

## 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

**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  $L_{\text{stray}}$ ) 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

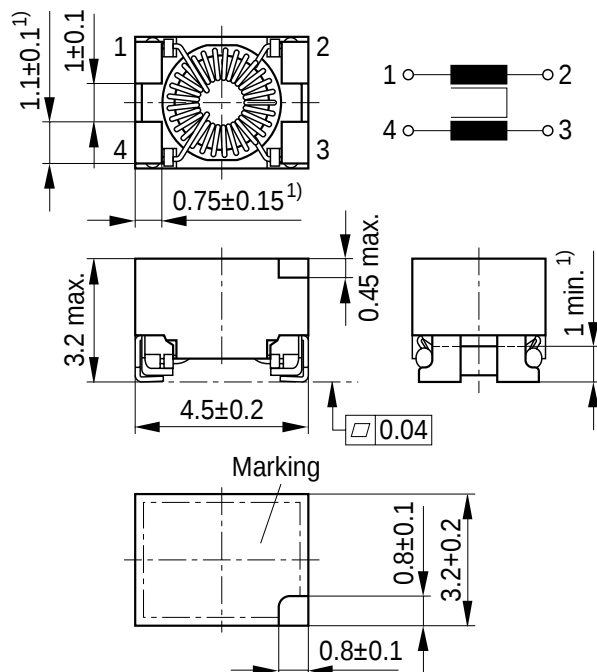
### Marking

- Marking on component: Manufacturer, bifilar or sector winding (coded), L value (nH, coded), date of manufacture (YWWD)
- 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 Ø reel
- Packing unit: 2500 pcs./reel

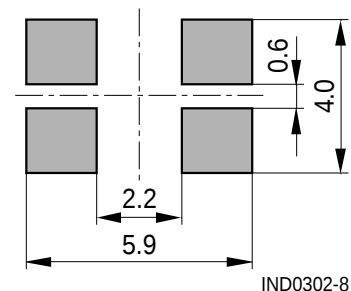
## Dimensional drawing and pin configuration



