SMT inductors

SIMID series, SIMID 2220-H

Series/Type: **B82442H**

Date: March 2008

SMD

Size 2220 (EIA) or 5650 (IEC)
Rated inductance 1 µH to 10000 µH
Rated current 35 mA to 2500 mA

Construction

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

Features

- Temperature range up to 150 °C
- Current handling capability up to 2.5 A
- 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
- Automotive electronics
- Telecommunications
- Consumer electronics
- Industrial electronics

Terminals

- Base material CuSn6
- Layer composition Cu, Ag, Sn (lead-free)[1)]
- Electro-plated

Marking

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

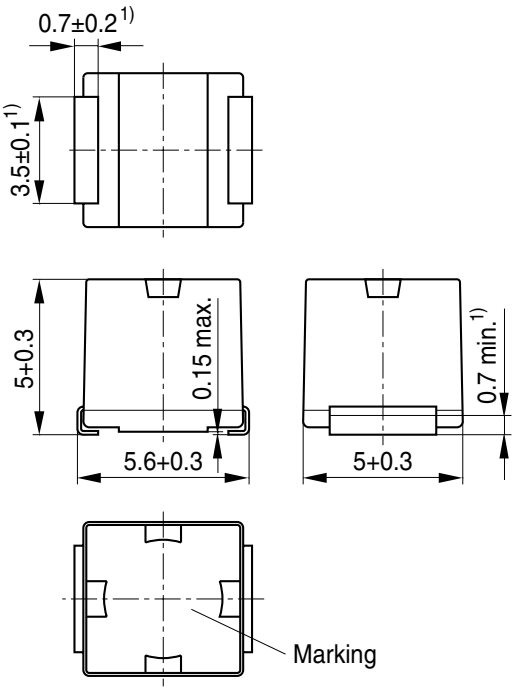
Delivery mode and packing unit

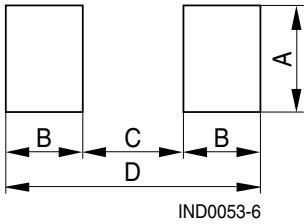
- 12-mm blister tape, wound on 330-mm ∅ reel
- Packing unit: 1500 pcs./reel

1) Ni-barrier-plated terminals on request (B82442H*50).

SMD

Dimensional drawing and layout recommendation





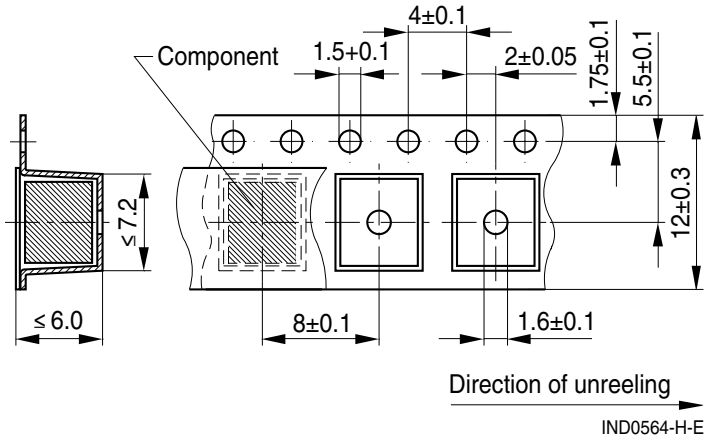
A	B	C	D
4.5	2.0	4.0	8.0

1) Soldering area IND0088-3-E

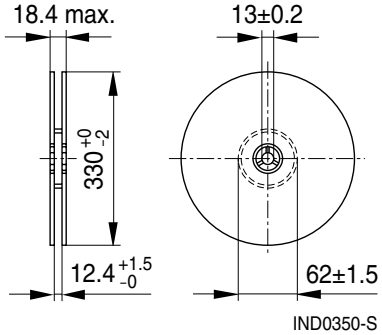
Dimensions in mm

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 $L/L_0 \leq 10\%$ and temperature increase of ≤ 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 ±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

