Data and signal line chokes

Common-mode chokes, ring core
0.005 … 47 mH, 100 … 1200 mA, +60 °C

Series/Type: **B82793C0/S0**

Date: March 2016

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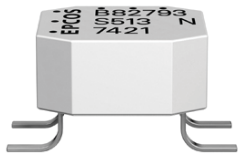
SMD

Rated voltage 42 V AC/80 V DC
Rated inductance 0.005 ... 47 mH
Rated current 100 ... 1200 mA



Construction

- Current-compensated double choke
- Ferrite core
- LCP case (UL 94 V-0), silicone potting
- Bifilar winding (B82793C0)
- Sector winding (B82793S0)

Features

- High rated currents, reduced components height
- Qualified to AEC-Q200 ($L \leq 4.7$ mH)
- Suitable for reflow soldering
- RoHS-compatible

Function

- B82793C0:
  Suppression of asymmetrical interference coupled in on lines, whereas data signals up to some MHz can pass unaffectedly.
- B82793S0:
  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
- Industrial applications
- Types with $L_R > 4.7$ mH only for telecom applications

Terminals

- Base material CuSn6
- Layer composition Ni, Sn
- Hot-dipped

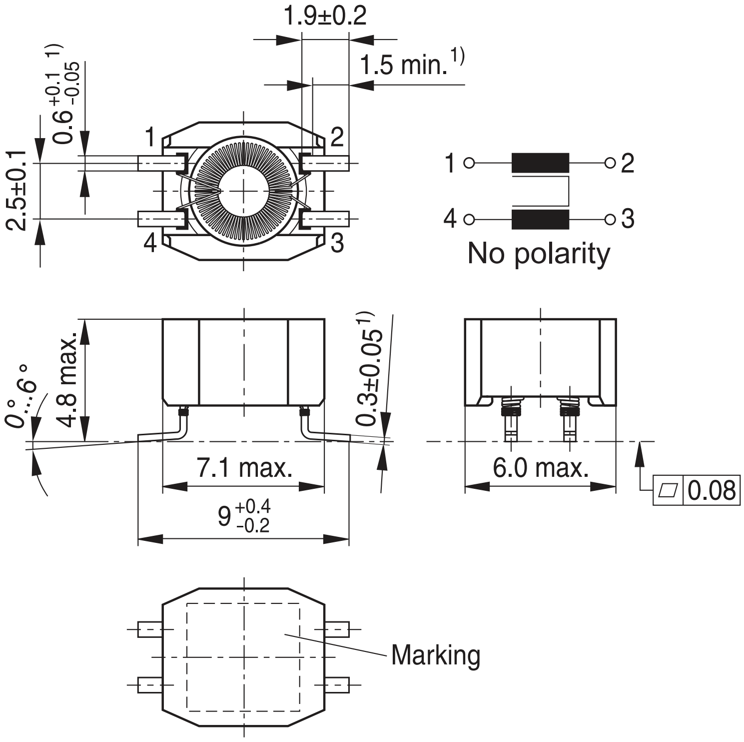
Marking

- Marking on component: Manufacturer, process location (coded), winding method (coded), ordering code (short form), date of manufacture (YWWD)
- Minimum data on reel: Manufacturer, ordering code, L value and tolerance, quantity, date of packing

Delivery mode and packing unit

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

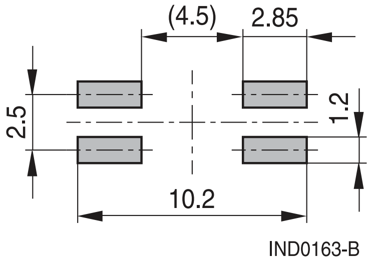
Dimensional drawing and pin configuration



