



Data and signal line chokes

Common-mode chokes, ring core, EIA 1812
0.011 ... 0.47 mH, 200 ... 300 mA, 60 °C

Series/Type: B82799C0/S0

Date: October 2008

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SMD

Rated voltage 42 V AC/80 V DC
Rated inductance 0.011 mH to 0.47 mH
Rated current 200 mA to 300 mA


Construction

- Current-compensated ring core double choke
- Ferrite core
- LCP case (UL 94 V-0)
- Silicone potting
- Bifilar winding (B82799C0)
- Sector winding (B82799S0)

Features

- 150 °C version
- Qualified to AEC-Q200
- Suitable for reflow soldering
- Suitable for conductive adhesion due gold-plated terminals
- RoHS-compatible

Function

- B82799C0:
Suppression of asymmetrical interference coupled in on lines, whereas data signals up to some MHz can pass unaffectedly.
- B82799S0:
Suppression of asymmetrical and symmetrical interference (by L_{stray}) coupled in on lines. The high-frequency portions of the symmetrical data signal are decreased so far that EMC problems can be significantly reduced.

Applications

- Automotive applications, e.g. CAN bus

Terminals

- Base material CuSn6
- Layer composition Ni, Ag, Au
- Electro-plated

Marking

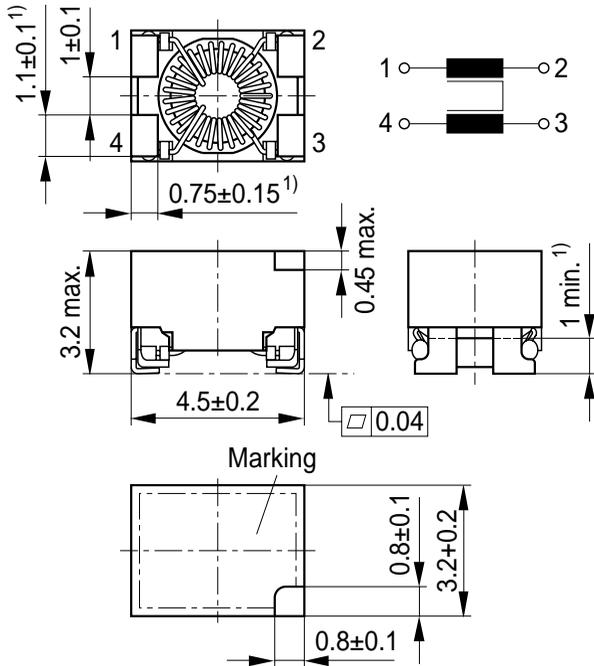
- Marking on component: Manufacturer, bifilar or sector winding (coded), L value (nH, coded), date of manufacture (YWWDD)
- Minimum data on reel: Manufacturer, ordering code, L value and tolerance, quantity, date of packing

Delivery mode and packing unit

- 12-mm blister tape, wound on 330-mm \varnothing reel
- Packing unit: 2500 pcs./reel

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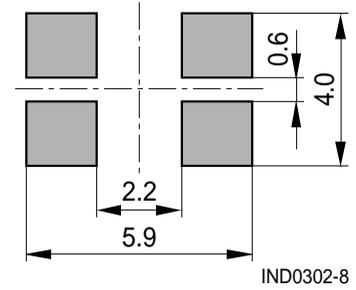
Dimensional drawing and pin configuration



