# Data and signal line chokes

SIMDAD 1812, common-mode chokes
42 V AC/80 V DC, 11 … 100 µH, 150 … 300 mA

**Series/Type:** **B82789C0/S0**

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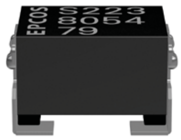
**Rated voltage 42 V AC/80 V DC**
**Rated inductance 11 ... 100 µH**
**Rated current 150 ... 300 mA**




## Construction

- Current-compensated double choke
- Ferrite I core
- Winding: enamel copper wire
- Winding welded to terminals
- Bifilar winding (B82789C0…)
- Sector winding (B82789S0…)

## Features

- Temperature range up to +150 °C (B82789C0/S0*H)
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- For gold-plated terminals conductive adhesion possible
- Qualified to AEC-Q200
- RoHS-compatible

## Function

- B82789C0:
  Suppression of asymmetrical interference coupled in on lines, whereas data signals up to some MHz can pass unaffectedly.
- B82789S0:
  Suppression of asymmetrical (by $L_R$) 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 and FlexRay bus
- Industrial field bus systems
- Line cards for telecom

## Terminals

Tinned terminals (B82789C0/S0*002)
- Base material CuSn6
- Layer composition Ni, Ag, Sn [1)]
- Lead-free tinned

Gold-plated terminals (B82789C0/S0*001)
- Base material CuSn6
- Layer composition Ni, Ag, Au
- Gold plated

1) Ni-barrier-plated terminals (NiSn) on request (B82789C0/S0*H052).

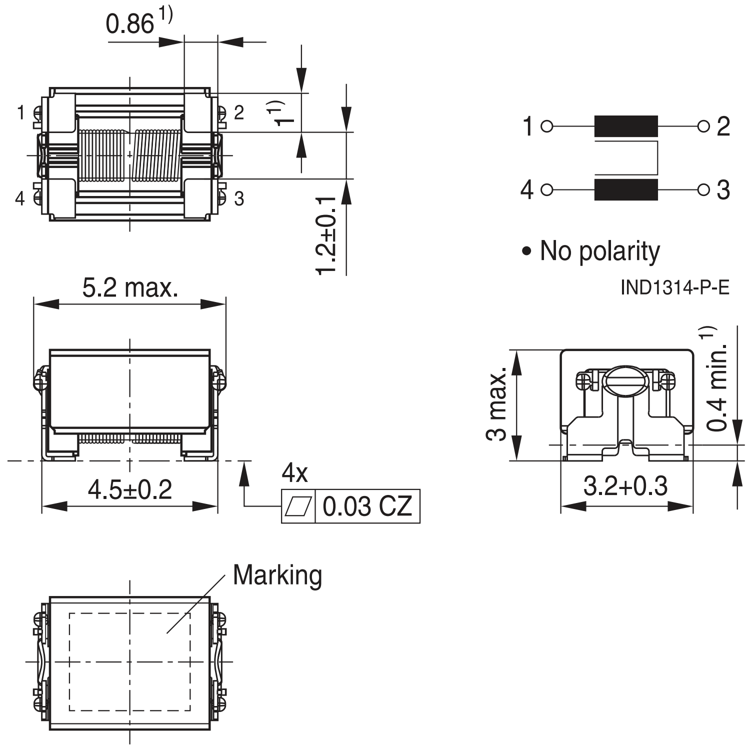
## Marking

- Marking on component:
  Manufacturer, bifilar or sector winding (coded),
  L value (in nH; for version B82789C0/S0*H052 underlined),
  date of manufacture (YWWD), two last digits of production order
- Minimum data on reel:
  Manufacturer, ordering code, L value (in nH), quantity, date of packing

## Delivery mode and packing unit

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

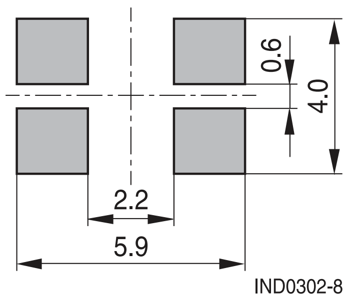
### Dimensional drawing and pin configuration




