



Inductors

RF chokes, MCC series

Series/Type: B78108T, B78148T

Date: March 2008

MCC choke (Mini Cylinder Core)
Rated inductance 0.1 μH to 100 μH
Rated current 85 mA to 1120 mA
Construction

- Ceramic or ferrite cylinder core
- Winding: enamel copper wire
- Flame-retardant lacquer coating

Features

- Low total height
- Low inductance
- High resonance frequency
- Suitable for wave soldering
- RoHS-compatible

Applications

- RF blocking
- Decoupling and interference suppression
- For antenna systems, automotive electronics, telecommunications, entertainment electronics

Terminals

- Central axial leads (B78108T)
- Radially bent to 5 mm lead spacing (B78148T)
- B781*T3:
 - Base material Staku 30/copper-clad steel 30
 - Hot-dipped and electro-plated with pure tin
- B781*T1:
 - Base material CuAg0.1
 - Hot-dipped with pure tin

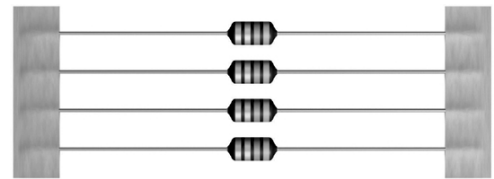
Marking

Inductance indicated by color bands to IEC 60062

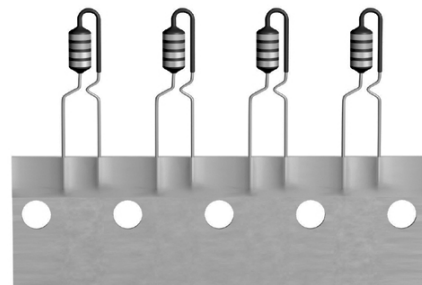
Delivery mode and packing units

- Taped, Ammo and reel packing
- Packing units:

| | Ammo (pcs./pack.) | Reel (pcs./reel) |
|--------|----------------------|---------------------|
| Axial | 5000 | 5000 |
| Radial | 2500 | 2000 |



B78108T

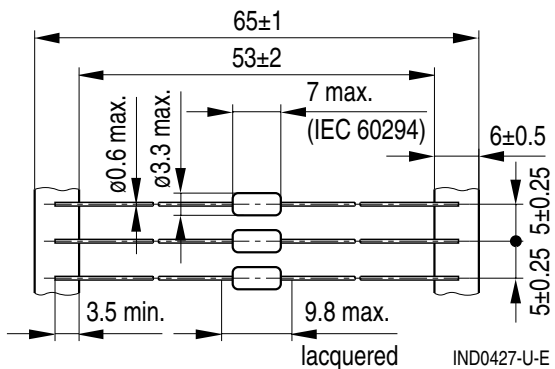


B78148T

Dimensional drawings

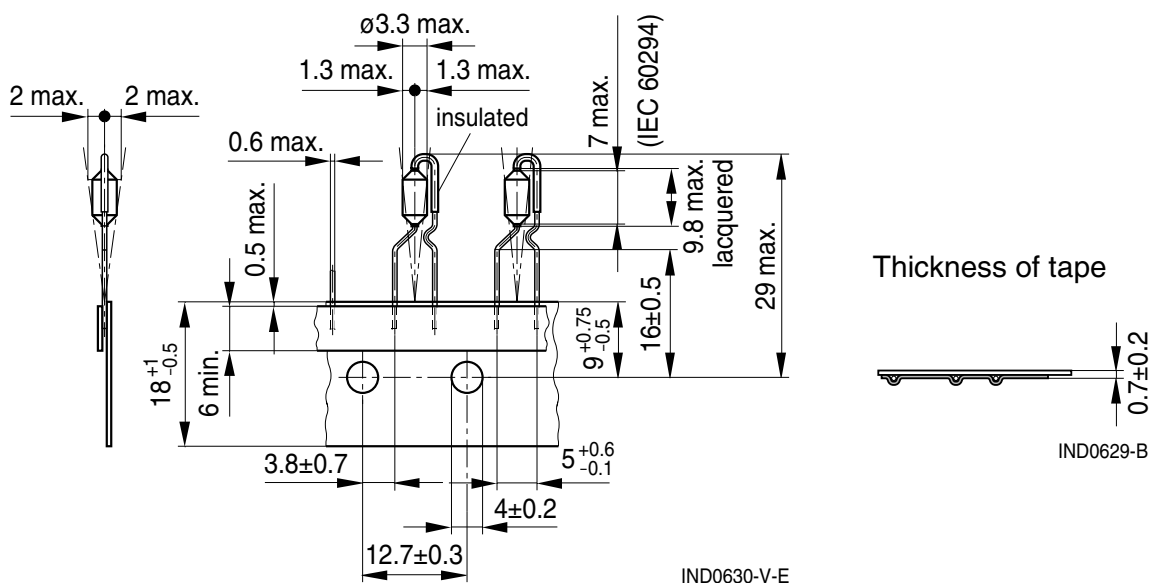
B78108T (axial leads, taped)