1) Soldering area

IND0301-6-E

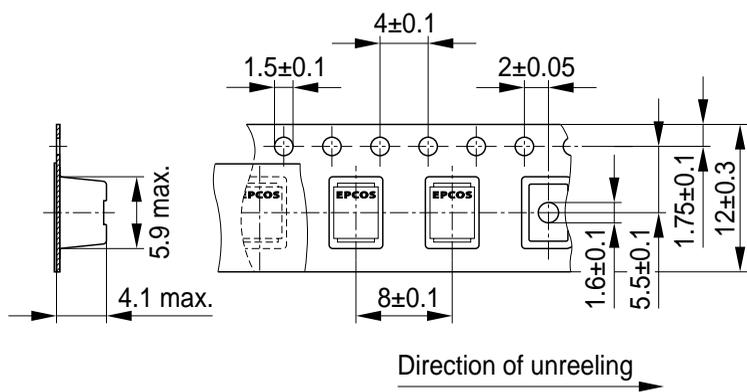
Layout recommendation



Dimensions in mm

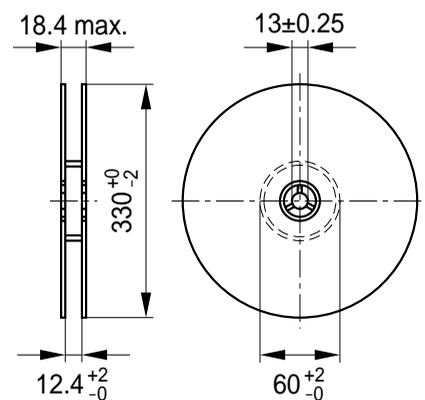
Taping and packing

Blister tape



IND0416-9-E

Reel



IND0421-C

Dimensions in mm

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Technical data and measuring conditions

| | |
|---|--|
| Rated voltage V_R | 42 V AC (50/60 Hz) / 80 V DC |
| Rated temperature T_R | 60 °C |
| Rated current I_R | Referred to 50 Hz and rated temperature |
| Applicable current I_R for high temperature applications | $0.5 \times I_R$, referred to 50 Hz and 150 °C ambient temperature |
| Rated inductance L_R | Measured with Agilent 4284A at 100 kHz, 0.1 mA, 20 °C Inductance is specified per winding. |
| Inductance tolerance | $\pm 30\%$ at 20 °C |
| Inductance decrease $\Delta L/L$ | < 10% at DC magnetic bias with I_R , 20 °C |
| Stray inductance $L_{\text{stray,typ}}$ | Measured with Agilent 4284A, 5 mA, 20 °C, typical values Measuring frequency: $L_R \leq 11 \mu\text{H} = 1 \text{ MHz}$ $L_R > 11 \mu\text{H} = 100 \text{ kHz}$ |
| DC resistance R_{typ} | Measured at 20 °C, typical values, specified per winding |
| Solderability | SnPb: (215 \pm 3) °C, (3 \pm 0.3) s Sn96.5Ag3.0Cu0.5: (245 \pm 5) °C, (3 \pm 0.3) s Wetting of soldering area $\geq 95\%$ (to IEC 60068-2-58) |
| Resistance to soldering heat | (260 \pm 5) °C, (10 \pm 1) s (to IEC 60068-2-58) |
| Climatic category | 55/150/56 (to IEC 60068-1) |
| Storage conditions (packaged) | -25 °C ... +40 °C, $\leq 75\%$ RH |
| Weight | Approx. 0.09 g |

Characteristics and ordering codes

| L_R mH | $L_{\text{stray,typ}}$ nH | I_R mA | R_{typ} m Ω | V_{test} V DC, 2 s | Ordering code |
|-------------|------------------------------|-------------|--------------------------------|--------------------------------|-----------------|
| 0.011 | 40 | 300 | 120 | 250 | B82799C0113N001 |
| 0.022 | 60 | 250 | 170 | 250 | B82799C0223N001 |
| 0.022 | 1200 | 250 | 170 | 250 | B82799S0223N001 |
| 0.033 | 70 | 200 | 200 | 250 | B82799C0333N001 |
| 0.033 | 1500 | 200 | 200 | 250 | B82799S0333N001 |
| 0.051 | 90 | 200 | 250 | 250 | B82799C0513N001 |
| 0.051 | 2300 | 200 | 250 | 250 | B82799S0513N001 |
| 0.10 | 50 | 300 | 150 | 750 | B82799C0104N001 |
| 0.22 | 60 | 200 | 200 | 750 | B82799C0224N001 |
| 0.33 | 70 | 200 | 250 | 750 | B82799C0334N001 |
| 0.47 | 100 | 200 | 320 | 750 | B82799C0474N001 |

Sample kit available. Ordering code: B82799X001
For more information refer to chapter "Sample kits".