1) Soldering area

IND0301-6-E

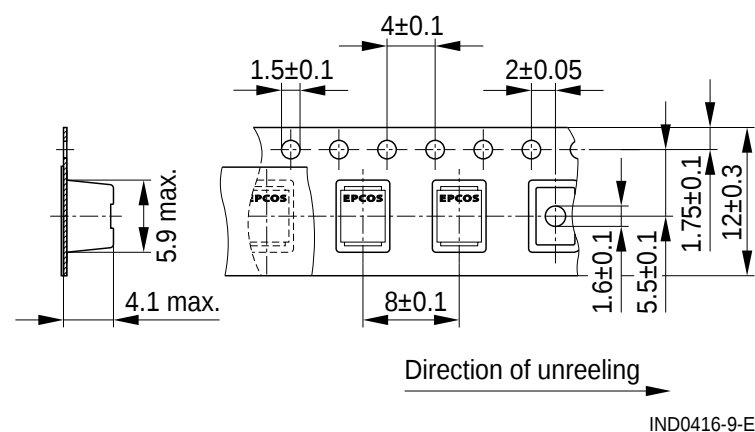
## Layout recommendation



Dimensions in mm

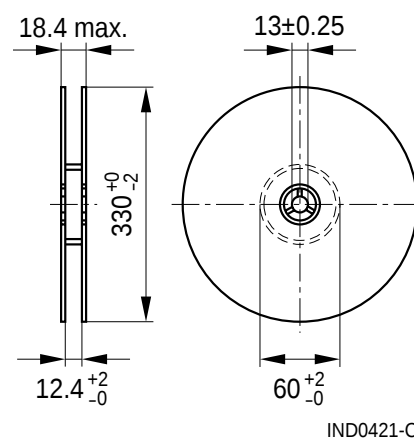
## Taping and packing

### Blister tape



Dimensions in mm

### Reel



**Data and signal line chokes**
**B82799C0/S0**
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**SMD**
**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 $I_R$<br>for high temperature applications | $0.5 \times I_R$ ,<br>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<br>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<br>Measuring frequency: $L_R \leq 11 \mu\text{H} = 1 \text{ MHz}$<br>$L_R > 11 \mu\text{H} = 100 \text{ kHz}$ |
| DC resistance $R_{\text{typ}}$                                | Measured at 20 °C, typical values, specified per winding                                                                                                               |
| Solderability                                                 | SnPb: (215 $\pm$ 3) °C, (3 $\pm$ 0.3) s<br>Sn96.5Ag3.0Cu0.5: (245 $\pm$ 5) °C, (3 $\pm$ 0.3) s<br>Wetting of soldering area $\geq 95\%$<br>(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**

| $L_R$<br>mH | $L_{\text{stray,typ}}$<br>nH | $I_R$<br>mA | $R_{\text{typ}}$<br>m $\Omega$ | $V_{\text{test}}$<br>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

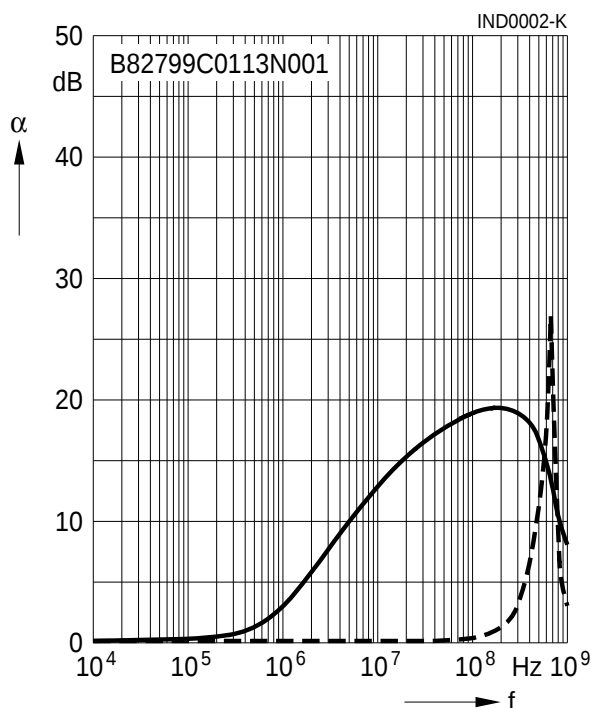
For more information refer to chapter "Sample kits".

Insertion loss  $\alpha$  (typical values at  $|Z| = 50 \Omega$ ,  $20^\circ\text{C}$ )

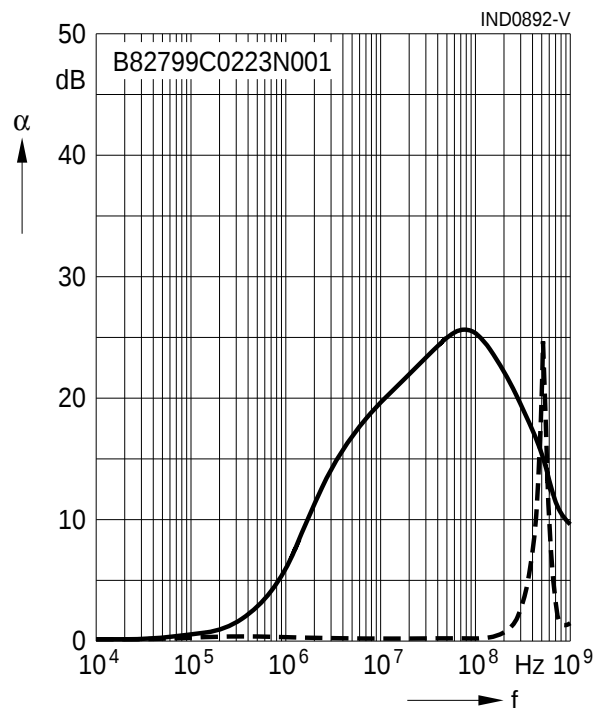
———— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

