

Data and signal line chokes

ACT45B common-mode chokes for CAN bus systems, EIA 1812
51 ... 100 μ H, 150 ... 200 mA

Series/Type: **ACT45B**

Date: October 2019

SMD

Rated voltage 50 V DC

Rated inductance 51 ... 100 μ H

Rated current 150 ... 200 mA

Construction

- Current-compensated double choke
- Ferrite I core
- Winding: enamel copper wire
- Winding welded to terminals



Features

- Operating temperature range: $-40 \dots +150 \text{ }^{\circ}\text{C}$
- Qualified to AEC-Q200
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- RoHS-compatible

Function

- Suppression of asymmetrical interference coupled in on lines, whereas data signals up to some MHz can pass unaffectedly.

Applications

- Automotive CAN bus systems

Terminals

One-sided tinned terminals:

- Base material CuSn8
- Electro-plating Sn with Ni underlayer
- Lead-free tinned

Marking

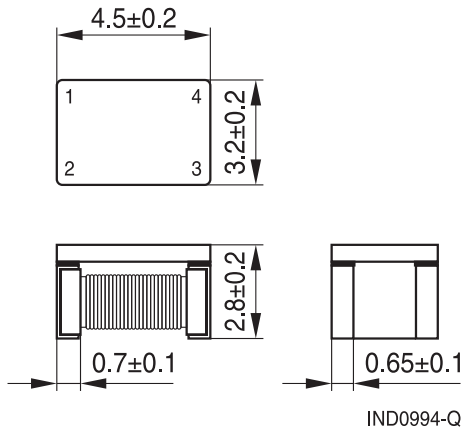
- Marking on component: L value ("G" = 51 μ H, "H" = 100 μ H), date of manufacture (YWWDD), two last digits of production order (underlined)

Delivery mode and packing unit

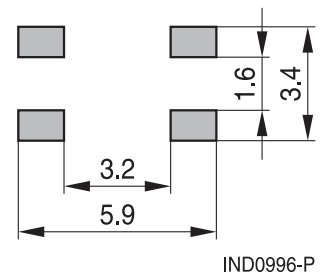
- 12-mm blister tape, wound on 330-mm $\varnothing$ reel
- Packing unit: 2500 pcs./reel

SMD

Dimensional drawing and pin configuration

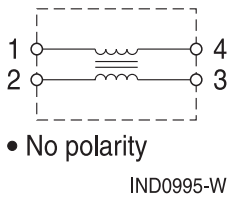


Layout recommendation



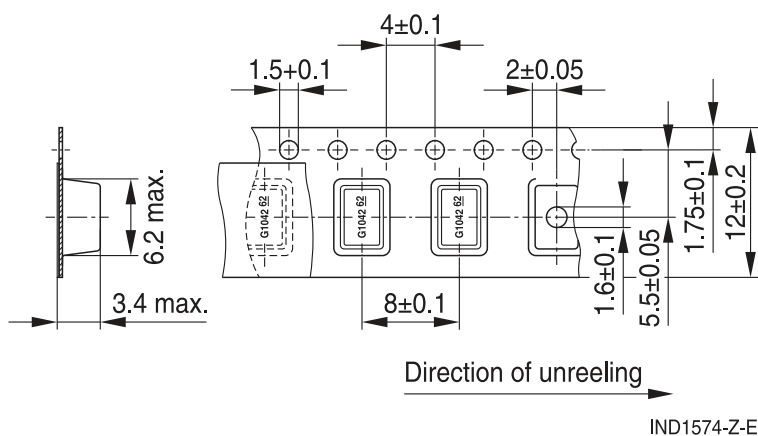
Dimensions in mm

Circuit diagram

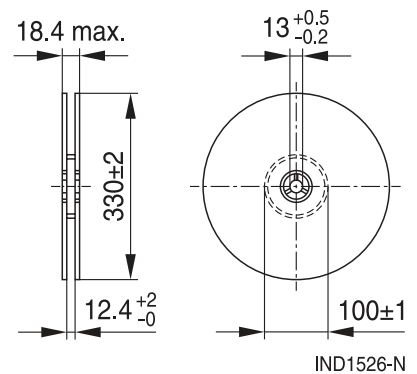


Taping and packing

Blister tape



Reel



Dimensions in mm

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Technical data and measuring conditions