Characteristics and ordering codes

L_R µH	Tolerance	Q_{min}	f_L; f_Q MHz	I_R mA	R_{max} Ω	$f_{res,min}$ MHz	Ordering code[1)2)]
1.0	±10% ≙ K	10	7.96	2500	0.024	95	B82442H1102K000
1.2		10	7.96	2350	0.028	70	B82442H1122K000
1.5		10	7.96	2200	0.032	55	B82442H1152K000
1.8		10	7.96	2000	0.040	47	B82442H1182K000
2.2		10	7.96	1800	0.048	42	B82442H1222K000
2.7		10	7.96	1700	0.056	37	B82442H1272K000
3.3		10	7.96	1550	0.064	34	B82442H1332K000
3.9		10	7.96	1450	0.072	32	B82442H1392K000
4.7		10	7.96	1350	0.088	29	B82442H1472K000
5.6		10	7.96	1250	0.104	26	B82442H1562K000
6.8		10	7.96	1130	0.120	24	B82442H1682K000
8.2		10	7.96	1050	0.144	22	B82442H1822K000
10		10	2.52	1000	0.168	19	B82442H1103K000
12		10	2.52	880	0.20	17	B82442H1123K000
15		10	2.52	810	0.24	16	B82442H1153K000
18		10	2.52	740	0.29	14	B82442H1183K000
22		10	2.52	670	0.35	13	B82442H1223K000
27		10	2.52	620	0.42	11.5	B82442H1273K000
33	±5% ≙ J	10	2.52	560	0.50	10.5	B82442H1333+000
39	±10% ≙ K	10	2.52	520	0.58	9.5	B82442H1393+000
47		10	2.52	480	0.68	8.5	B82442H1473+000
56		10	2.52	430	0.80	7.8	B82442H1563+000
68		10	2.52	400	0.96	7.0	B82442H1683+000
82		10	2.52	380	1.12	6.4	B82442H1823+000
100		20	0.796	350	1.28	6.0	B82442H1104+000
120		20	0.796	320	1.52	5.4	B82442H1124+000
150		20	0.796	290	1.76	4.8	B82442H1154+000

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

Sample kit available. Ordering code: B82442X001
For more information refer to chapter “Sample kits”.

1) Replace the + by the code letter for the required inductance tolerance.
2) For Ni-barrier-plated terminals replace the last two digits “00” by “50”.

Characteristics and ordering code

L_R µH	Tolerance	Q_{min}	f_L; f_Q MHz	I_R mA	R_{max} Ω	$f_{res,min}$ MHz	Ordering code[1)2)]
180	±5% ≙ J	20	0.796	270	2.24	4.4	B82442H1184+000
220	±10% ≙ K	20	0.796	240	2.72	3.9	B82442H1224+000
270		20	0.796	220	3.36	3.6	B82442H1274+000
330		20	0.796	200	3.92	3.2	B82442H1334+000
390		20	0.796	180	4.64	2.9	B82442H1394+000
470		20	0.796	170	5.60	2.6	B82442H1474+000
560		20	0.796	150	6.80	2.4	B82442H1564+000
680		20	0.796	140	8.00	2.2	B82442H1684+000
820		20	0.796	130	10.4	2.0	B82442H1824+000
1000		30	0.252	120	12.0	1.8	B82442H1105+000
1200		30	0.252	105	13.6	1.5	B82442H1125+000
1500		30	0.252	100	16.0	1.4	B82442H1155+000
1800		30	0.252	85	24.0	1.3	B82442H1185+000
2200		30	0.252	75	28.0	1.2	B82442H1225+000
2700		30	0.252	65	44.0	1.1	B82442H1275+000
3300		30	0.252	55	48.0	1.0	B82442H1335+000
3900		30	0.252	53	56.0	1.0	B82442H1395+000
4700		30	0.252	50	62.4	0.9	B82442H1475+000
5600		30	0.252	46	68.0	0.8	B82442H1565+000
6800		30	0.252	42	88.0	0.7	B82442H1685+000
8200		30	0.252	39	100	0.6	B82442H1825+000
10000		30	0.0796	35	120	0.5	B82442H1106+000