1) Soldering area

IND1305-G-E

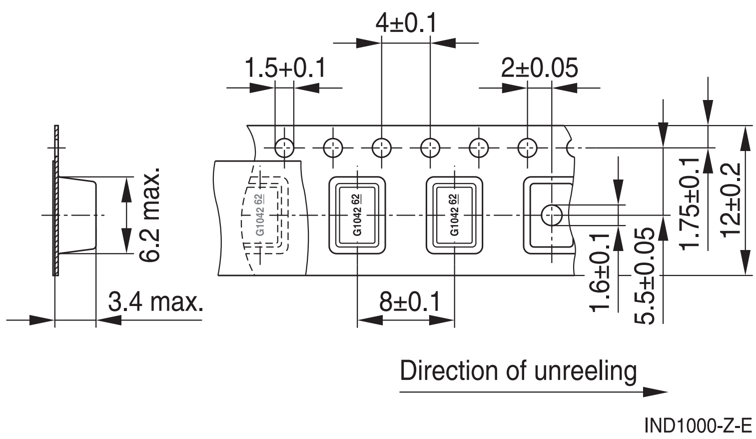
### Layout recommendation



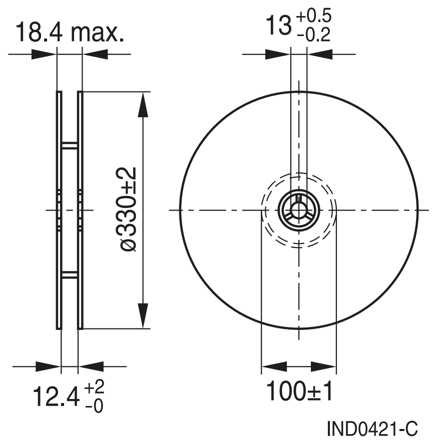

Dimensions in mm

### Taping and packing

Blister tape




Reel




Dimensions in mm

**Technical data and measuring conditions**

| | |
|---|---|
| Rated voltage $V_R$ | 42 V AC (50/60 Hz) / 80 V DC |
| Test voltage $V_{test}$ | 250 V DC, 2 s (line/line) |
| Rated temperature $T_R$ | +85 °C / +110 °C |
| Rated current $I_R$ | Referred to 50 Hz and rated 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 | –30/+50% at +20 °C |
| Inductance decrease $\Delta L/L_0$ | Common mode < 10% at DC magnetic bias with $I_R$, +20 °C |
| Stray inductance $L_{stray,typ}$ | Measured with Agilent 4284A at 100 kHz, 5 mA, +20 °C,<br>typical values |
| DC resistance $R_{max}$ | Measured at +20 °C, specified per winding |
| Solderability (lead-free) | Dip and look method Sn95.5Ag3.8Cu0.7: +(245 ±5) °C, (3 ±0.3) s<br>Wetting of soldering area ≥ 90%<br>(based on IEC 60068-2-58) |
| Resistance to soldering heat | +260 °C, 40 s as referenced in JEDEC J-STD 020D |
| Climatic category | 55/125/56 (B82789*N)<br>55/150/56 (B82789*H)<br>(to IEC 60068-1) |
| Storage conditions | Mounted: –55 °C … +125 °C (B82789C0/S0*N)<br>–55 °C … +150 °C (B82789C0/S0*H)<br>Packaged: –25 °C … +40 °C, ≤ 75% RH |
| Weight | Approx. 0.16 g |