Dimensions in mm

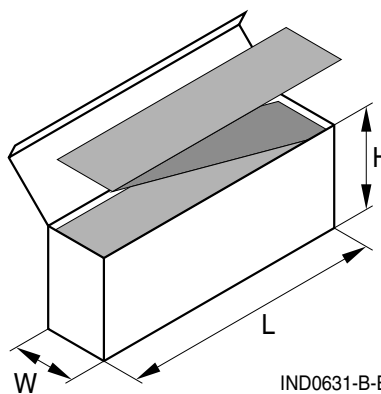
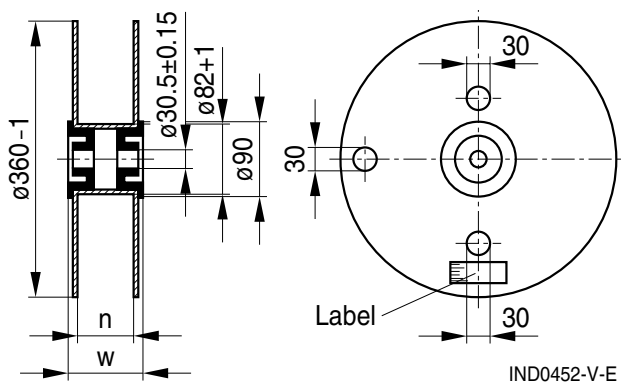


Minimum lead spacing 10 mm

B78148T (central radial leads, taped)



Packing



n (mm): Axial 72 +1, radial 42 +1
 w (mm): Axial 84 max., radial 54 max.

L × W × H (max. mm):
 Axial: 310 × 75 × 120, radial: 340 × 50 × 210

Technical data and measuring conditions

| | |
|---|--|
| Rated inductance L_R | Measured with LCR meter Agilent 4284A or impedance analyzer Agilent 4294A Measuring frequency: $L_R \leq 10 \mu\text{H}$ = 1 MHz $10 \mu\text{H} < L_R \leq 4700 \mu\text{H}$ = 100 kHz Measuring current: $\leq 1 \text{ mA}$ Measuring temperature: 20 °C |
| Q factor Q_{\min} | Measured with precision impedance analyzer Agilent 4294A, 20 °C |
| Rated temperature T_R | 40 °C |
| Rated current I_R | Maximum permissible DC current at rated temperature |
| Inductance decrease $\Delta L/L_0$ | $\leq 10\%$ (referred to initial value) at I_R , 20 °C |
| DC resistance R_{\max} | Measured at 20 °C |
| Resonance frequency $f_{\text{res},\min}$ | Measured with Agilent 4294A or 8753ES, 20 °C |
| Solderability (lead-free) | Sn95.5Ag3.8Cu0.7: (245 ±5) °C, (3 ±0.3) s Wetting of soldering area $\geq 90\%$ (to IEC 60068-2-20, test Ta) |
| Resistance to soldering heat | (260 ±5) °C, 10 s (to IEC 60068-2-20, test Tb) |
| Tensile strength of leads | $\geq 20 \text{ N}$ (to IEC 60068-2-21, test Ua) |
| Climatic category | 55/125/56 (to IEC 60068-1) |
| Storage conditions | Mounted: -55 °C ... +125 °C Packaged: -25 °C ... +40 °C, $\leq 75\%$ RH |
| Weight | Approx. 0.25 g |

 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.

