



## Chokes and inductors

For high frequency and EMC  
RF chokes, LBC series, axial

**Series/Type:** B82144A  
Date: November 2005

**LBC choke (Large Bobbin Core)**  
**Rated current 20 to 2200 mA**  
**Rated inductance 1 to 100 000  $\mu$ H**

### Construction

- Large ferrite drum core
- Winding: enamel copper wire
- Flame-retardant lacquer coating

### Features

- Very wide inductance range
- High rated current
- RoHS-compatible (see page 6)

### Applications

- RF blocking and filtering
- Decoupling and interference suppression
- For telecommunications (12- or 16-kHz blocking filter), automotive electronics, energy-saving lamps, entertainment electronics

### Terminals

- Central axial leads, lead-free tinned

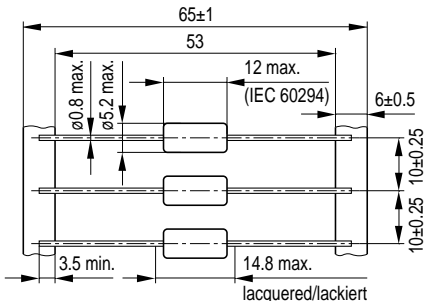
### Marking

Inductance indicated by color bands to IEC 60062

### Delivery mode

Taped, Ammo and reel packing (packing see page 8)

### Dimensional drawing



IND0431-4

Minimum lead spacing 15 mm

Approx. weight 1.1 g

**Characteristics and ordering codes**

For further technical data see page 6.

$L_R$ $\mu\text{H}$	Tolerance <sup>1)</sup>	$Q_{\min}$	$f_Q$ MHz	$I_R$ mA	$R_{\max}$ $\Omega$	$f_{\text{res, min}}$ MHz	Ordering code (reel packing) <sup>2)</sup>
1.0	$\pm 10\%$ $\triangleq K$	40	7.96	2200	0.08	200	B82144A2102K000
1.5		40	7.96	2100	0.09	190	B82144A2152K000
2.2		40	7.96	1900	0.11	140	B82144A2222K000
3.3		40	7.96	1750	0.13	120	B82144A2332K000
4.7		40	7.96	1600	0.16	100	B82144A2472K000
6.8		40	7.96	1500	0.19	80	B82144A2682K000
10		60	2.52	1400	0.22	60	B82144A2103K000
15		60	2.52	1250	0.28	20	B82144A2153K000
22		50	2.52	1100	0.35	12	B82144A2223K000
33		$\pm 5\%$ $\triangleq J$	40	2.52	900	0.43	8.0
47	40		2.52	800	0.50	5.0	B82144A2473J000
68	30		2.52	700	0.60	4.5	B82144A2683J000
100	50		0.796	600	0.70	3.5	B82144A2104J000
150	50		0.796	500	0.90	3.0	B82144A2154J000
220	50		0.796	400	1.60	2.4	B82144A2224J000
330	50		0.796	330	1.90	2.0	B82144A2334J000
470	40		0.796	280	2.50	1.5	B82144A2474J000
680	30		0.796	240	2.80	1.3	B82144A2684J000
1000	60		0.252	200	3.80	1.2	B82144A2105J000
1500	60	0.252	160	6.00	1.0	B82144A2155J000	
2200	60	0.252	120	9.00	0.8	B82144A2225J000	
3300	60	0.252	110	12.0	0.6	B82144A2335J000	
4700	60	0.252	90	20.0	0.5	B82144A2475J000	
6800	60	0.252	80	30.0	0.4	B82144A2685J000	
10000	50	0.0796	60	42.0	0.35	B82144A2106J000	
15000	50	0.0796	50	68.0	0.30	B82144A2156J000	
22000	50	0.0796	40	120	0.26	B82144A2226J000	

1) Closer tolerances upon request.

2) For Ammo pack the last digit has to be a »9«. Example: B82144A2102K009

**Characteristics and ordering codes** (continued)

For further technical data see page 6..

$L_R$ $\mu\text{H}$	Tolerance <sup>1)</sup>	$Q_{\min}$	$f_Q$ MHz	$I_R$ mA	$R_{\max}$ $\Omega$	$f_{\text{res, min}}$ MHz	Ordering code (reel packing) <sup>2)</sup>
33000	$\pm 5\%$	50	0.0796	35	150	0.22	B82144A2336J000
47000	$\triangleq J$	40	0.0796	30	230	0.18	B82144A2476J000
68000		40	0.0796	25	290	0.15	B82144A2686J000
100000		40	0.0796	20	420	0.12	B82144A2107J000

For telecommunications in the blocking filter for 12-kHz and 16-kHz counting pulses

