SMT inductors

SIMID series, SIMID 2220-T

Series/Type: **B82442T**

Date: March 2008

SMD

Size 2220 (EIA) or 5650 (IEC)
Rated inductance 1 µH to 10000 µH
Rated current 46 mA to 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 020C
- RoHS-compatible

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

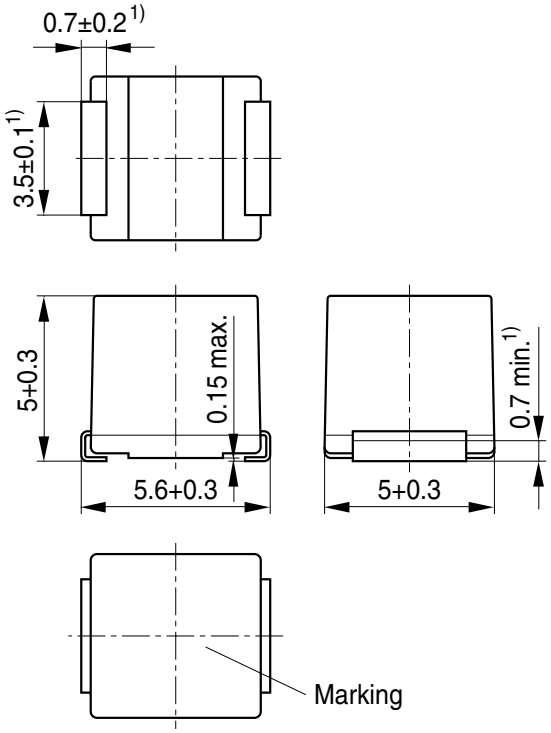
- Marking on component:
  Manufacturer, letter "T", L value (in µH),
  tolerance of L value (coded), date of manufacture (YWWD)
- Minimum data on reel:
  Manufacturer, ordering code, L value, quantity, date of packing

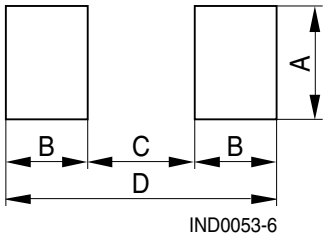
Delivery mode and packing unit

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

SMD

Dimensional drawing and layout recommendation





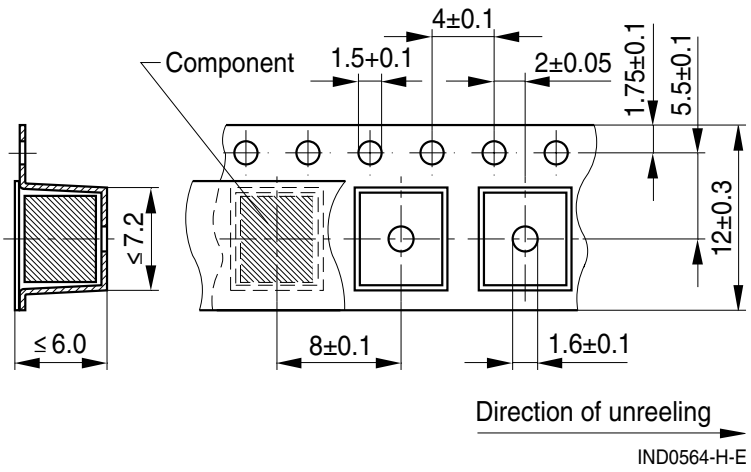
A	B	C	D
4.5	2.0	4.0	8.0

1) Soldering area IND0918-C-E

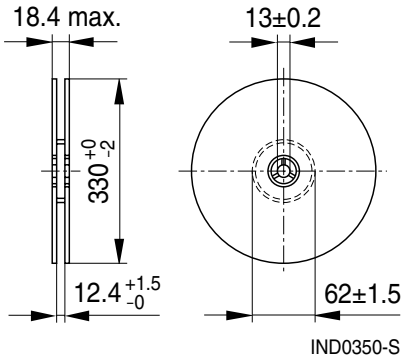
Dimensions in mm

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 temperature increase of ≤ 60 K at rated temperature
Saturation current I_{sat}	Maximum permissible DC with inductance decrease $\Delta L/L_0 \leq 10\%$, 20 °C
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 Wetting of soldering area ≥ 90% (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. 0.4 g