Characteristics and ordering codes

| L_R μH | Tolerance ¹⁾ | Q_{\min} | f_Q MHz | I_R mA | R_{\max} Ω | $f_{\text{res,min}}$ MHz | Ordering code ²⁾ (reel packing) ³⁾ |
|------------------------|-------------------------|------------|--------------|-------------|------------------------|-----------------------------|---|
| Ceramic cylinder core | | | | | | | |
| 0.10 | $\pm 10\% \triangleq K$ | 40 | 25.2 | 1120 | 0.13 | 600 | B781*8T3101K000 |
| 0.12 | | 40 | 25.2 | 1080 | 0.145 | 570 | B781*8T3121K000 |
| 0.15 | | 38 | 25.2 | 1020 | 0.155 | 500 | B781*8T3151K000 |
| 0.18 | | 35 | 25.2 | 1000 | 0.17 | 460 | B781*8T3181K000 |
| 0.22 | | 35 | 25.2 | 990 | 0.195 | 420 | B781*8T3221K000 |
| 0.27 | | 35 | 25.2 | 910 | 0.215 | 380 | B781*8T3271K000 |
| 0.33 | | 35 | 25.2 | 830 | 0.24 | 330 | B781*8T3331K000 |
| 0.39 | | 35 | 25.2 | 790 | 0.27 | 300 | B781*8T3391K000 |
| 0.47 | | 35 | 25.2 | 750 | 0.315 | 280 | B781*8T3471K000 |
| 0.56 | | 35 | 25.2 | 700 | 0.34 | 260 | B781*8T3561K000 |
| 0.68 | | 35 | 25.2 | 530 | 0.48 | 240 | B781*8T3681K000 |
| 0.82 | | 35 | 25.2 | 500 | 0.55 | 230 | B781*8T3821K000 |

1) Closer tolerances on request.

2) Replace the * by code number »0« for axial taping or by »4« for radial taping.