1) Soldering area

IND0010-9-E

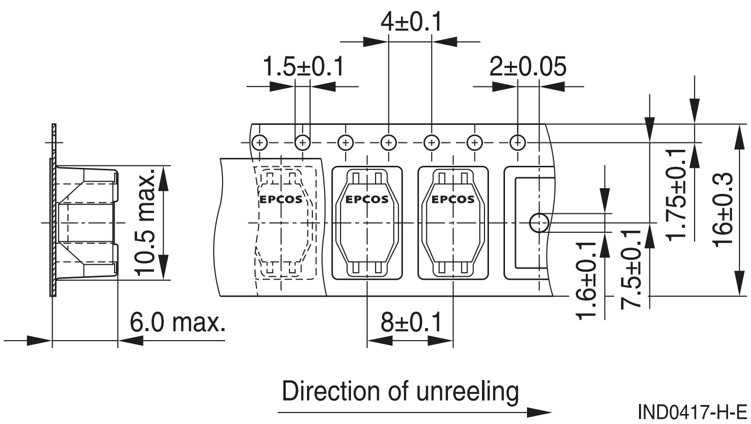
Layout recommendation



Dimensions in mm

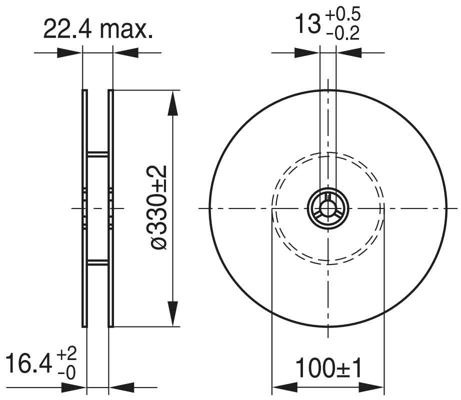
Taping and packing

Blister tape



IND0417-H-E

Reel



IND1302-D

Dimensions in mm

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
Rated inductance L_R	Measured with Agilent 4284A, 0.1 mA, +20 °C Measuring frequency: $L_R \leq 1$ mH = 100 kHz $L_R > 1$ mH = 10 kHz Inductance is specified per winding.
Inductance tolerance	±30% ($L_R \leq 0.47$ mH), –30/+50% ($L_R \geq 1$ mH) at +20 °C
Inductance decrease ΔL/L	< 10% at DC magnetic bias with I_R, +20 °C
Stray inductance $L_{stray,typ}$	Measured with Agilent 4284A, 5 mA, +20 °C, typical values Measuring frequency: $L_R \leq 11$ µH = 1 MHz $L_R > 11$ µH = 100 kHz
DC resistance R_{typ}	Measured at +20 °C, typical values, specified per winding
Solderability	SnPb: +(215 ±3) °C, (3 ±0.3) s Sn96.5Ag3.0Cu0.5: +(245 ±5) °C, (3 ±0.3) s Wetting of soldering area ≥ 95% (to IEC 60068-2-58)
Resistance to soldering heat	+(260 ±5) °C, (10 ±1) s (to IEC 60068-2-58)
Climatic category	40/125/56 (to IEC 60068-1)
Storage conditions (packaged)	–25 °C … +40 °C, ≤ 75% RH
Weight	Approx. 0.25 g

Characteristics and ordering codes

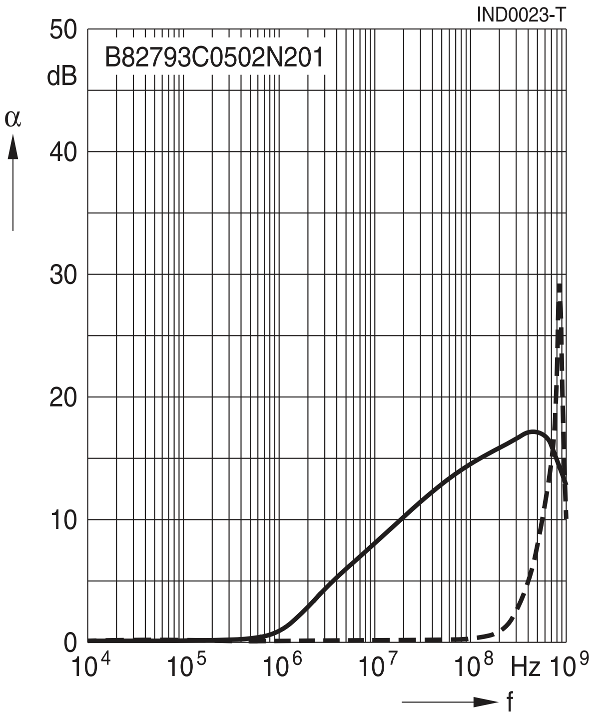
L_R mH	$L_{stray,typ}$ nH	I_R mA	R_{typ} mΩ	V_{test} V DC, 2 s	Ordering code
0.005	40	1200	60	250	B82793C0502N201
0.011	50	800	80	250	B82793C0113N201
0.025	60	800	110	250	B82793C0253N201
0.025	1400	800	110	250	B82793S0253N201
0.051	70	800	140	250	B82793C0513N201
0.051	2300	800	140	250	B82793S0513N201
0.10	100	500	180	250	B82793C0104N201
0.47	100	700	170	750	B82793C0474N215
1.0	70	700	140	750	B82793C0105N265
2.2	120	500	400	750	B82793C0225N265
4.7	250	400	550	750	B82793C0475N265
For telecommunications					
20	300	100	1800	750	B82793C0206N265
47	1200	100	3700	750	B82793C0476N265

