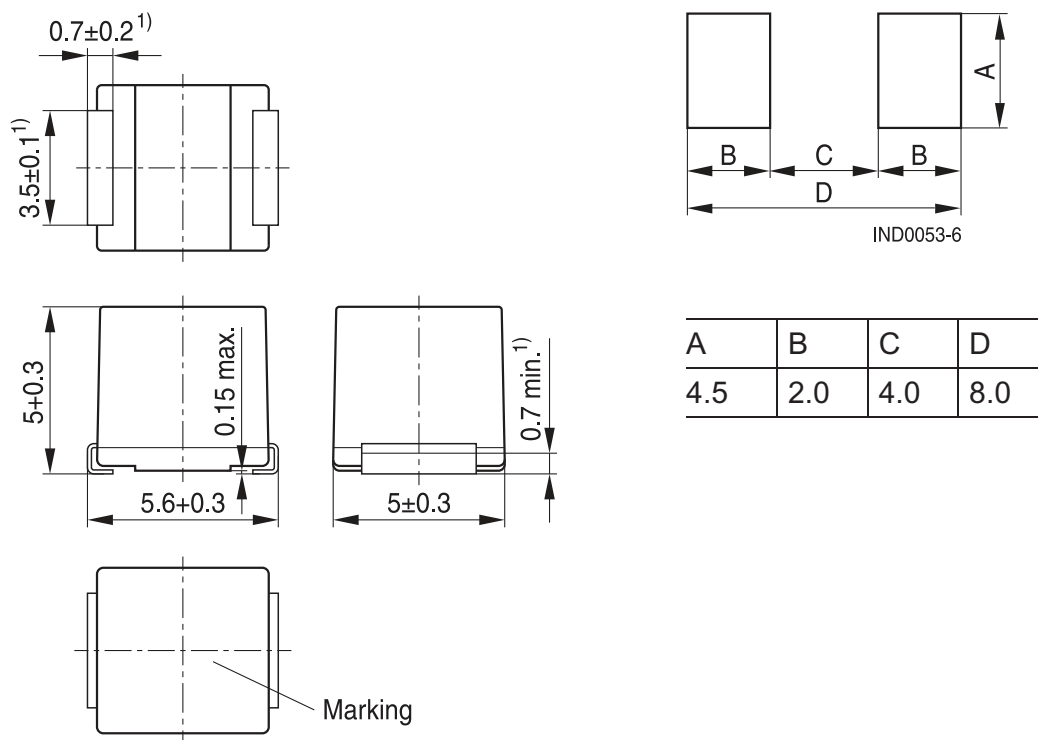
- Marking on component:  
 Manufacturer, letter "T", L value (in  $\mu$ H),  
 tolerance of L value (coded), date of manufacture (YWWDD)
- Minimum data on reel:  
 Manufacturer, ordering code, L value, quantity, date of packing

### Delivery mode and packing unit

- 12-mm blister tape, wound on 330-mm  $\varnothing$  reel
- Packing unit: 1500 pcs./reel

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## Dimensional drawing and layout recommendation