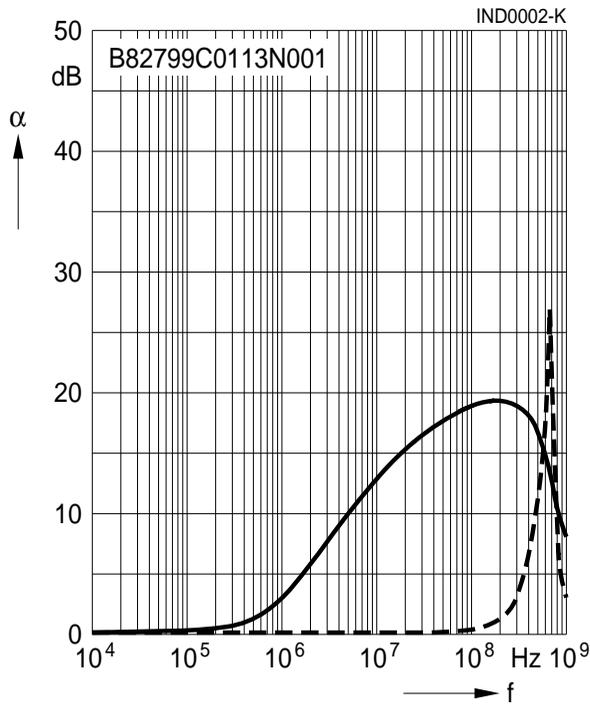
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Insertion loss α (typical values at $|Z| = 50 \Omega$, 20°C)

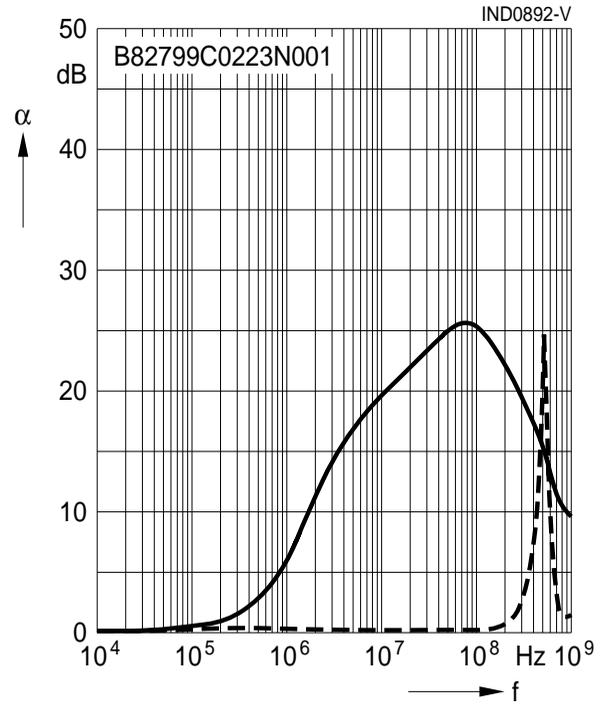
———— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