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

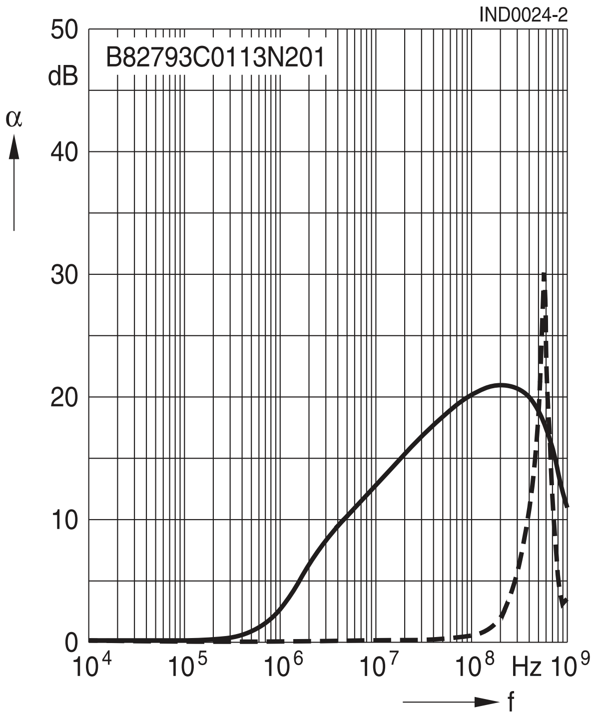
——— asymmetrical, all branches in parallel (common mode)

- - - - - - symmetrical (differential mode)