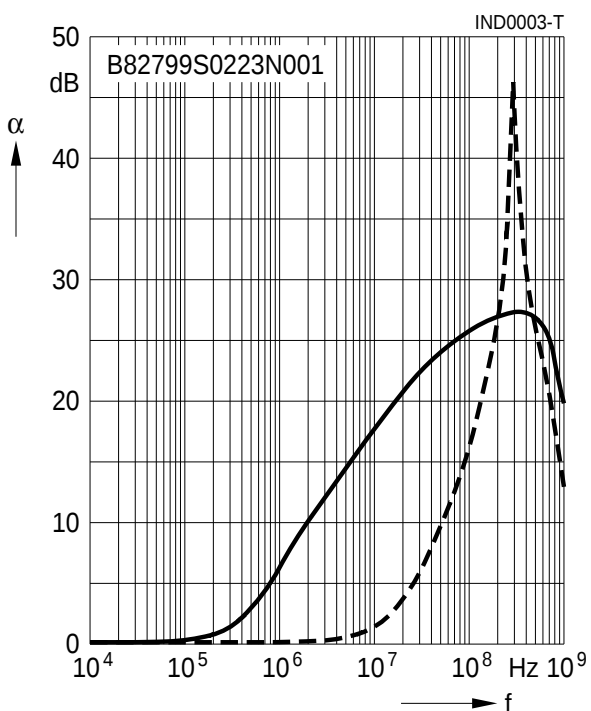
$L_R = 0.011 \text{ mH}$



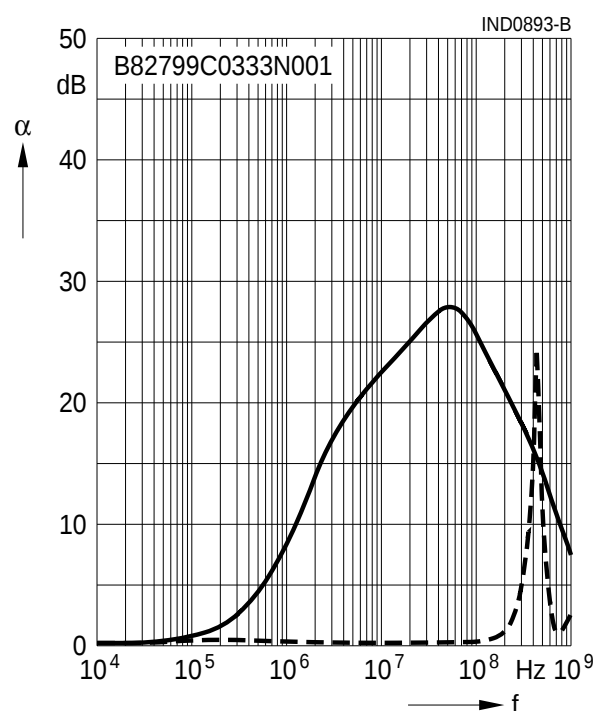
$L_R = 0.022 \text{ mH}$  (low  $L_{\text{stray}}$ )