## Characteristics and ordering codes

| $L_R$ | $L_{stray,typ}$ | $I_R$ | $R_{max}$ | $T_R$ | Ordering code | |
|---|---|---|---|---|---|---|
| µH | µH | mA | mΩ | °C | Gold-plated terminals | Tinned terminals |
| B82789C0/S0*N (operating temperature: –55 … +125 °C) | | | | | | |
| 11 | 0.06 | 300 | 250 | 85 | B82789C0113N001 | B82789C0113N002 |
| 22 | 0.10 | 250 | 580 | 85 | B82789C0223N001 | B82789C0223N002 |
| 22 | 3.0 | 250 | 580 | 85 | B82789S0223N001 | B82789S0223N002 |
| 51 | 0.10 | 250 | 550 | 85 | B82789C0513N001 | B82789C0513N002 |
| 100 | 0.25 | 150 | 1500 | 85 | B82789C0104N001 | B82789C0104N002 |
| B82789C0/S0*H (operating temperature: –55 … +150 °C) | | | | | | |
| 11 | 0.06 | 300 | 250 | 110 | B82789C0113H001 | B82789C0113H002[1)] |
| 22 | 0.10 | 250 | 580 | 110 | B82789C0223H001 | B82789C0223H002[1)] |
| 22 | 3.0 | 250 | 580 | 110 | B82789S0223H001 | B82789S0223H002[1)] |
| 51 | 0.10 | 250 | 550 | 110 | B82789C0513H001 | B82789C0513H002[1)] |
| 100 | 0.25 | 150 | 1500 | 110 | B82789C0104H001 | B82789C0104H002[1)] |

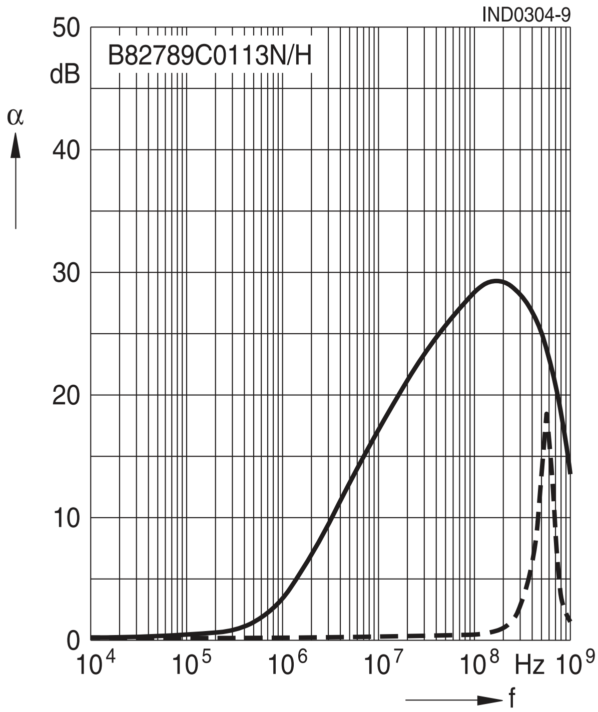
1) Replace the two last digits “02” by “52” for Ni-barrier-plated terminals.

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

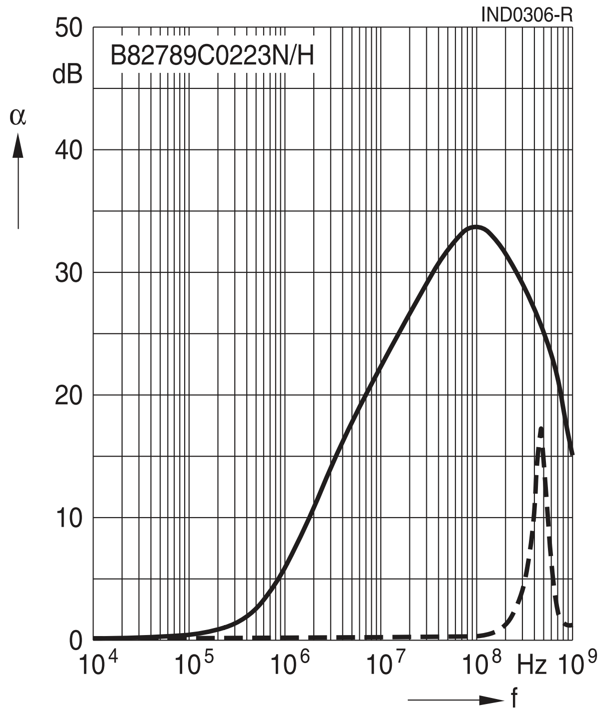
——— asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