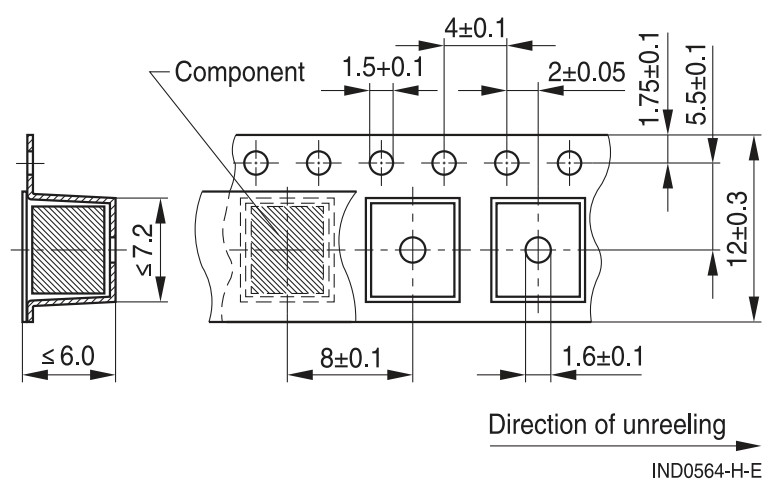
1) Soldering area

IND1306-H-E

Dimensions in mm

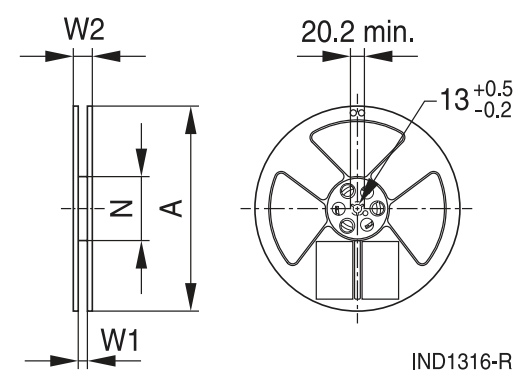
## Taping and packing

### Blister tape



Dimensions in mm

### Reel



| W1   | W2   | A   | N   |
|------|------|-----|-----|
| 12.4 | 18.4 | 330 | 100 |

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#### Technical data and measuring conditions

|                                        |                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------|
| Rated inductance $L_R$                 | Measured with impedance analyzer Agilent 4294A at frequency $f_L$ , 0.5 V, +23 ±5 °C                       |
| Q factor $Q_{min}$                     | Measured with impedance analyzer Agilent 4294A at frequency $f_Q$ , 0.5 V, +23 ±5 °C                       |
| Rated temperature $T_R$                | +85 °C                                                                                                     |
| Rated current $I_R$                    | Maximum permissible DC with temperature increase of ≤ 65 K at rated temperature                            |
| Saturation current $I_{sat}$           | Maximum permissible DC with inductance decrease $\Delta L/L_0 \leq 10\%$ , at +23 ±5 °C                    |
| Self-resonance frequency $f_{res,min}$ | Measured with impedance analyzer Agilent 4294A / E4991A at +23 ±5 °C                                       |
| DC resistance $R_{max}$                | Measured at +23 ±5 °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, 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, ≤ 75% RH                                       |
| Weight                                 | Approx. 0.4 g                                                                                              |