3) For Ammo pack the last digit has to be a »9«. Example: B78108T3101K009

Characteristics and ordering codes

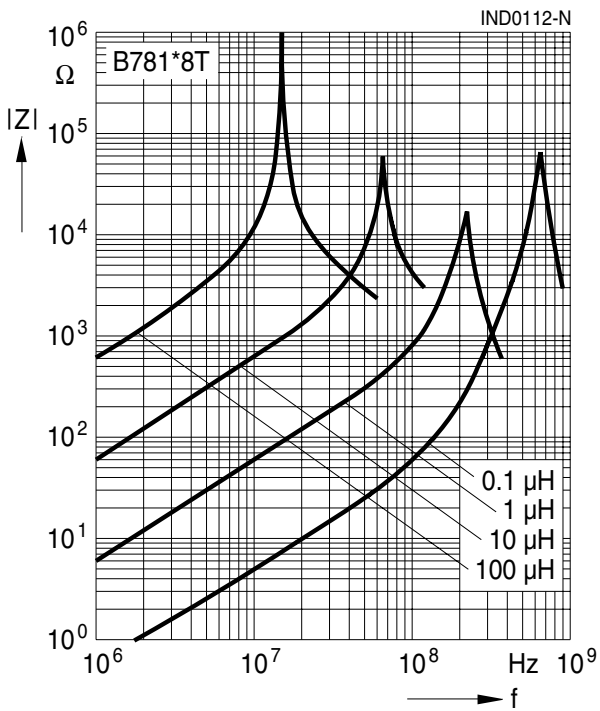
| L_R μH | Tolerance ¹⁾ | Q_{\min} | f_Q MHz | I_R mA | R_{\max} Ω | $f_{\text{res,min}}$ MHz | Ordering code ²⁾ (reel packing) ³⁾ |
|------------------------------|-------------------------|------------|--------------|-------------|------------------------|-----------------------------|---|
| Ferrite cylinder core | | | | | | | |
| 1.0 | $\pm 10\% \triangleq K$ | 35 | 25.2 | 630 | 0.25 | 180 | B781*8T1102K000 |
| 1.2 | | 40 | 7.96 | 610 | 0.25 | 170 | B781*8T1122K000 |
| 1.5 | | 40 | 7.96 | 570 | 0.30 | 150 | B781*8T1152K000 |
| 1.8 | | 40 | 7.96 | 540 | 0.30 | 130 | B781*8T1182K000 |
| 2.2 | | 40 | 7.96 | 520 | 0.35 | 120 | B781*8T1222K000 |
| 2.7 | | 40 | 7.96 | 480 | 0.40 | 110 | B781*8T1272K000 |
| 3.3 | | 40 | 7.96 | 420 | 0.50 | 110 | B781*8T1332K000 |
| 3.9 | | 40 | 7.96 | 400 | 0.55 | 100 | B781*8T1392K000 |
| 4.7 | | 40 | 7.96 | 380 | 0.65 | 90 | B781*8T1472K000 |
| 5.6 | | 45 | 7.96 | 260 | 1.30 | 75 | B781*8T1562K000 |
| 6.8 | 45 | 7.96 | 250 | 1.45 | 70 | B781*8T1682K000 | |
| 8.2 | 50 | 7.96 | 240 | 1.60 | 65 | B781*8T1822K000 | |
| 10 | 50 | 7.96 | 230 | 1.70 | 60 | B781*8T1103K000 | |
| 12 | 55 | 2.52 | 190 | 2.40 | 50 | B781*8T1123K000 | |
| 15 | 55 | 2.52 | 185 | 2.70 | 45 | B781*8T1153K000 | |
| 18 | 55 | 2.52 | 175 | 2.90 | 40 | B781*8T1183K000 | |
| 22 | 60 | 2.52 | 170 | 3.20 | 30 | B781*8T1223K000 | |
| 27 | 60 | 2.52 | 160 | 3.60 | 27 | B781*8T1273K000 | |
| 33 | 60 | 2.52 | 150 | 4.10 | 24 | B781*8T1333K000 | |
| 39 | 60 | 2.52 | 140 | 4.50 | 22 | B781*8T1393K000 | |
| 47 | 60 | 2.52 | 100 | 8.50 | 20 | B781*8T1473K000 | |
| 56 | 60 | 2.52 | 100 | 8.80 | 18 | B781*8T1563K000 | |
| 68 | 60 | 2.52 | 95 | 10.0 | 15 | B781*8T1683K000 | |
| 82 | 60 | 2.52 | 90 | 11.5 | 14 | B781*8T1823K000 | |
| 100 | 60 | 2.52 | 85 | 12.5 | 11 | B781*8T1104K000 | |

1) Closer tolerances on request.