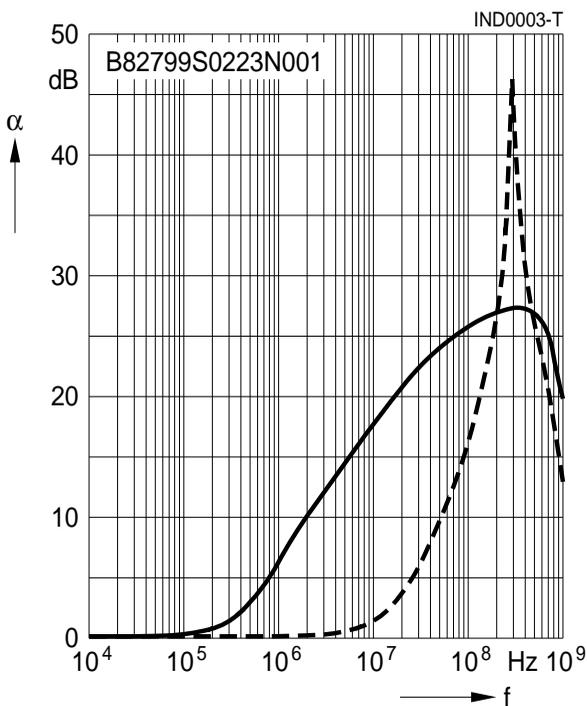
$L_R = 0.011 \text{ mH}$



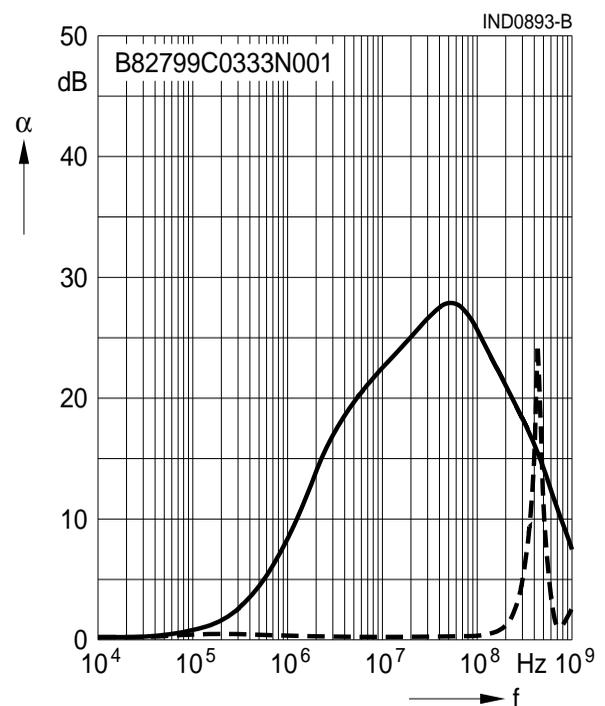
$L_R = 0.022 \text{ mH (low } L_{\text{stray}})$



$L_R = 0.022 \text{ mH (high } L_{\text{stray}})$



$L_R = 0.033 \text{ mH (low } L_{\text{stray}})$



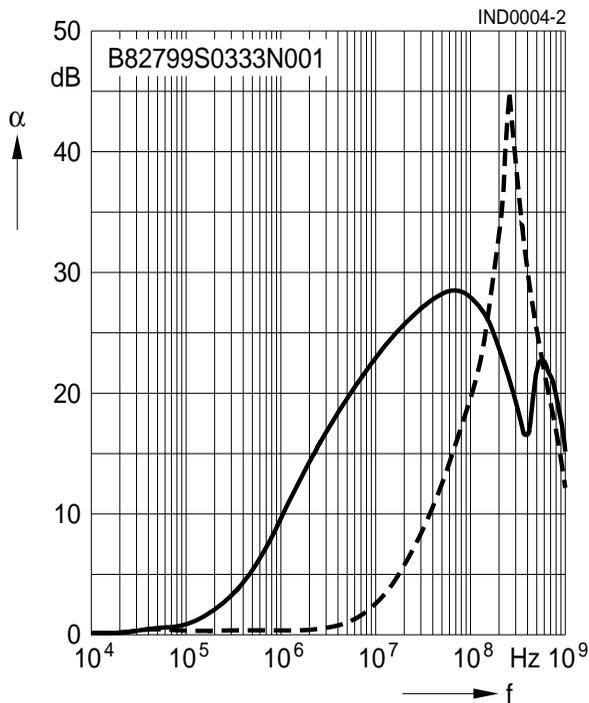
SMD

Insertion loss α (typical values at $|Z| = 50 \Omega$, 20°C)