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## 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 | I <sub>sat</sub><br>mA | R <sub>max</sub><br>Ω | f <sub>res,min</sub><br>MHz | Ordering code   |
|----------------------|-----------|------------------|----------------------------------------|----------------------|------------------------|-----------------------|-----------------------------|-----------------|
| 1.0                  | ±10% ≒ K  | 15               | 7.96                                   | 3510                 | 7330                   | 0.025                 | 111                         | B82442T1102K050 |
| 1.2                  |           | 15               | 7.96                                   | 3090                 | 6030                   | 0.028                 | 75                          | B82442T1122K050 |
| 1.5                  |           | 15               | 7.96                                   | 3020                 | 5480                   | 0.033                 | 60                          | B82442T1152K050 |
| 1.8                  |           | 15               | 7.96                                   | 2770                 | 4890                   | 0.035                 | 55                          | B82442T1182K050 |
| 2.2                  |           | 15               | 7.96                                   | 2710                 | 4820                   | 0.038                 | 46                          | B82442T1222K050 |
| 2.7                  |           | 15               | 7.96                                   | 2530                 | 3980                   | 0.042                 | 36                          | B82442T1272K050 |
| 3.3                  |           | 15               | 7.96                                   | 2460                 | 4010                   | 0.046                 | 36                          | B82442T1332K050 |
| 3.9                  |           | 15               | 7.96                                   | 2170                 | 3310                   | 0.057                 | 33                          | B82442T1472K050 |
| 4.7                  |           | 15               | 7.96                                   | 1950                 | 3450                   | 0.073                 | 30                          | B82442T1472K050 |
| 5.6                  |           | 15               | 7.96                                   | 1850                 | 2780                   | 0.078                 | 28                          | B82442T1562K050 |
| 6.8                  |           | 15               | 7.96                                   | 1680                 | 2770                   | 0.106                 | 23                          | B82442T1682K050 |
| 8.2                  |           | 15               | 7.96                                   | 1510                 | 2330                   | 0.118                 | 21                          | B82442T1822K050 |
| 10                   |           | 15               | 2.52                                   | 1420                 | 2280                   | 0.132                 | 19                          | B82442T1103K050 |
| 12                   |           | 15               | 2.52                                   | 1380                 | 2160                   | 0.141                 | 19                          | B82442T1123K050 |
| 15                   |           | 15               | 2.52                                   | 1260                 | 1870                   | 0.190                 | 16                          | B82442T1153K050 |
| 18                   |           | 15               | 2.52                                   | 1090                 | 1780                   | 0.210                 | 14                          | B82442T1183K050 |
| 22                   |           | 15               | 2.52                                   | 1040                 | 1590                   | 0.238                 | 13                          | B82442T1223K050 |
| 27                   |           | 15               | 2.52                                   | 880                  | 1400                   | 0.307                 | 11                          | B82442T1273K050 |
| 33                   |           | 15               | 2.52                                   | 840                  | 1380                   | 0.360                 | 11                          | B82442T1333K050 |
| 39                   |           | 15               | 2.52                                   | 720                  | 1190                   | 0.456                 | 9.0                         | B82442T1393K050 |
| 47                   |           | 15               | 2.52                                   | 700                  | 1120                   | 0.519                 | 8.0                         | B82442T1473K050 |
| 56                   |           | 15               | 2.52                                   | 600                  | 1010                   | 0.679                 | 7.5                         | B82442T1563K050 |
| 68                   |           | 15               | 2.52                                   | 570                  | 900                    | 0.781                 | 7.0                         | B82442T1683K050 |
| 82                   |           | 15               | 2.52                                   | 540                  | 830                    | 0.832                 | 6.6                         | B82442T1823K050 |
| 100                  | ±10% ≒ K  | 20               | 0.796                                  | 510                  | 760                    | 0.99                  | 6.1                         | B82442T1104K050 |
| 120                  |           | 20               | 0.796                                  | 440                  | 670                    | 1.29                  | 5.3                         | B82442T1124K050 |
| 150                  |           | 20               | 0.796                                  | 410                  | 610                    | 1.50                  | 4.6                         | B82442T1154K050 |
| 180                  |           | 20               | 0.796                                  | 350                  | 550                    | 1.96                  | 4.2                         | B82442T1184K050 |
| 220                  |           | 20               | 0.796                                  | 330                  | 500                    | 2.21                  | 3.9                         | B82442T1224K050 |
| 270                  |           | 20               | 0.796                                  | 290                  | 450                    | 2.95                  | 3.5                         | B82442T1274K050 |
| 330                  |           | 20               | 0.796                                  | 280                  | 430                    | 3.29                  | 3.4                         | B82442T1334K050 |
| 390                  |           | 20               | 0.796                                  | 260                  | 390                    | 3.70                  | 3.0                         | B82442T1394K050 |
| 470                  |           | 20               | 0.796                                  | 240                  | 350                    | 4.73                  | 2.6                         | B82442T1474K050 |
| 560                  |           | 20               | 0.796                                  | 220                  | 320                    | 5.21                  | 2.4                         | B82442T1564K050 |
| 680                  |           | 20               | 0.796                                  | 210                  | 300                    | 5.87                  | 2.3                         | B82442T1684K050 |
| 820                  |           | 20               | 0.796                                  | 170                  | 270                    | 7.86                  | 2.2                         | B82442T1824K050 |
| 1000                 |           | 30               | 0.252                                  | 150                  | 246                    | 9.5                   | 1.8                         | B82442T1105K050 |