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



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

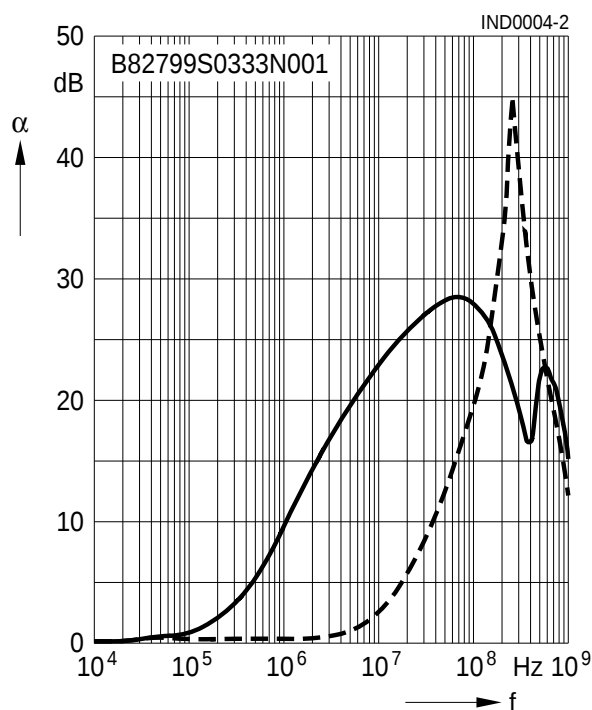


**Insertion loss  $\alpha$**  (typical values at  $|Z| = 50 \Omega$ , 20 °C)

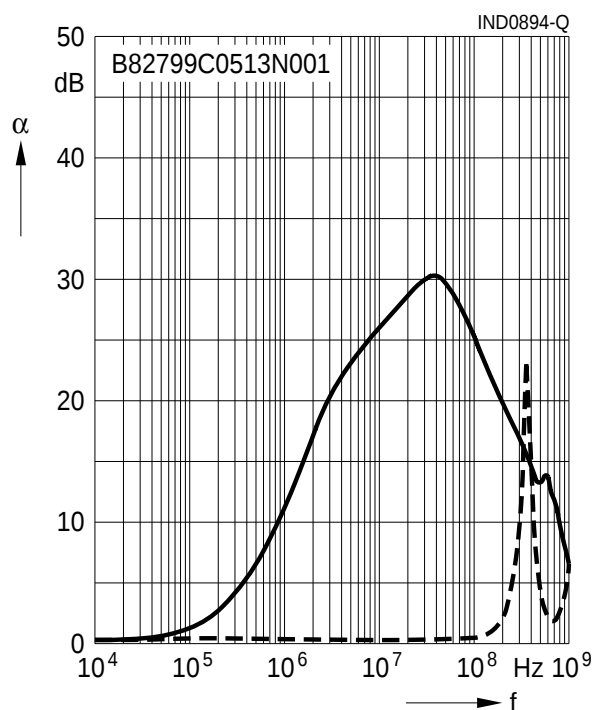
———— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

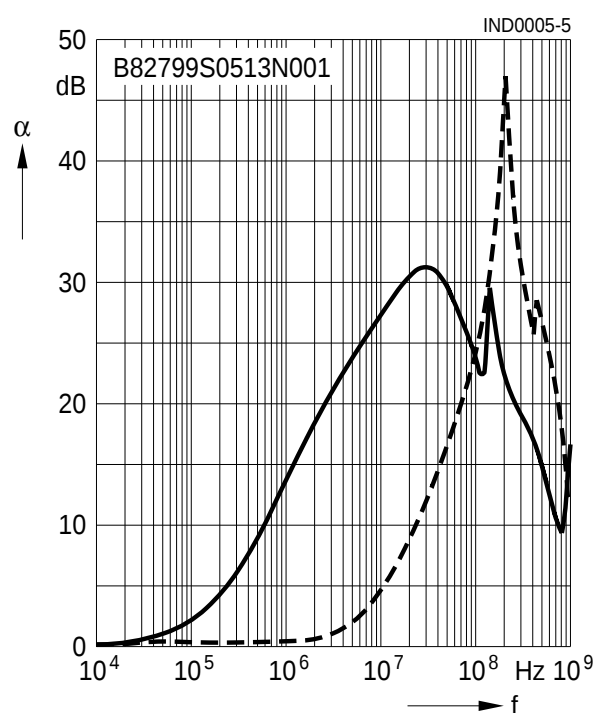
$L_R = 0.033 \text{ mH}$  (high  $L_{\text{stray}}$ )