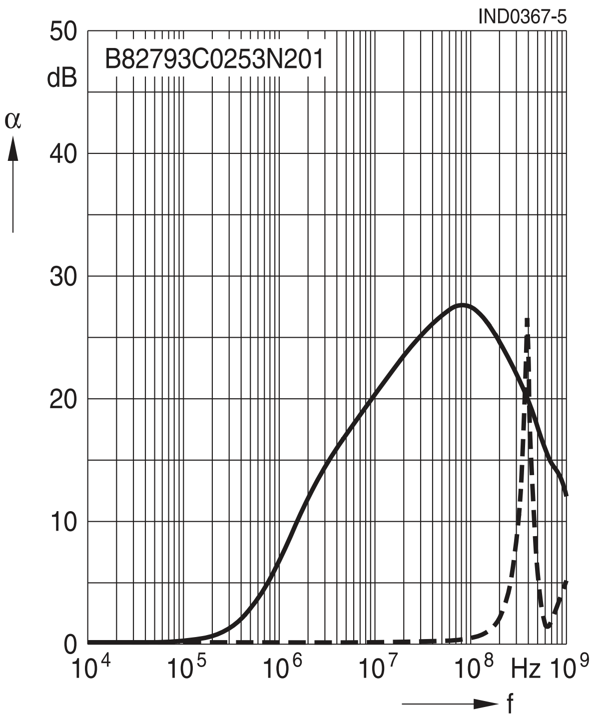
L_R = 0.005 mH



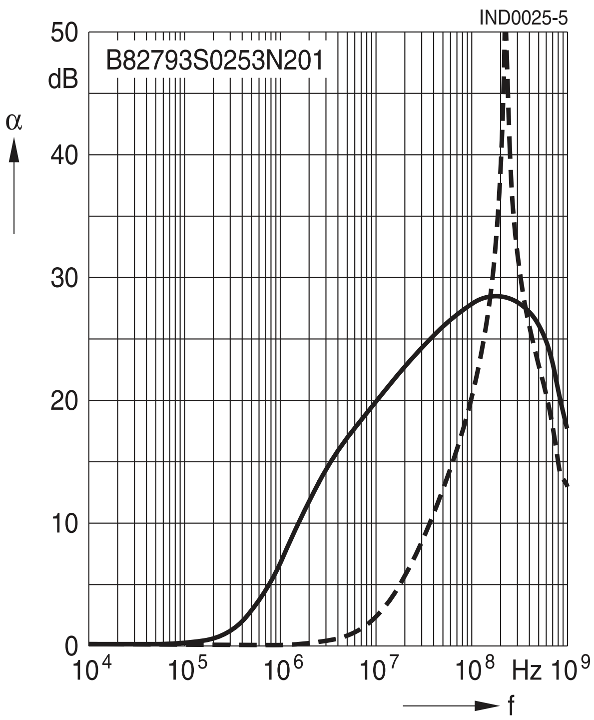
L_R = 0.011 mH



L_R = 0.025 mH (low L_{stray})



L_R = 0.025 mH (high L_{stray})

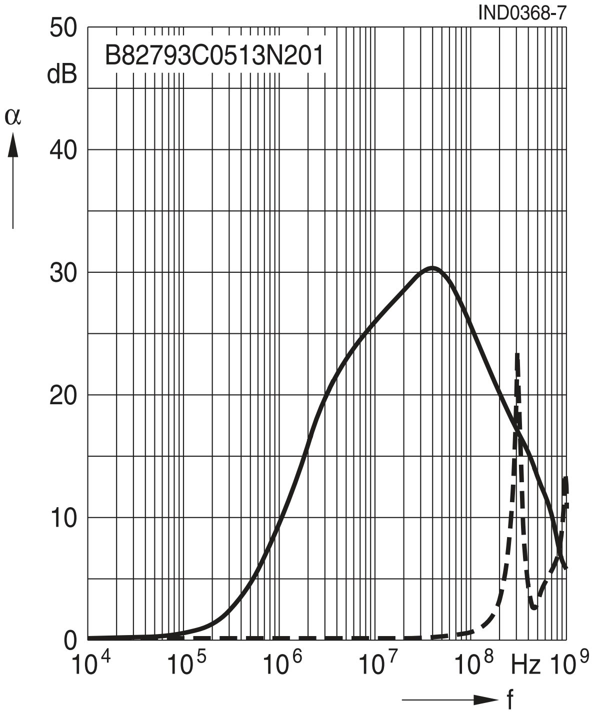


Insertion loss α (typical values at |Z| = 50 Ω, +20 °C)

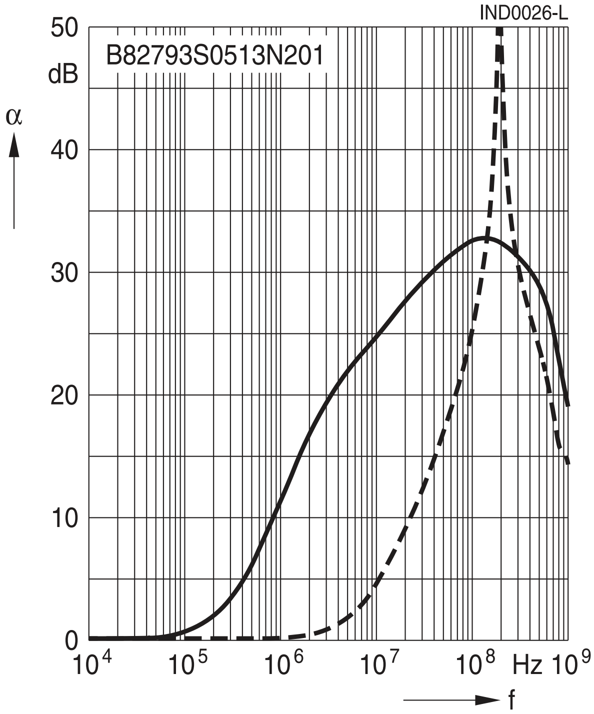
asymmetrical, all branches in parallel (common mode)

symmetrical (differential mode)