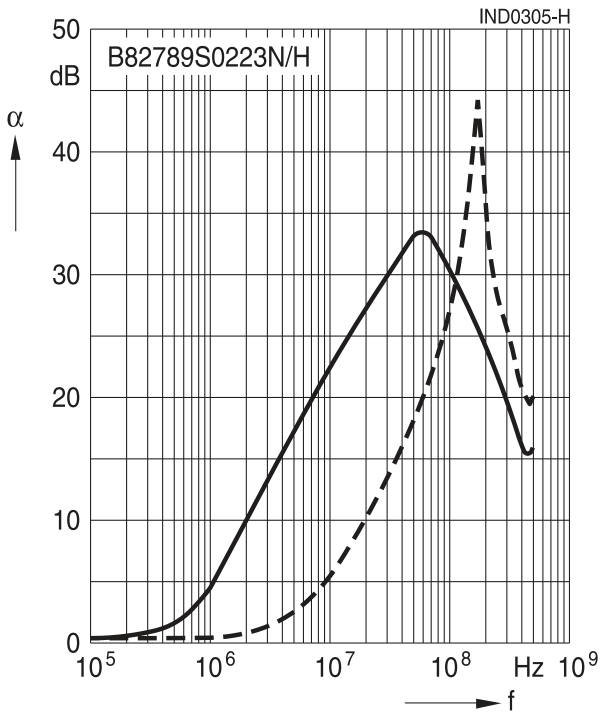
$L_R$ = 11 μH



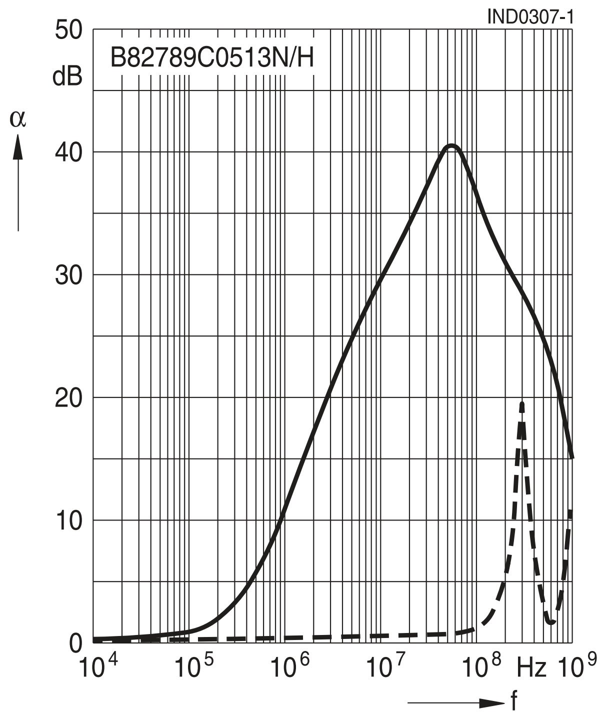

$L_R$ = 22 μH (low $L_{stray}$)




$L_R$ = 22 μH (high $L_{stray}$)