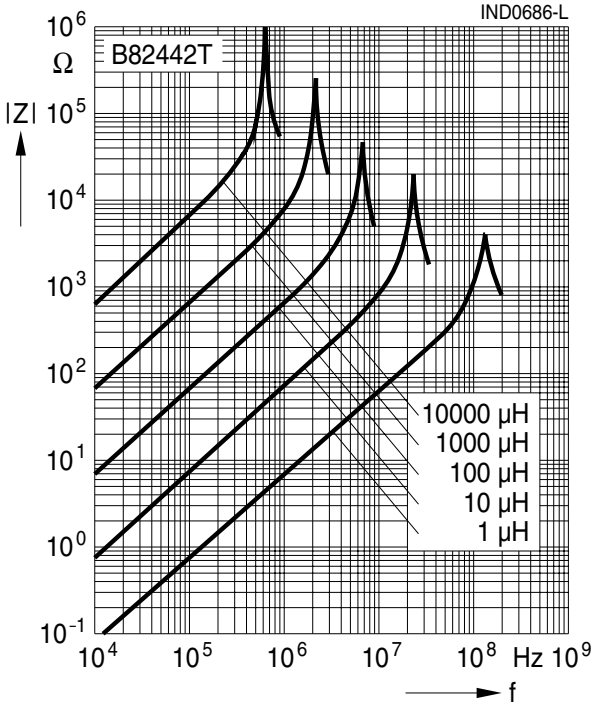
SMD

Characteristics and ordering codes

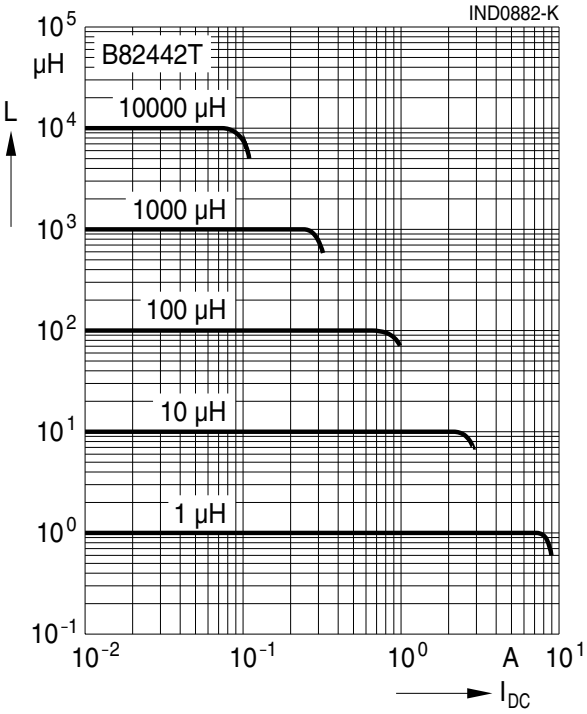
L_R µH	Tolerance	Q_{min}	f_L; f_Q MHz	I_R mA	I_{sat} mA	R_{max} Ω	$f_{res,min}$ MHz	Ordering code
1.0	±20% ≙ M	15	7.96	3510	7330	0.025	111	B82442T1102M050
1.5		15	7.96	3020	5480	0.033	60	B82442T1152M050
2.2		15	7.96	2710	4820	0.038	46	B82442T1222M050
3.3		15	7.96	2460	4010	0.046	36	B82442T1332M050
4.7		15	7.96	1950	3450	0.073	30	B82442T1472M050
6.8		15	7.96	1680	2770	0.106	23	B82442T1682M050
10	±10% ≙ K	15	2.52	1510	2280	0.132	19	B82442T1103K050
15		15	2.52	1260	1870	0.190	16	B82442T1153K050
22		15	2.52	1040	1590	0.238	13	B82442T1223K050
33		15	2.52	840	1380	0.360	11	B82442T1333K050
47		15	2.52	700	1120	0.519	8.0	B82442T1473K050
68		15	2.52	570	900	0.781	7.0	B82442T1683K050
100		20	0.796	510	760	0.99	6.1	B82442T1104K050
150		20	0.796	410	610	1.50	4.6	B82442T1154K050
220		20	0.796	330	500	2.21	3.9	B82442T1224K050
330		20	0.796	280	430	3.29	3.4	B82442T1334K050
470		20	0.796	240	350	4.73	2.6	B82442T1474K050
680		20	0.796	210	300	5.87	2.3	B82442T1684K050
1000		20	0.252	150	246	9.5	1.8	B82442T1105K050
1500		20	0.252	130	200	14.9	1.5	B82442T1155K050
2200		20	0.252	100	168	22.5	1.2	B82442T1225K050
3300		20	0.252	85	138	32.8	1.0	B82442T1335K050
4700		20	0.252	73	119	48.6	0.8	B82442T1475K050
6800		20	0.252	65	102	60.3	0.6	B82442T1685K050
10000		20	0.0796	46	81	112	0.5	B82442T1106K050