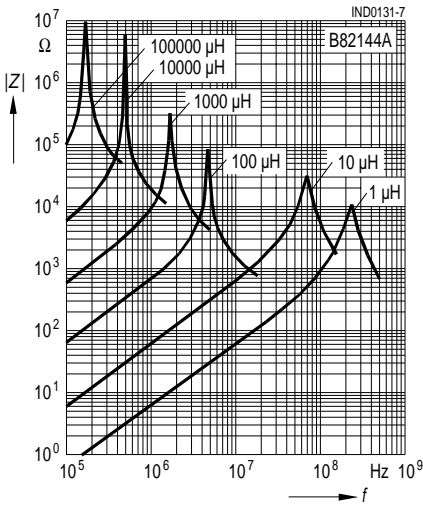
980	$\pm 3\%$	25	0.016	200	3.8	1.2	B82144A2984A000
1450	$\triangleq A$	25	0.016	140	6.0	1.0	B82144A2145A500
2600		20	0.012	120	11.0	0.7	B82144A2265A000
3050		25	0.016	100	12.0	0.6	B82144A2305A500
5330		20	0.012	90	25.0	0.5	B82144A2535A300

1) Closer tolerances upon request.

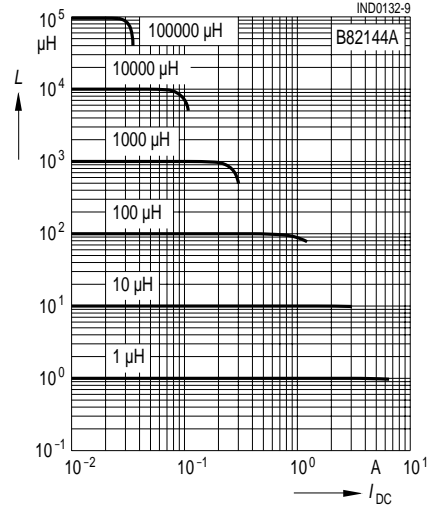
2) For Ammo pack the last digit has to be a »9«. Example: B82144A2336J009

**RF chokes** **B82144A**  
**LBC series**

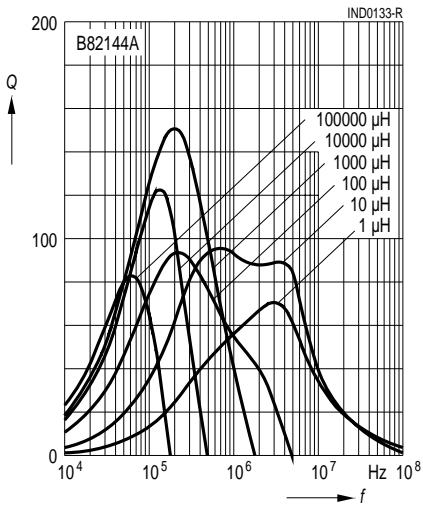
Impedance  $|Z|$   
 versus frequency  $f$   
 measured with impedance analyzer  
 HP 4191A / HP 4194A



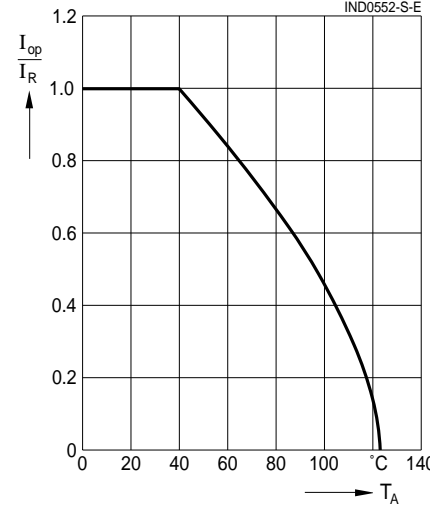
Inductance  $L$   
 versus DC load current  $I_{DC}$   
 measured with LCR meter  
 HP 4275A




Q factor  
 versus frequency  $f$   
 measured with impedance analyzer  
 HP 4194A



Current derating  $I_{op}/I_R$   
 versus ambient temperature  $T_A$   
 (rated temperature  $T_R = 40$  °C)



**General technical data**

Rated inductance $L_R$	Measuring frequency: $L \leq 10 \mu\text{H}$ = 1 MHz $10 \mu\text{H} < L \leq 4700 \mu\text{H}$ = 100 kHz $L > 4700 \mu\text{H}$ = 10 kHz Measuring current: $\leq 1 \text{ mA}$ Distance between measuring clamps: 25.4 mm
Q factor $Q_{\min}$	Measured with HP 4342A
Rated current $I_R$	Maximum permissible DC current referred to 40 °C ambient temperature, for derating see below
Inductance decrease $\Delta L/L_0$	$\leq 10\%$ (referred to initial value) at $I_R$ at 20 °C ambient temperature
DC resistance $R_{\max}$	Measured at 20 °C ambient temperature, distance between measuring clamps: 25.4 mm
Resonance frequency $f_{\text{res, min}}$	Measured with Scalar Network Analyzer ZAS from Rohde & Schwarz
Climatic category	55/125/56 (-55 °C/+125 °C/56 days damp heat test) to IEC 60068-1
Solderability	235 °C, 2 s, $\geq 90\%$ wetting to IEC 60068-2-20, test Ta
Resistance to soldering heat	To IEC 60068-2-20, test Tb 260 °C, 10 s
Tensile strength of leads	To IEC 60068-2-21, test Ua $\geq 20 \text{ N}$
RoHS-compatible	RoHS-compatible is defined as compatible with the following documents: DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 February 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment COM (2004) 606 final Proposal for a COUNCIL DECISION amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment.
 Mounting information	When bending the leads, take care that the start-of-winding areas at the face ends (protected by glue and lacquer) are not subjected to any mechanical stress.