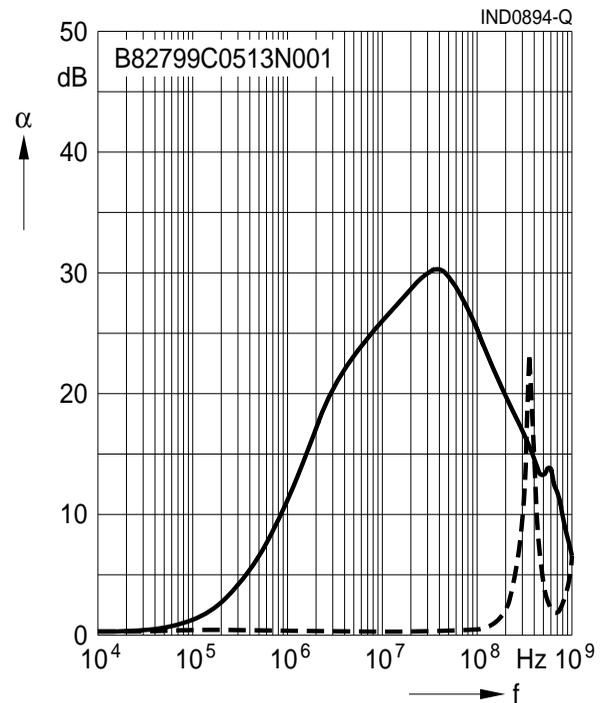
———— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

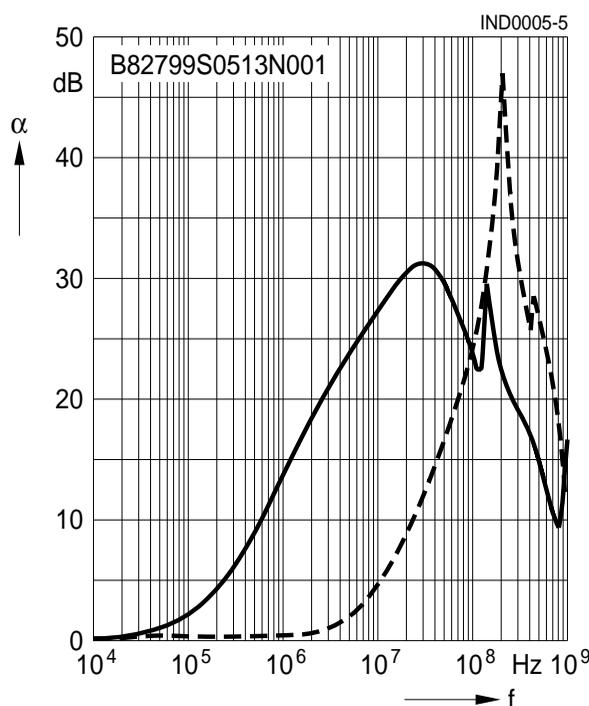
$L_R = 0.033 \text{ mH}$ (high L_{stray})



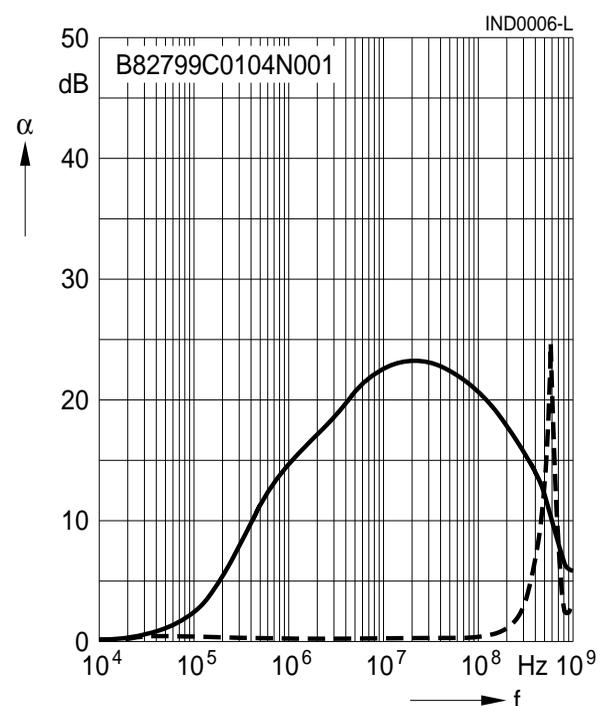
$L_R = 0.051 \text{ mH}$ (low L_{stray})