Closer tolerances and intermediate values on request.
Higher currents possible at temperatures $<T_R$ on request.

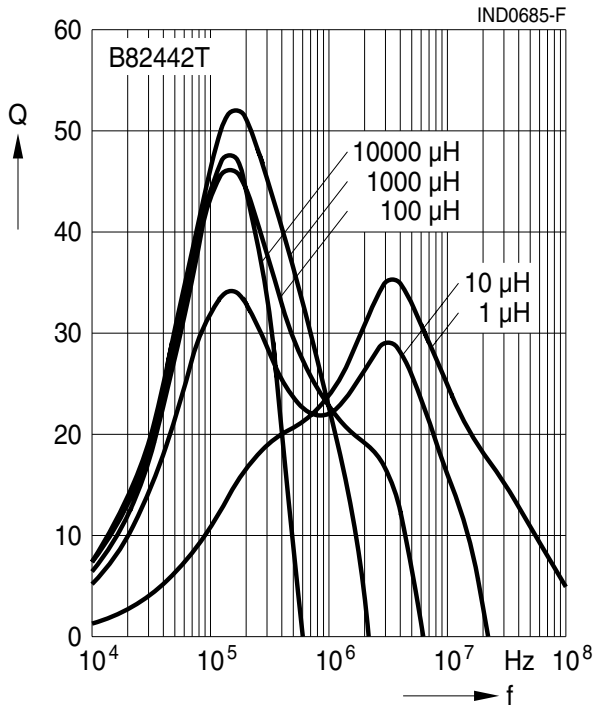
Impedance |Z| versus frequency f
measured with impedance analyzer Agilent 4294A/E4991A, typical values at 20 °C



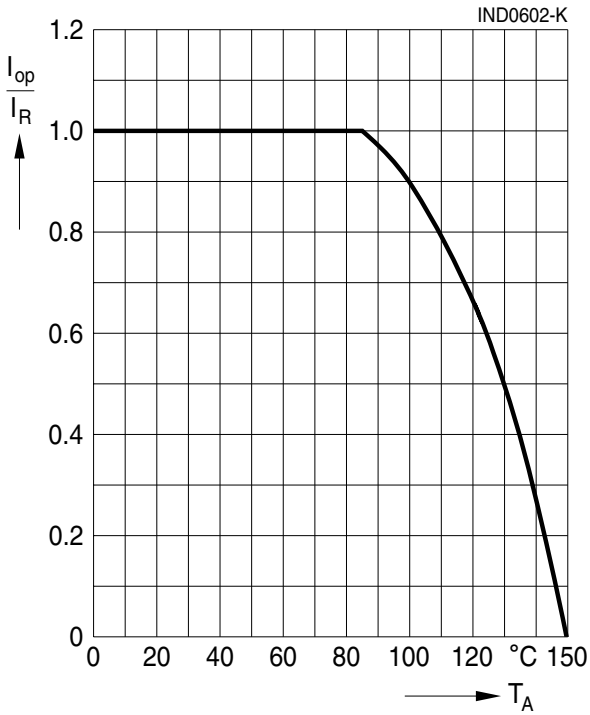
Inductance L versus DC load current I_{DC}
measured with LCR meter Agilent 4285A, typical values at 20 °C



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.
- 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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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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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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