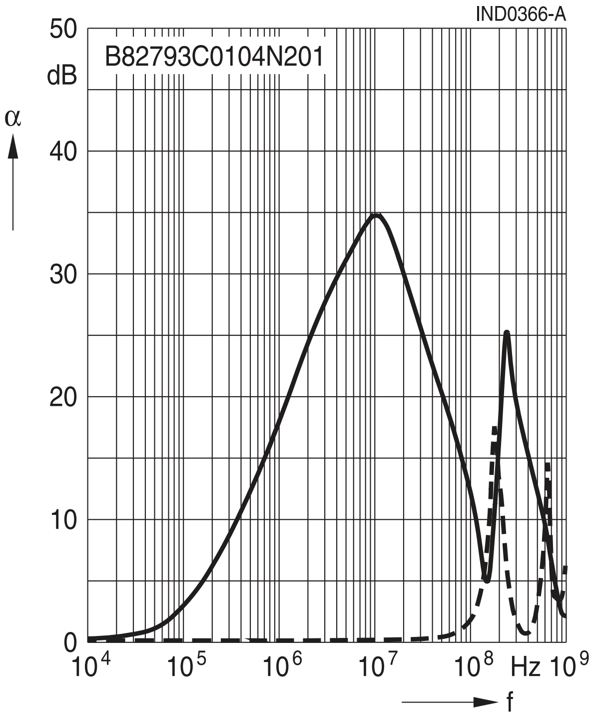
L_R = 0.051 mH (low L_{stray})



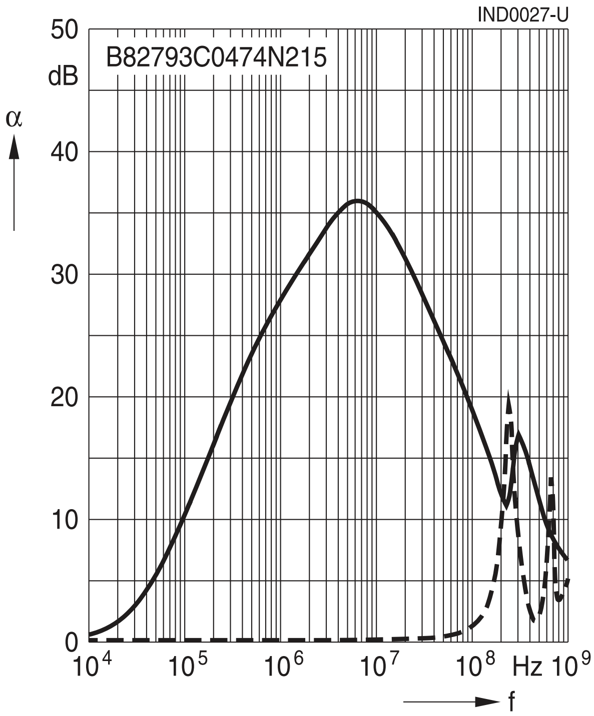
L_R = 0.051 mH (high L_{stray})



L_R = 0.10 mH



L_R = 0.47 mH

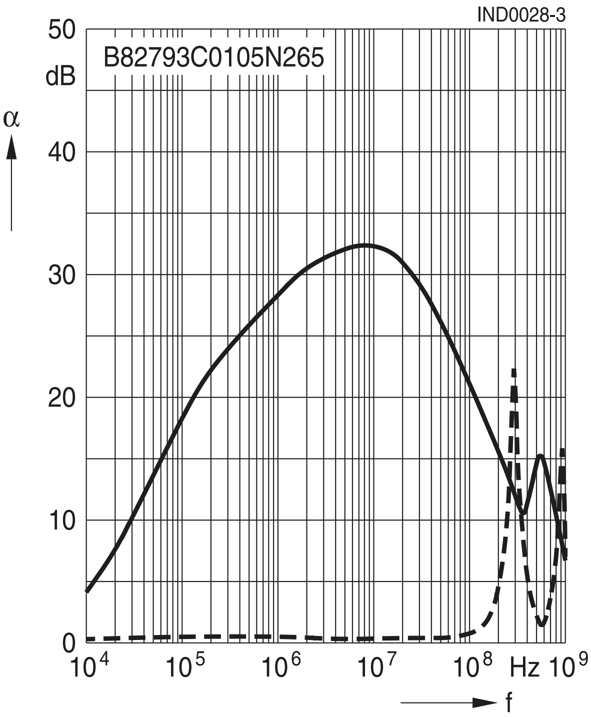


Insertion loss α (typical values at |Z| = 50 Ω, +20 °C)