$L_R = 0.051 \text{ mH}$ (high L_{stray})



$L_R = 0.10 \text{ mH}$



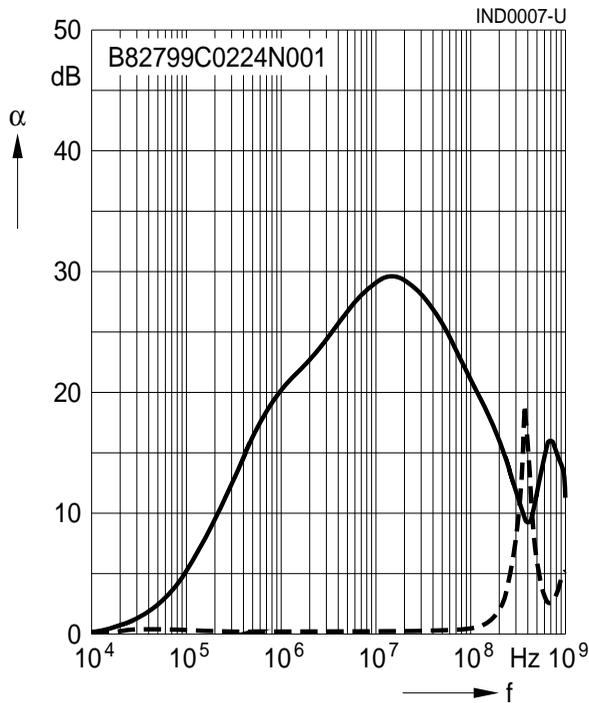
SMD

Insertion loss α (typical values at $|Z| = 50 \Omega$, 20°C)

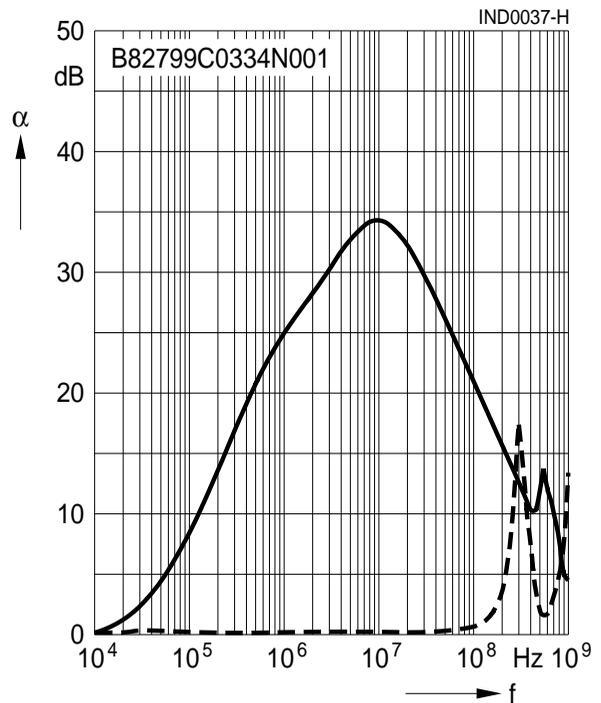
———— asymmetrical, all branches in parallel (common mode)