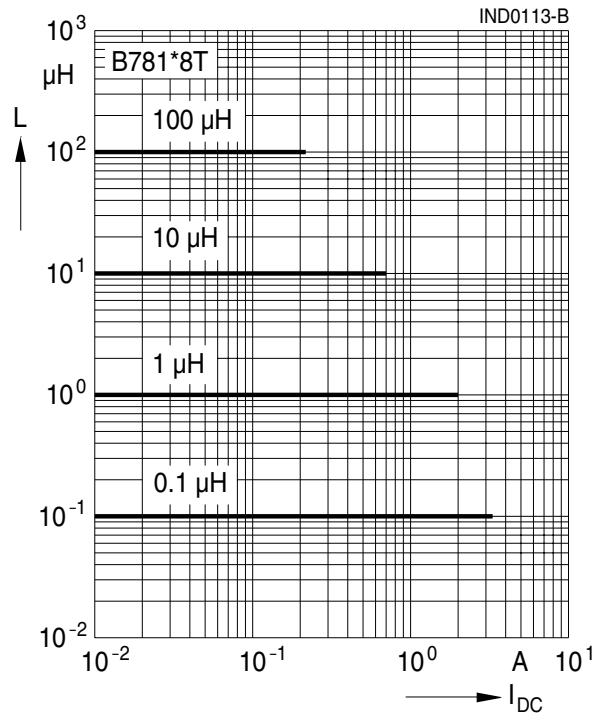
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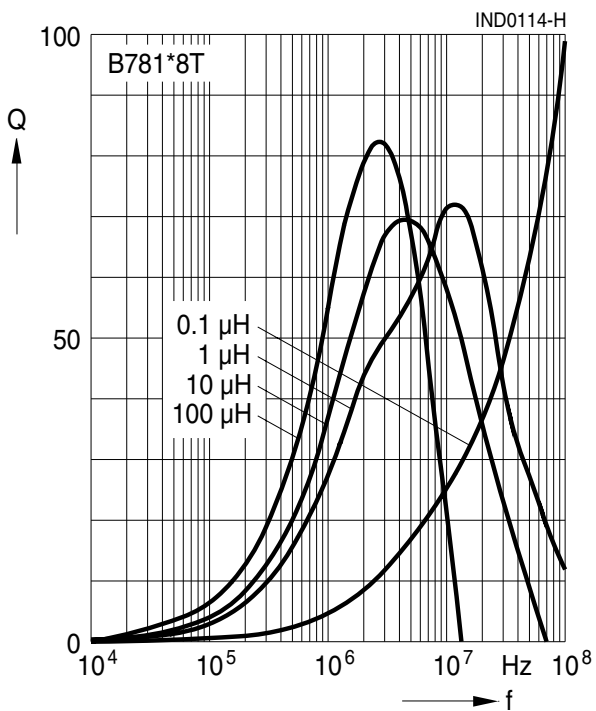
Impedance |Z| versus frequency f
 measured with impedance analyzer Agilent 4294A or S-parameter network analyzer Agilent 8753ES, typical values at 20 °C



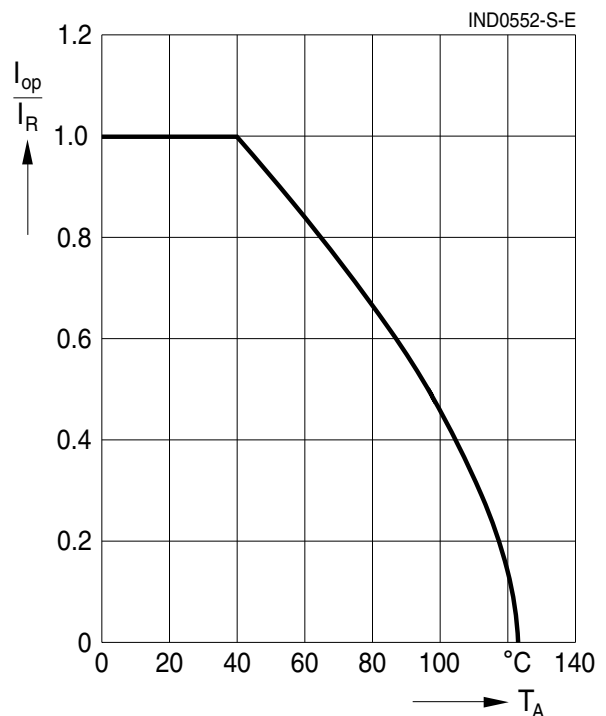
Inductance L versus DC load current I_{DC}
 measured with LCR meter Agilent 4284A, typical values at 20 °C



Q factor versus frequency f
 measured with impedance analyzer Agilent 4294A, typical values at 20 °C



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