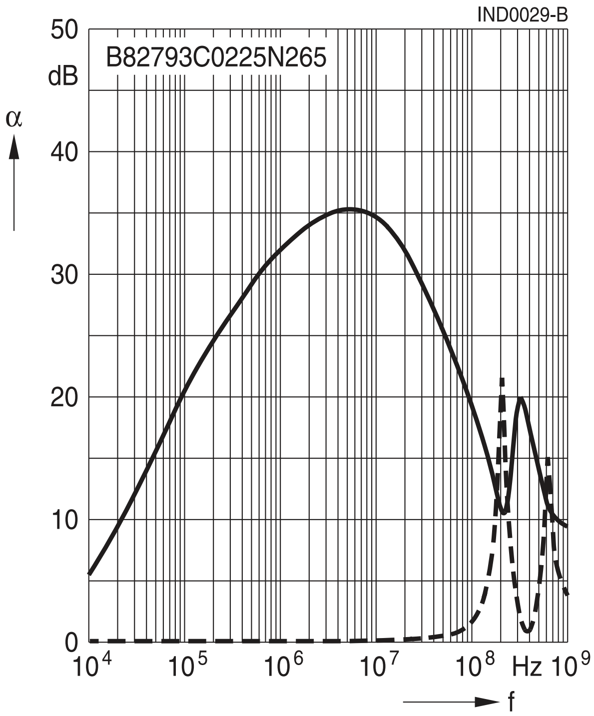
——— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