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| $L_R$<br>$\mu\text{H}$ | Tolerance                      | $Q_{\min}$ | $f_L; f_Q$<br>MHz | $I_R$<br>mA | $I_{\text{sat}}$<br>mA | $R_{\max}$<br>$\Omega$ | $f_{\text{res}, \min}$<br>MHz | Ordering code   |
|------------------------|--------------------------------|------------|-------------------|-------------|------------------------|------------------------|-------------------------------|-----------------|
| 1200                   | $\pm 5\% \triangleq \text{J}$  | 30         | 0.252             | 140         | 223                    | 12.6                   | 1.7                           | B82442T1125+050 |
| 1500                   | $\pm 10\% \triangleq \text{K}$ | 30         | 0.252             | 130         | 200                    | 14.9                   | 1.5                           | B82442T1155+050 |
| 1800                   |                                | 30         | 0.252             | 110         | 183                    | 19.7                   | 1.4                           | B82442T1185+050 |
| 2200                   |                                | 30         | 0.252             | 100         | 168                    | 22.5                   | 1.2                           | B82442T1225+050 |
| 2700                   |                                | 30         | 0.252             | 90          | 151                    | 29.5                   | 1.1                           | B82442T1275+050 |
| 3300                   |                                | 30         | 0.252             | 85          | 138                    | 32.8                   | 1.0                           | B82442T1335+050 |
| 3900                   |                                | 30         | 0.252             | 74          | 127                    | 43.5                   | 0.9                           | B82442T1395+050 |
| 4700                   |                                | 30         | 0.252             | 73          | 119                    | 48.6                   | 0.8                           | B82442T1475+050 |
| 5600                   |                                | 30         | 0.252             | 66          | 109                    | 54.7                   | 0.8                           | B82442T1565+050 |
| 6800                   |                                | 30         | 0.252             | 65          | 102                    | 60.3                   | 0.6                           | B82442T1685+050 |
| 8200                   |                                | 30         | 0.252             | 54          | 92                     | 80.6                   | 0.6                           | B82442T1825+050 |
| 10000                  |                                | 25         | 0.0796            | 46          | 81                     | 112                    | 0.5                           | B82442T1106+050 |

Closer tolerances and intermediate values on request.

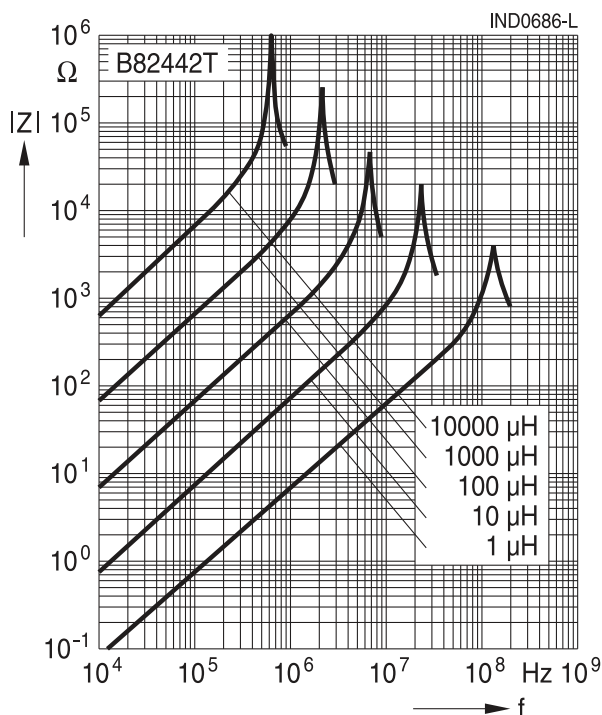
Higher currents possible at temperatures  $< T_R$  on request.