**Color coding of the inductance value**

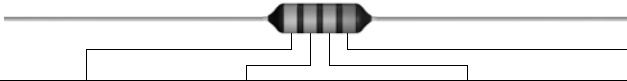
The inductance value and tolerance are encoded by means of colored bands in accordance with IEC 60062. The basic unit is  $\mu\text{H}$ .

1<sup>st</sup> band 1<sup>st</sup> digit of inductance value

2<sup>nd</sup> band 2<sup>nd</sup> digit of inductance value

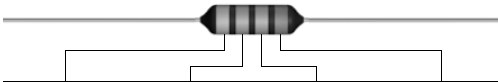
3<sup>rd</sup> band multiplier, i.e. the power of ten, by which the first two digits have to be multiplied.

4<sup>th</sup> band tolerance of the inductance value.

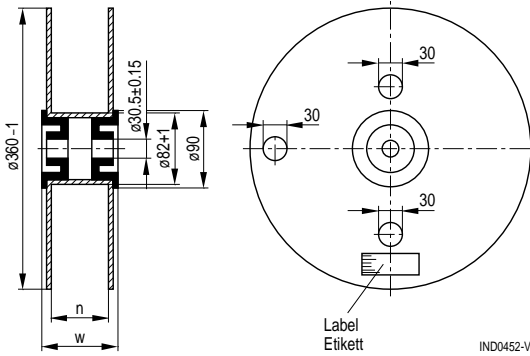


Color code	1 <sup>st</sup> band = 1 <sup>st</sup> digit	2 <sup>nd</sup> band = 2 <sup>nd</sup> digit	3 <sup>rd</sup> band = multiplier	4 <sup>th</sup> band = tolerance
Colorless	—	—	—	$\pm 20\%$ (M)
Silver	—	—	$\times 10^{-2} \mu\text{H} =$	$0.01 \mu\text{H}$ $\pm 10\%$ (K)
Gold	—	—	$\times 10^{-1} \mu\text{H} =$	$0.1 \mu\text{H}$ $\pm 5\%$ (J)
Black	—	0	$\times 10^0 \mu\text{H} =$	$1 \mu\text{H}$ —
Brown	1	1	$\times 10^1 \mu\text{H} =$	$10 \mu\text{H}$ —
Red	2	2	$\times 10^2 \mu\text{H} =$	$100 \mu\text{H}$ $\pm 2\%$ (G)
Orange	3	3	$\times 10^3 \mu\text{H} =$	$1000 \mu\text{H}$ —
Yellow	4	4	$\times 10^4 \mu\text{H} =$	$10000 \mu\text{H}$ —
Green	5	5	$\times 10^5 \mu\text{H} =$	$100000 \mu\text{H}$ —
Blue	6	6		Special designs manufactured to customer specifica- tions are identified by a white tolerance band.
Violet	7	7		
Grey	8	8		
White	9	9		

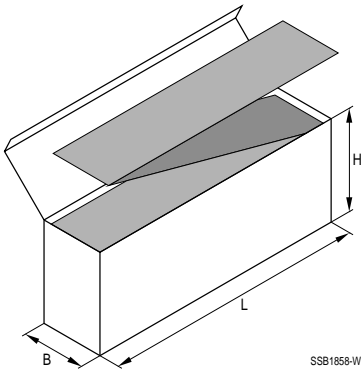
Examples:



1 <sup>st</sup> band	2 <sup>nd</sup> band	3 <sup>rd</sup> band	4 <sup>th</sup> band	Decoding
Yellow 4	Violet 7	Gold $\times 0.1 \mu\text{H}$	Silver $\pm 10\%$	$= 47 \times 0.1 \mu\text{H} \pm 10\% = 4.7 \mu\text{H} \pm 10\%$
Brown 1	Green 5	Red $\times 100 \mu\text{H}$	Gold $\pm 5\%$	$= 15 \times 100 \mu\text{H} \pm 5\% = 1500 \mu\text{H} \pm 5\%$

**Packing**
**Reel packing**


	Axial
n (mm)	72 +1
w (mm)	84 max.

**Ammo packing**


	Axial
L (mm)	265 max.
B (mm)	75 max.
H (mm)	125 max.

**Packing units**

	Reel packing pcs./reel	Ammo pack pcs./pack.
Axial	1500	1250



## Important notes

The following applies to all products named in this publication:

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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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