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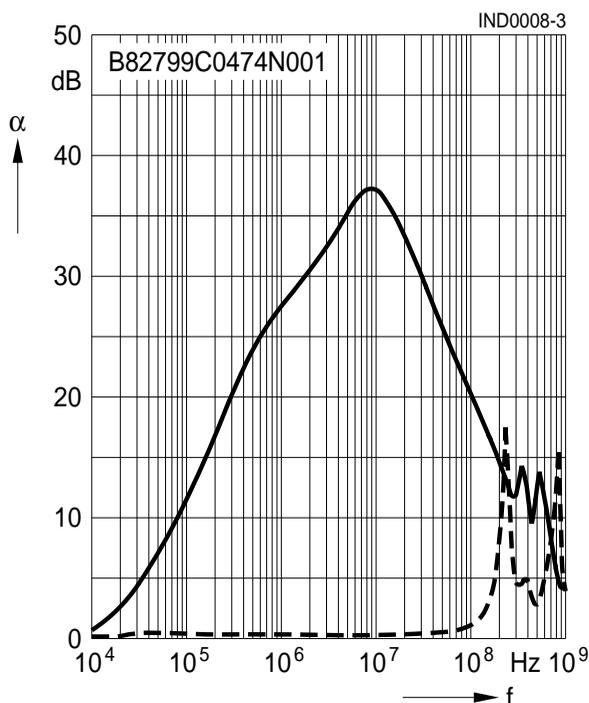
$L_R = 0.22 \text{ mH}$