Sample kit available. Ordering code: B82442X002

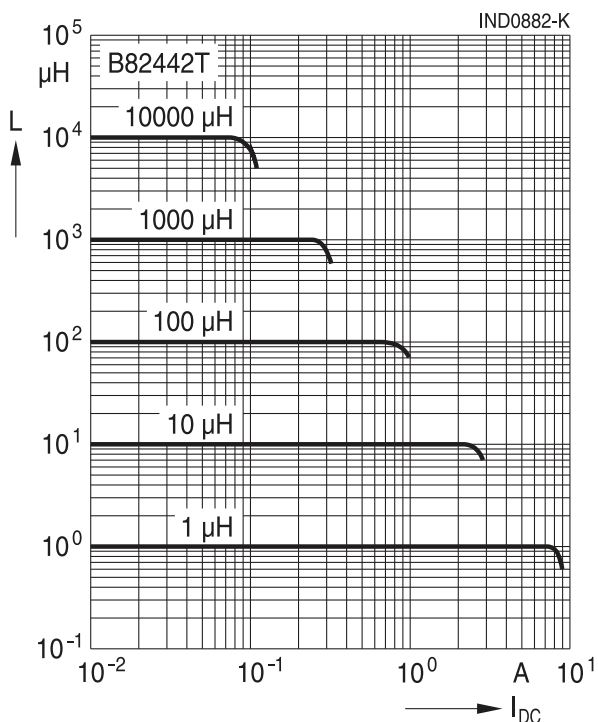
For more information refer to chapter "Sample kits".

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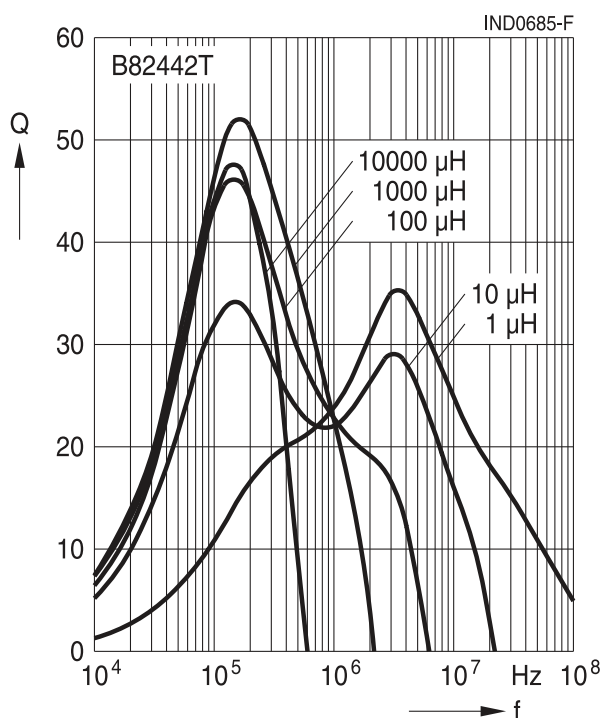
**Impedance  $|Z|$  versus frequency  $f$**   
measured with impedance analyzer Agilent 4294A/E4991A, typical values at +20 °C



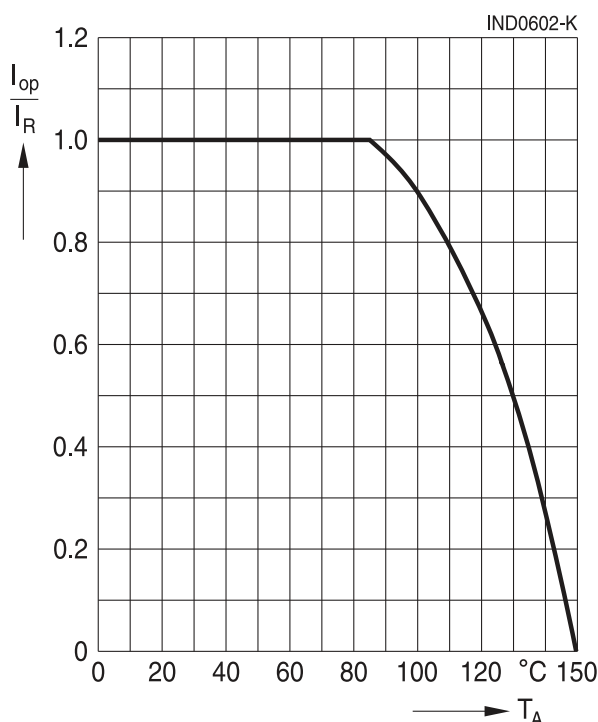
**Inductance  $L$  versus DC load current  $I_{DC}$**   
measured with LCR meter Agilent 4285A, typical values at +20 °C



**Q factor versus frequency  $f$**   
measured with impedance analyzer Agilent 4294A/E4991A, 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.

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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