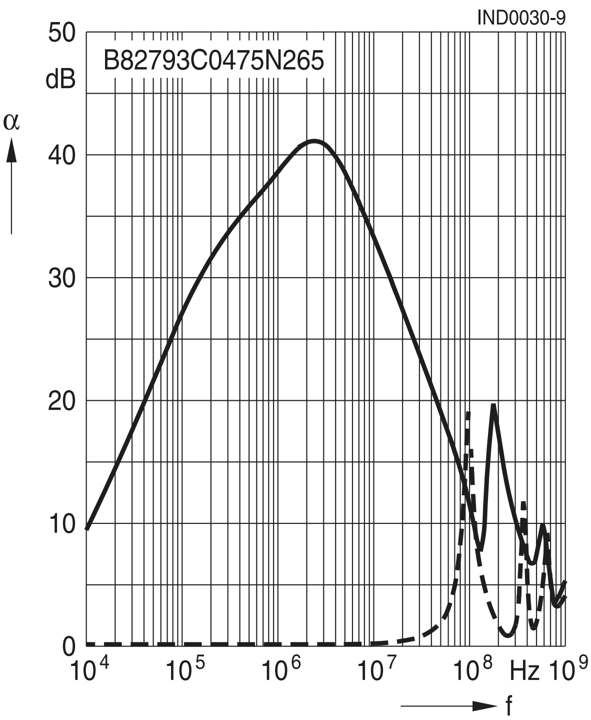
L_R =1.0 mH



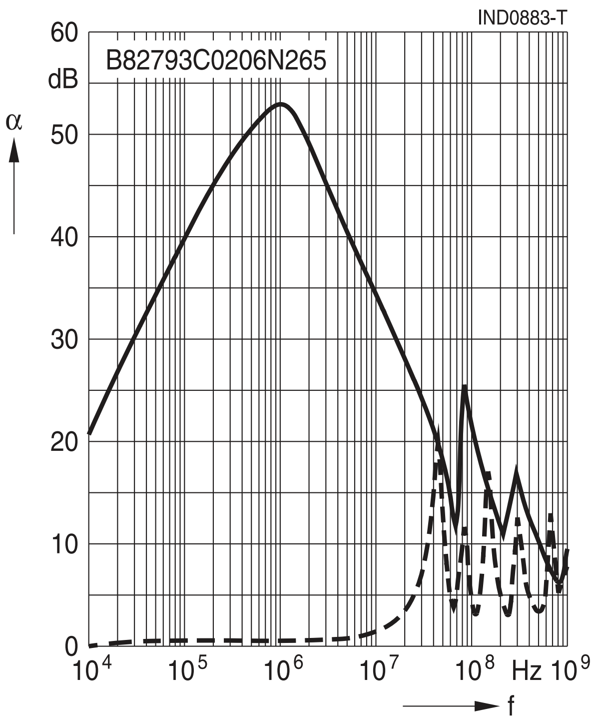
L_R = 2.2 mH



L_R = 4.7 mH



L_R = 20 mH

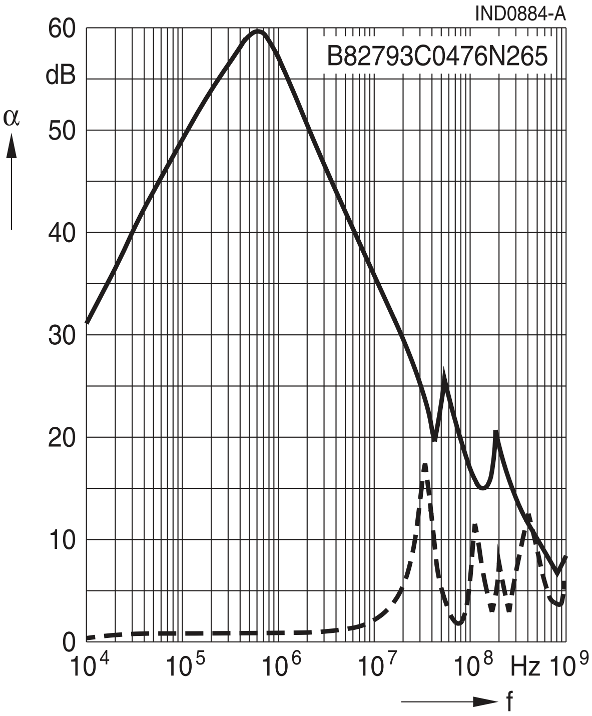


Insertion loss α (typical values at |Z| = 50 Ω, +20 °C)

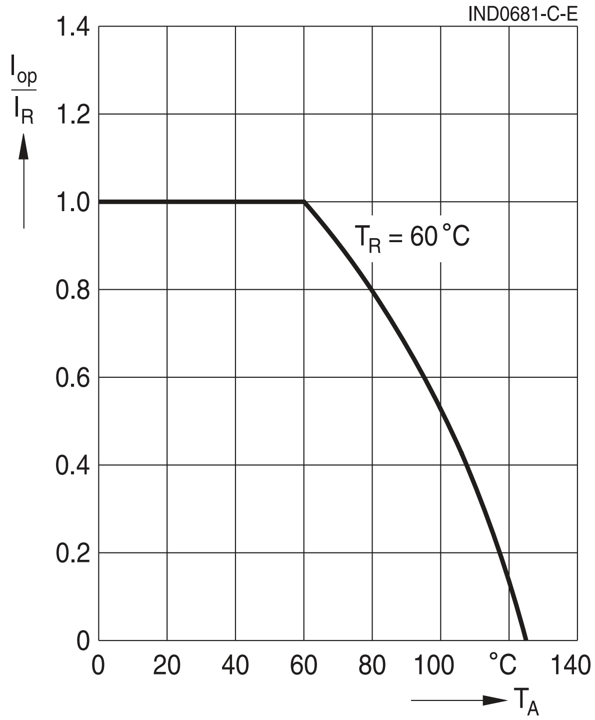
——— asymmetrical, all branches in parallel (common mode)

- - - - - - symmetrical (differential mode)

