

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

Series/Type: B82789C0/S0

Date: October 2008



B82789C0/S0

SIMDAD 1812, common-mode chokes

SMD

Rated voltage 42 V AC/80 V DC Rated inductance 11 μH to 100 μH Rated current 150 mA to 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 020C
- 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, Sn¹)
- 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).



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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

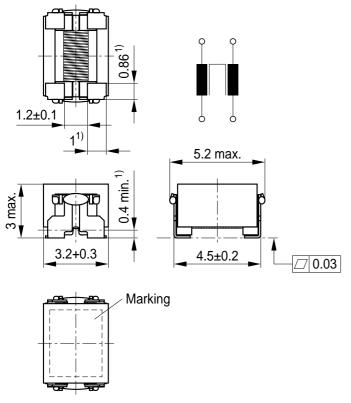
- 12-mm blister tape, wound on 330-mm \varnothing reel
- Packing unit: 2500 pcs./reel

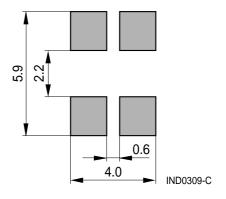


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SMD

Dimensional drawing and layout recommendation





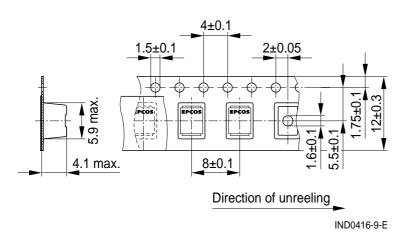
1) Soldering area

IND0303-W-E

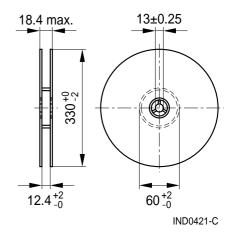
Dimensions in mm

Taping and packing

Blister tape



Reel



Dimensions in mm



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SMD

Technical data and measuring conditions

Weight	Approx. 0.16 g
Storage conditions	Mounted: -55 °C +125 °C (B82789C0/S0*N) -55 °C +150 °C (B82789C0/S0*H) Packaged: -25 °C +40 °C, ≤75% RH
Climatic category	55/125/56 (B82789*N) 55/150/56 (B82789*H) (to IEC 60068-1)
Resistance to soldering heat	260 °C, 40 s as referenced in JEDEC J-STD 020C
Solderability (lead-free)	Dip and look method Sn95.5Ag3.8Cu0.7: (245 \pm 5) °C, (3 \pm 0.3) s Wetting of soldering area \geq 90% (based on IEC 60068-2-58)
DC resistance R _{max}	Measured at 20 °C, specified per winding
Stray inductance L _{stray,typ}	Measured with Agilent 4284A at 100 kHz, 5 mA, 20 °C, typical values
Inductance decrease $\Delta L/L_0$	Common mode < 10% at DC magnetic bias with I _R , 20 °C
Inductance tolerance	-30/+50% at 20 °C
Rated inductance L _R	Measured with Agilent 4284A at 100 kHz, 0.1 mA, 20 °C Inductance is specified per winding.
Rated current I _R	Referred to 50 Hz and rated temperature
Rated temperature T _R	85 °C / 110 °C
Test voltage V _{test}	250 V DC, 2 s (line/line)
Rated voltage V _R	42 V AC (50/60 Hz) / 80 V DC



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Characteristics and ordering codes

	ı	ı	D	т	Ordoring godo			
L_{R}	L _{stray,typ}	I _R	R_{max}	T_R	Ordering code			
μΗ	μΗ	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⁾		

Sample kit available. Ordering code: B82789X001 For more information refer to chapter "Sample kits".

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

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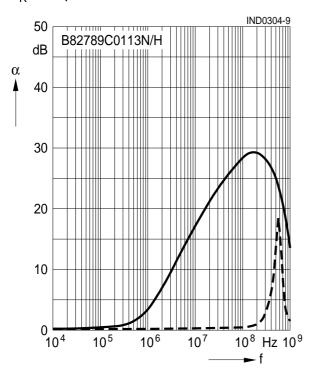
SMD

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

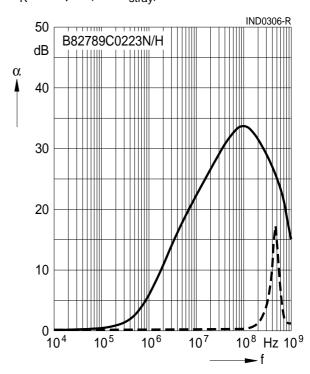
asymmetrical, all branches in parallel (common mode)

- - - - - symmetrical (differential mode)

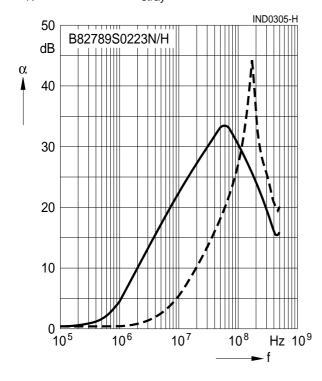
$$L_R = 11 \, \mu H$$



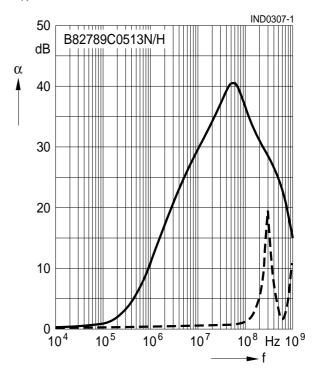
$$L_R = 22 \mu H \text{ (low } L_{\text{strav}})$$



$$L_R = 22 \mu H \text{ (high } L_{stray})$$



$$L_R = 51 \mu H$$



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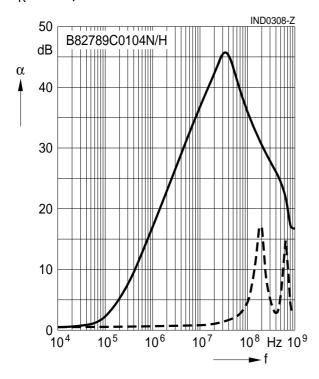
SMD

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

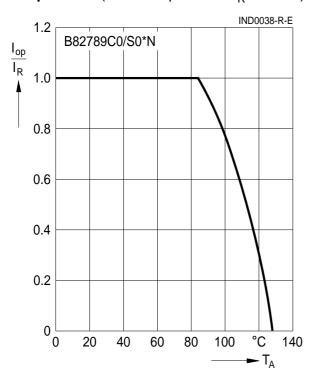
asymmetrical, all branches in parallel (common mode)

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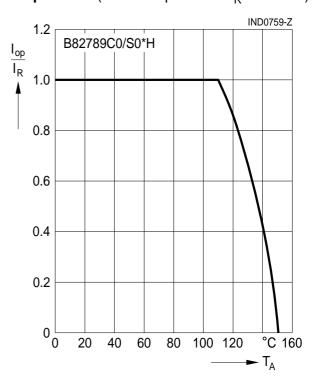
$$L_{R} = 100 \, \mu H$$



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 $T_R = 110 \, ^{\circ}\text{C}$)







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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