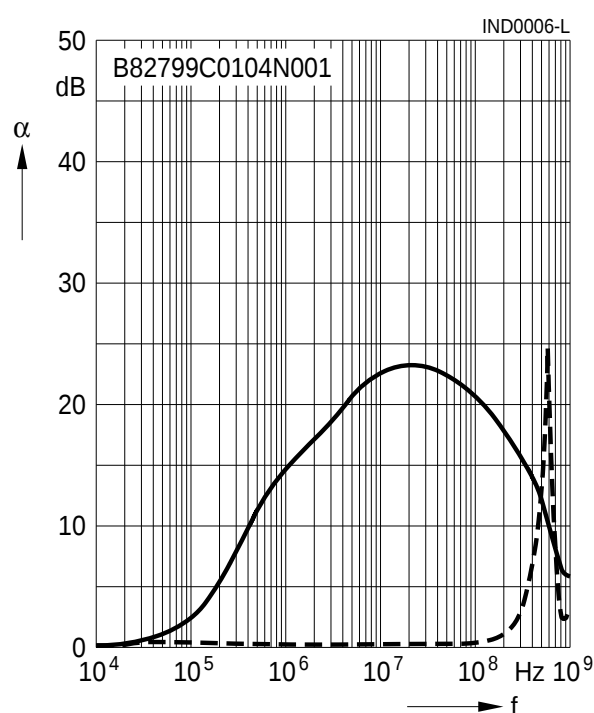
$L_R = 0.051 \text{ mH}$  (low  $L_{\text{stray}}$ )



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



$L_R = 0.10 \text{ mH}$



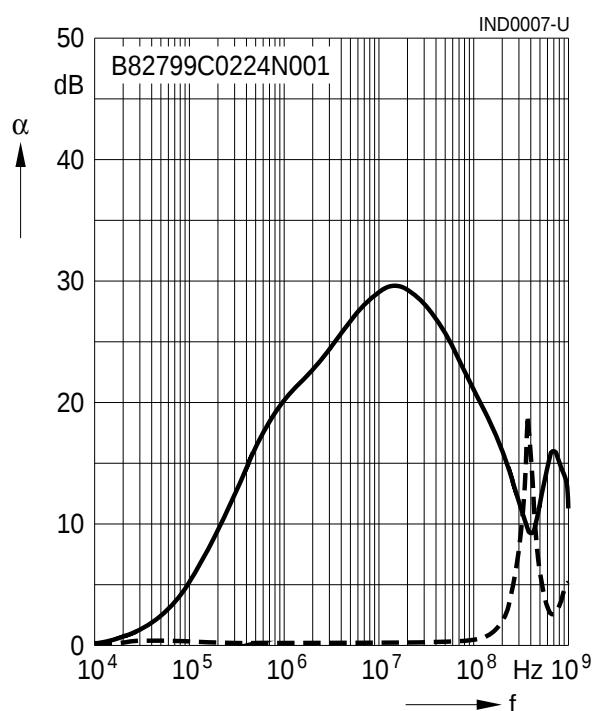
**SMD**

**Insertion loss  $\alpha$**  (typical values at  $|Z| = 50 \Omega$ ,  $20^\circ\text{C}$ )

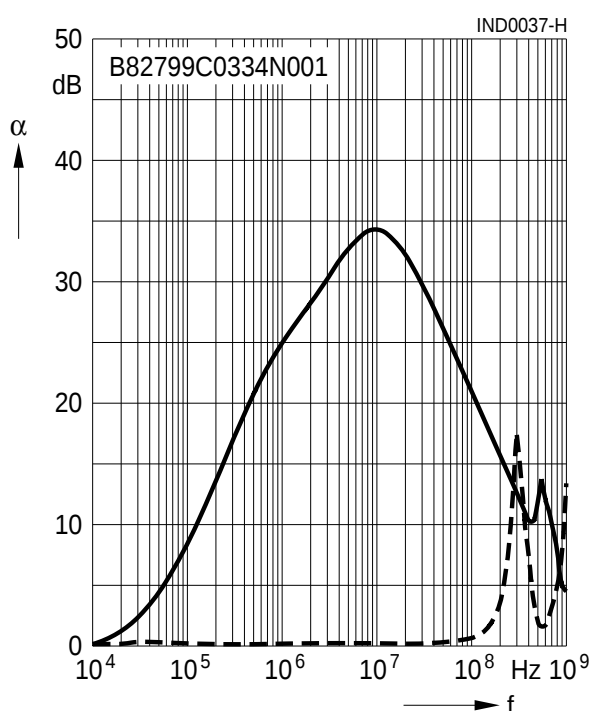
———— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