L_R = 47 mH

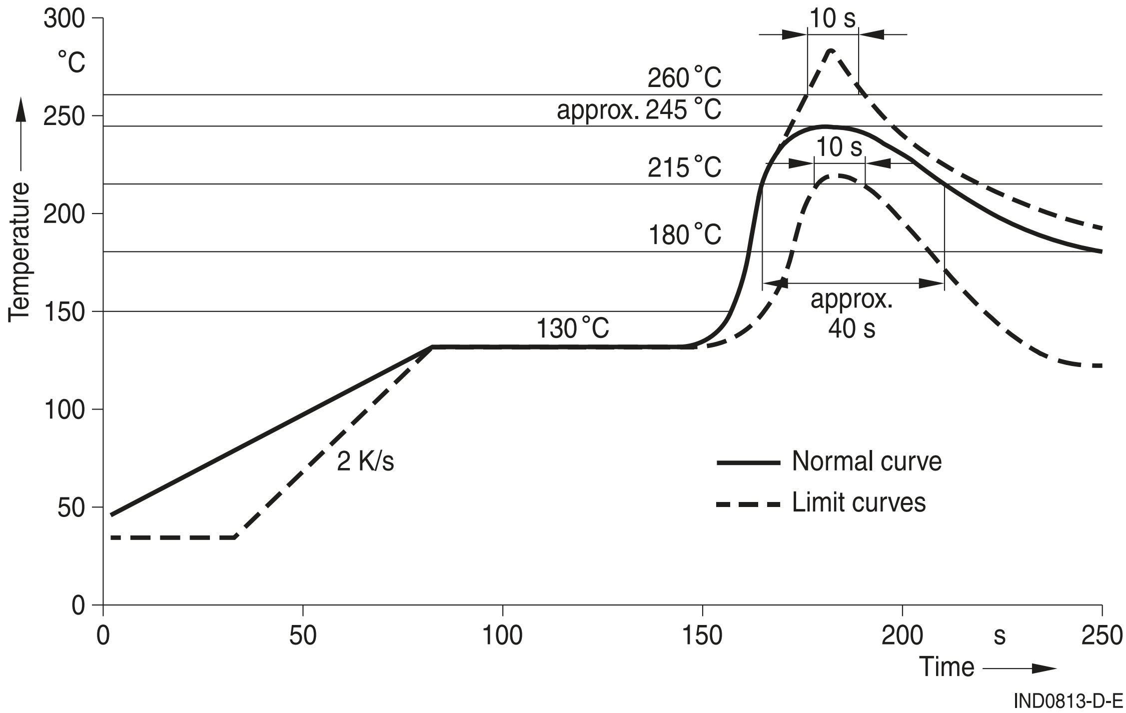


Current derating I_{op}/I_R versus ambient temperature

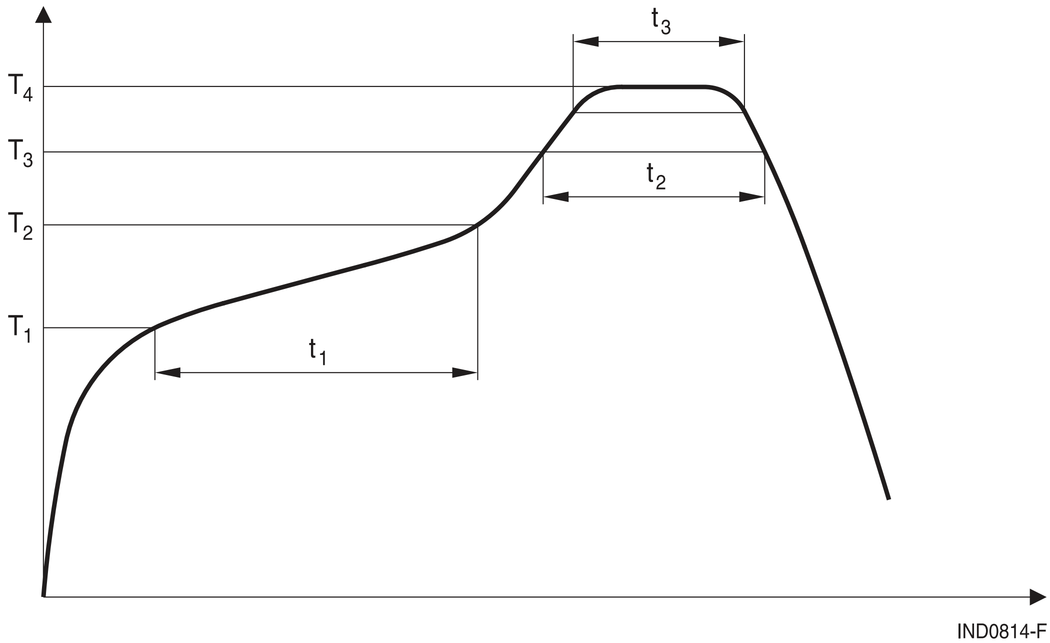


Recommended reflow soldering curve

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



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



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

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- 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.
  Washing processes may damage the product due to the possible static or cyclic mechanical loads (e.g. ultrasonic cleaning). They may cause cracks to develop on the product and its parts, which might lead to reduced reliability or lifetime.
- 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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