$L_R$ = 51 μH

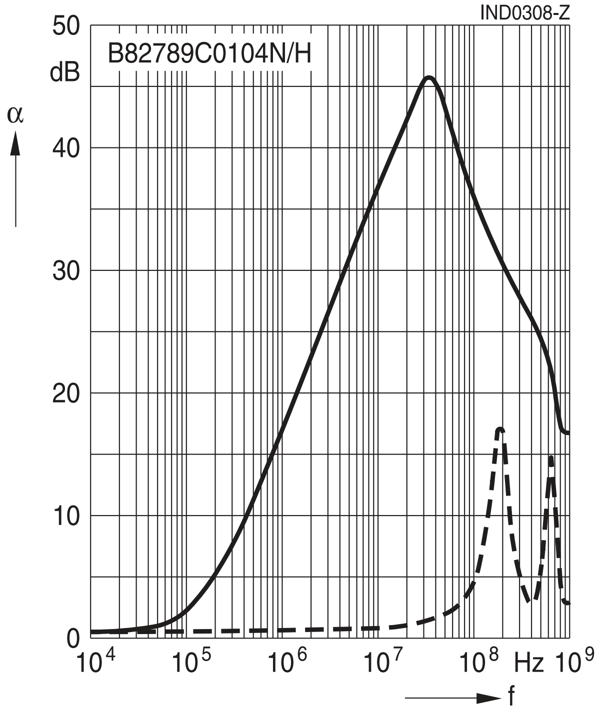


**Insertion loss** $\alpha$ (typical values at $|Z|$ = 50 $\Omega$, +20 °C)

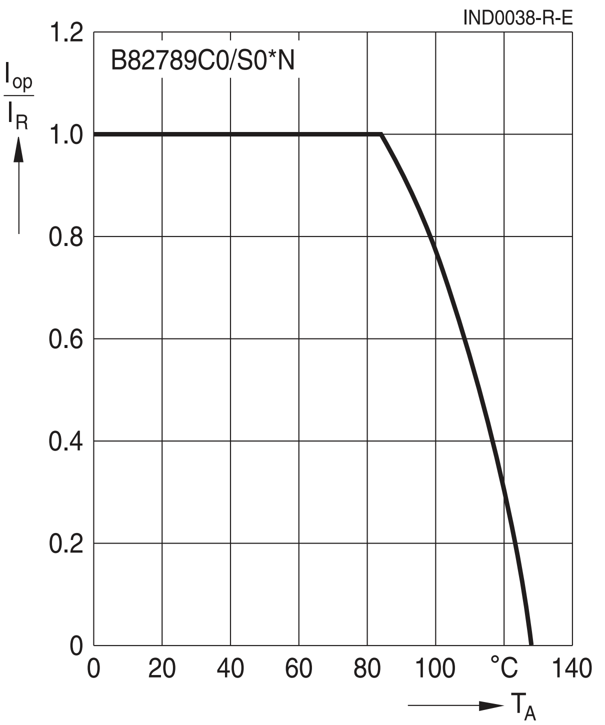
——— asymmetrical, all branches in parallel (common mode)

- - - - - - symmetrical (differential mode)

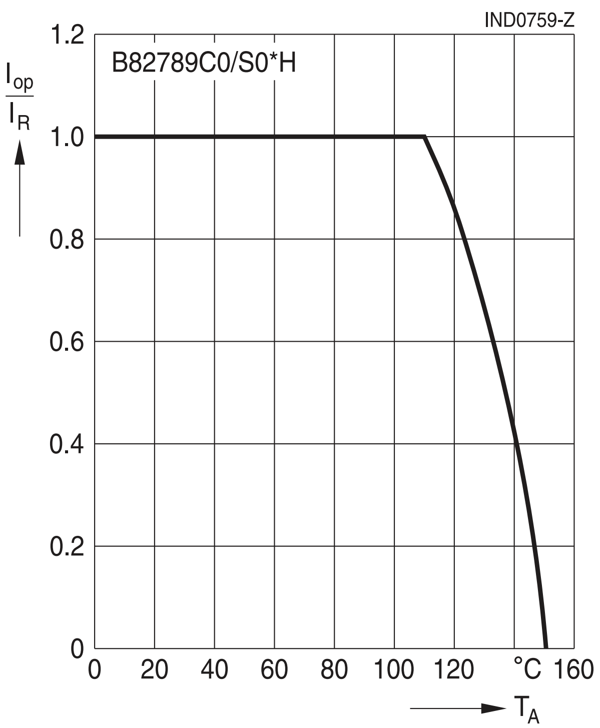
$L_R$ = 100 $\mu$H




**Current derating $I_{op}/I_R$ versus ambient temperature** (rated temperature $T_R$ = +85 °C)




**Current derating $I_{op}/I_R$ versus ambient temperature** (rated temperature $T_R$ = +110 °C)



## 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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