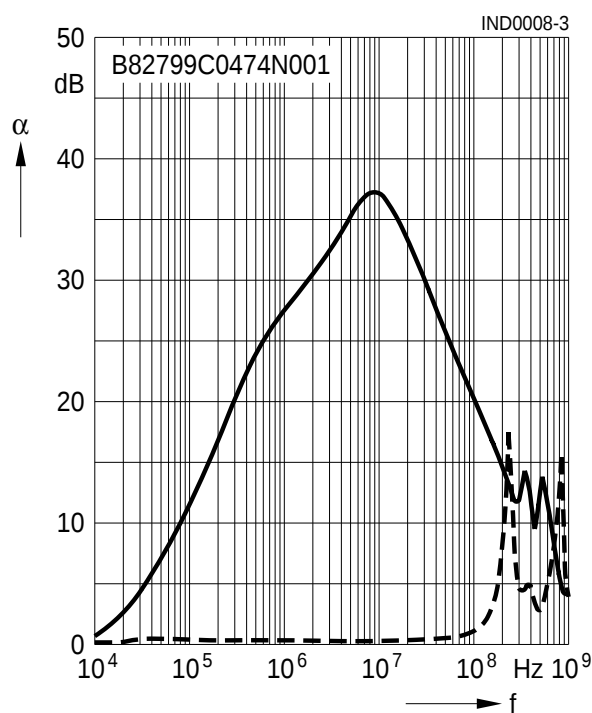
$L_R = 0.22 \text{ mH}$



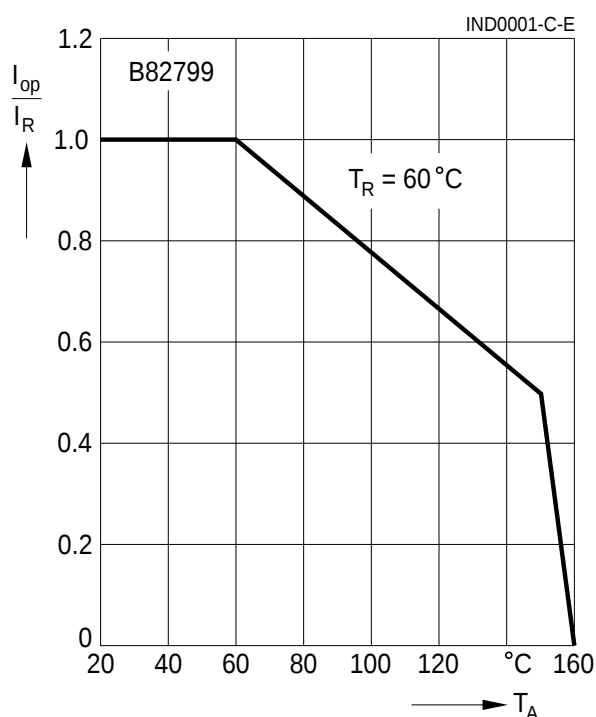
$L_R = 0.33 \text{ mH}$



$L_R = 0.47 \text{ mH}$

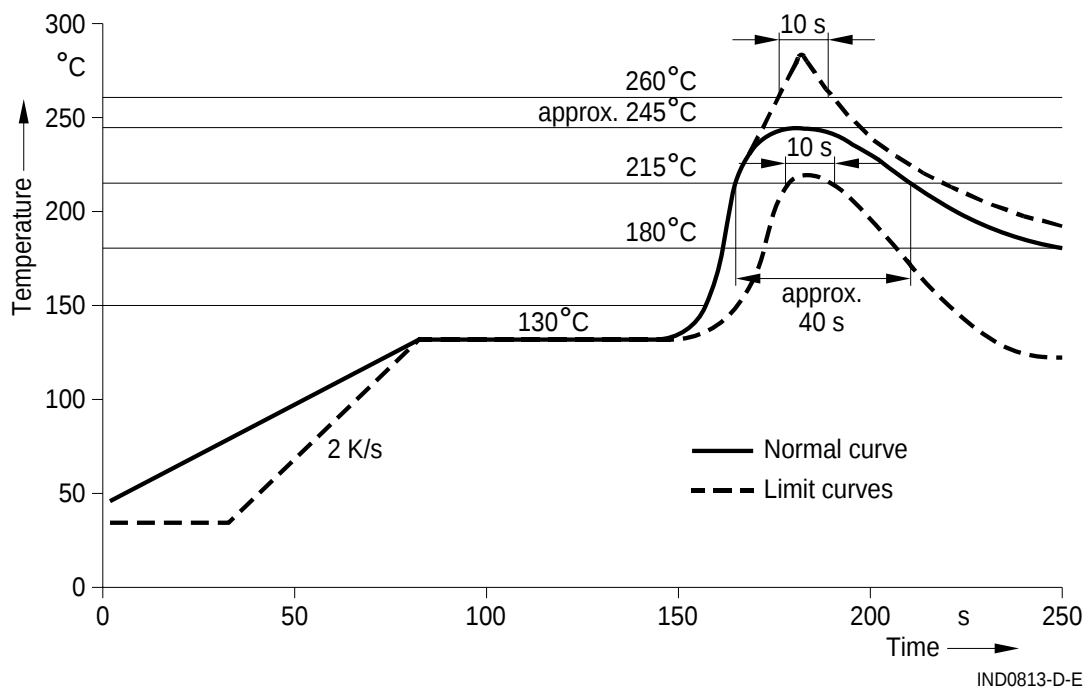


**Current derating  $I_{op}/I_R$   
versus ambient temperature**

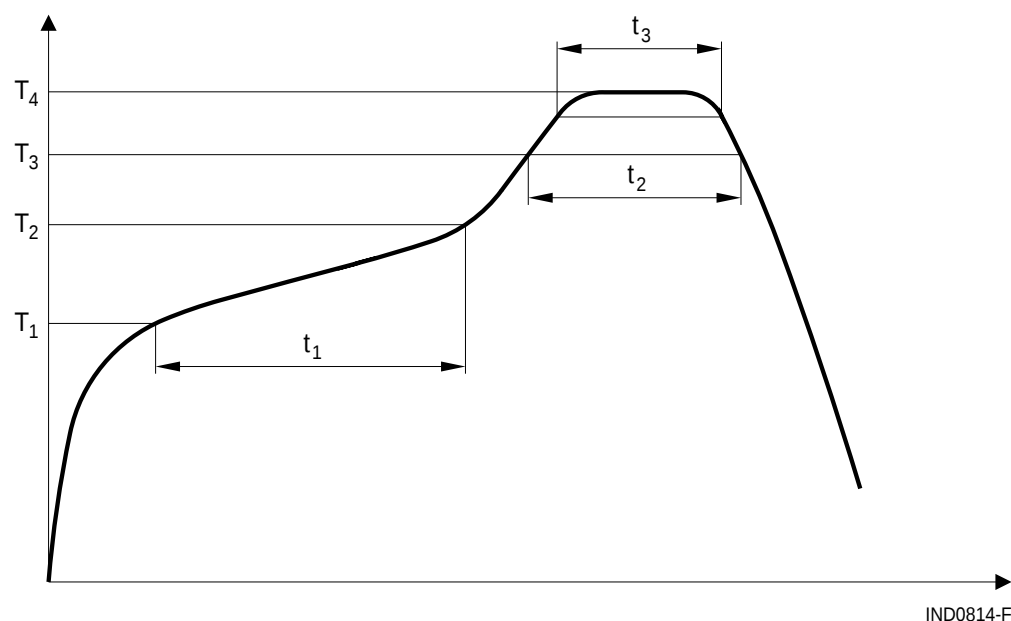


## Recommended reflow soldering curve

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



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



| $T_1$<br>°C | $T_2$<br>°C | $T_3$<br>°C | $T_4$<br>°C | $t_1$<br>s | $t_2$<br>s | $t_3$<br>s                     |
|-------------|-------------|-------------|-------------|------------|------------|--------------------------------|
| 150         | 200         | 217         | 250         | < 110      | < 90       | < 40 @ $T_4 - 5^\circ\text{C}$ |

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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