Closer tolerances on request.
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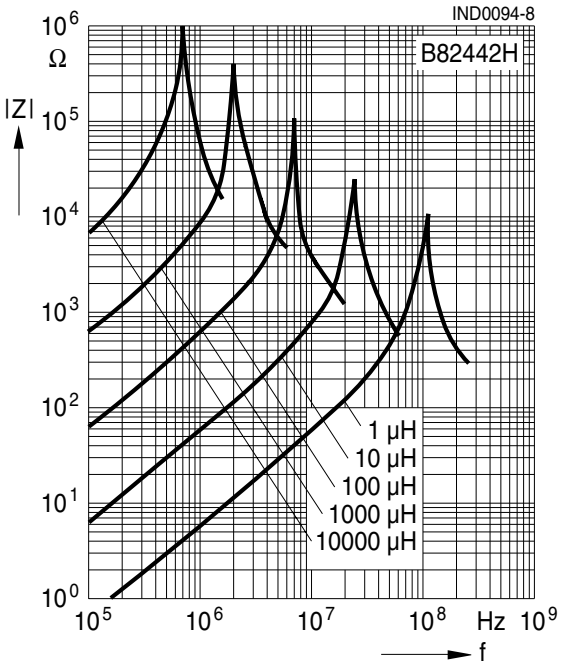
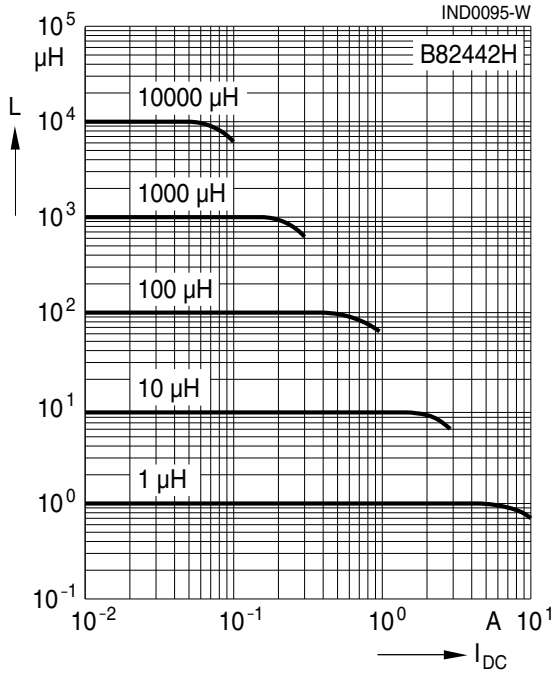
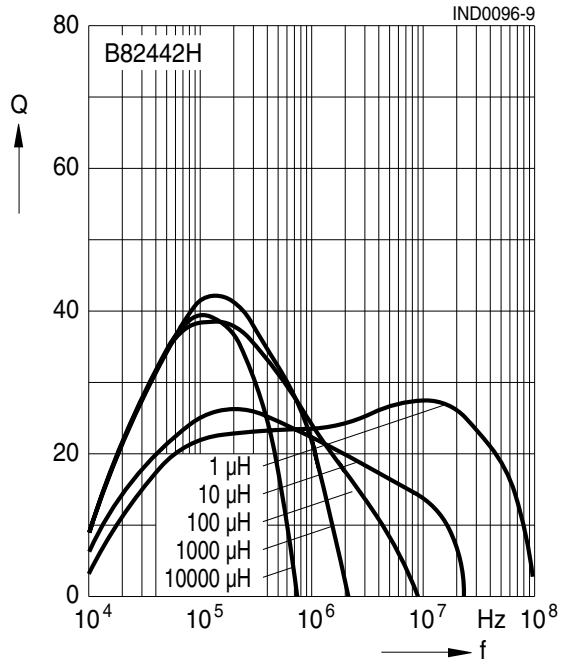
Impedance |Z| versus frequency f
measured with impedance analyzer Agilent 4191A/A4194A, typical values at 20 °C



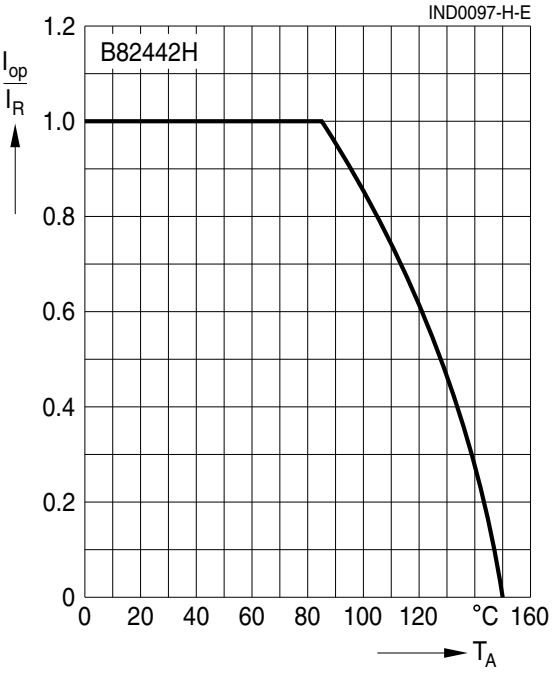
Inductance L versus DC load current I_{DC}
measured with LCR meter Agilent 4275A, typical values at 20 °C



Q factor versus frequency f
measured with impedance analyzer Agilent 4191A, 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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