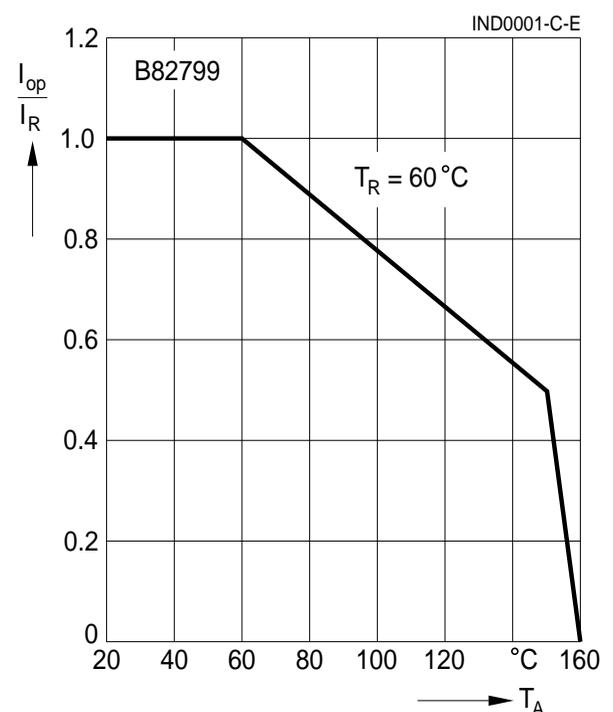
$L_R = 0.33 \text{ mH}$



$L_R = 0.47 \text{ mH}$



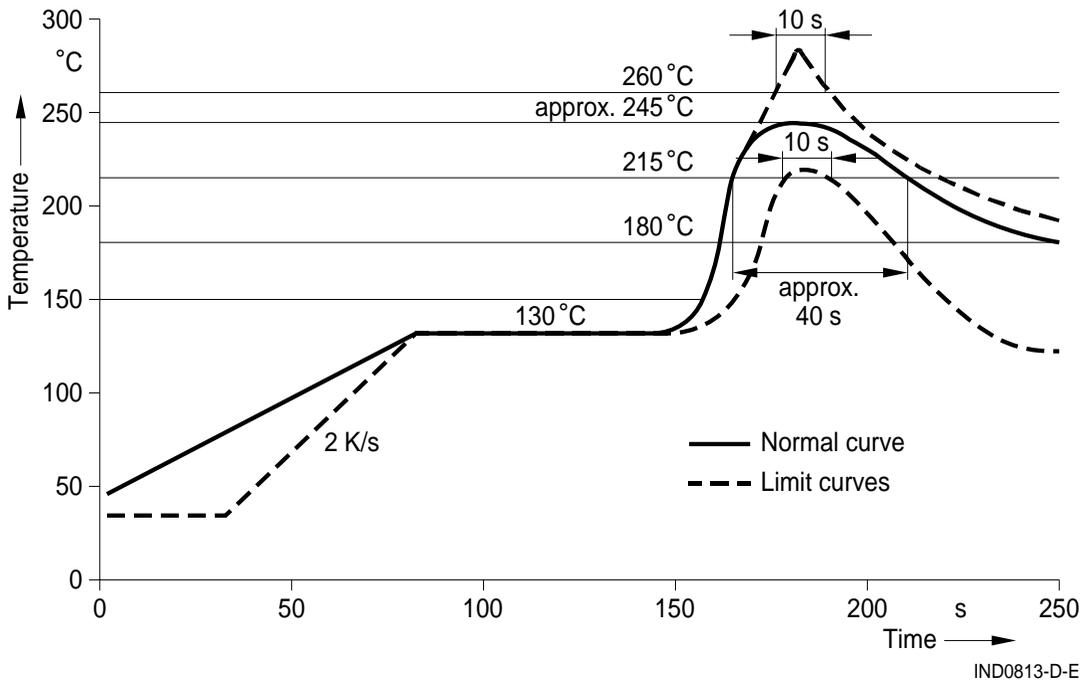
Current derating I_{op}/I_R versus ambient temperature



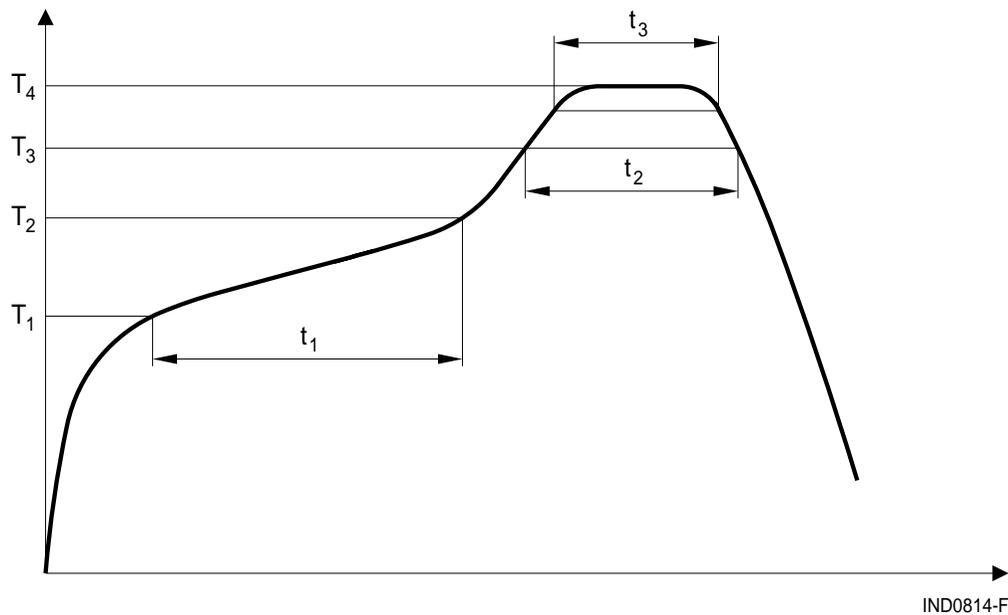
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Recommended reflow soldering curve

Pb containing solder material (based on CECC 00802 edition 2)



Pb-free solder material (based on JEDEC J-STD 020C)



| T_1 °C | T_2 °C | T_3 °C | T_4 °C | t_1 s | t_2 s | t_3 s |
|-------------|-------------|-------------|-------------|------------|------------|---------------------|
| 150 | 200 | 217 | 250 | < 110 | < 90 | < 40 @ $T_4 - 5$ °C |

Time from 25 °C to T_4 : max 300 s

Maximal numbers of reflow cycles: 3

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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