Rated voltage V_R	50 V DC
Max. component temperature	+150 °C
Rated current I_R	Referred to 50 Hz and +20 °C
Rated inductance L_R	Measured with Agilent 4284A at 100 kHz, 100 mV, +20 °C Inductance is specified in common-mode
Inductance tolerance	−30/+50% at +20 °C
Stray inductance $L_{\text{stray,typ}}$	Measured with Agilent 4284A at 100 kHz, 100 mV, +20 °C, typical values
DC resistance R_{max}	Measured at +20 °C, specified per winding
Insulation resistance (min)	10 MΩ, measured at 50 V DC
Rated impedance Z_{min}	Measured at +20 °C, 10 MHz, 100 mV in common-mode
Rated impedance Z_{typ}	Measured at +20 °C, 10 MHz, 100 mV in common-mode
Solderability	Dip and look method Sn95.5Ag3.8Cu0.7: +(245 ±5) °C, (3 ±0.3) s Wetting of soldering area ≥ 90% (based on IEC 60068-2-58)
Resistance to soldering heat	+260 °C, 40 s as referenced in JEDEC J-STD 020D
Climatic category	40/150/56 (to IEC 60068-1)
Storage conditions (packaged)	−25 °C ... +40 °C, ≤ 75% RH
Weight	Approx. 0.14 g

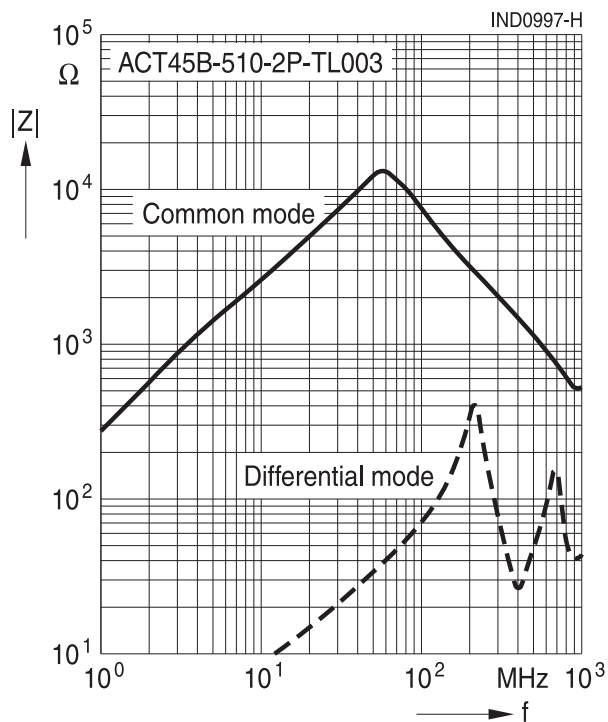
Characteristics and ordering codes

L_R μH	$L_{\text{stray,typ}}$ μH	I_R mA	R_{max} Ω	Z_{min} Ω	Z_{typ} Ω	Internal code	Ordering code
51	0.15	200	1.0	1000	2800	B82787C0513H002	ACT45B-510-2P-TL003
100	0.20	150	2.0	2000	5800	B82787C0104H002	ACT45B-101-2P-TL003

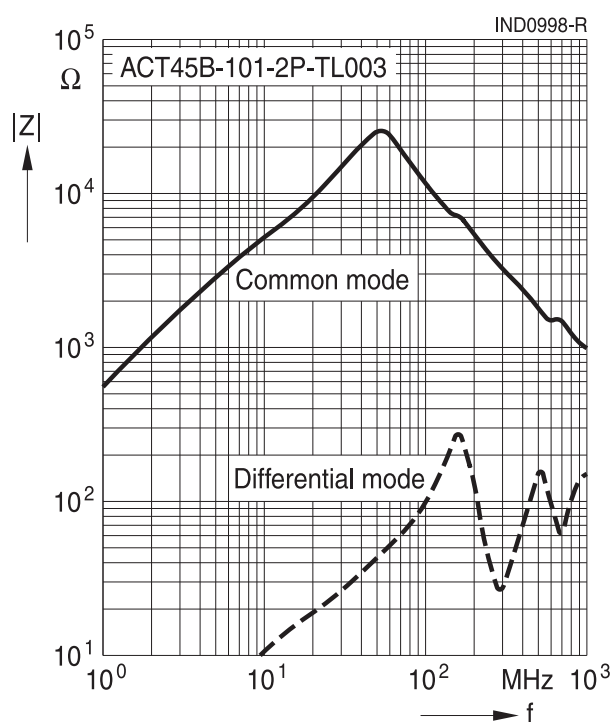
SMD

Impedance versus frequency

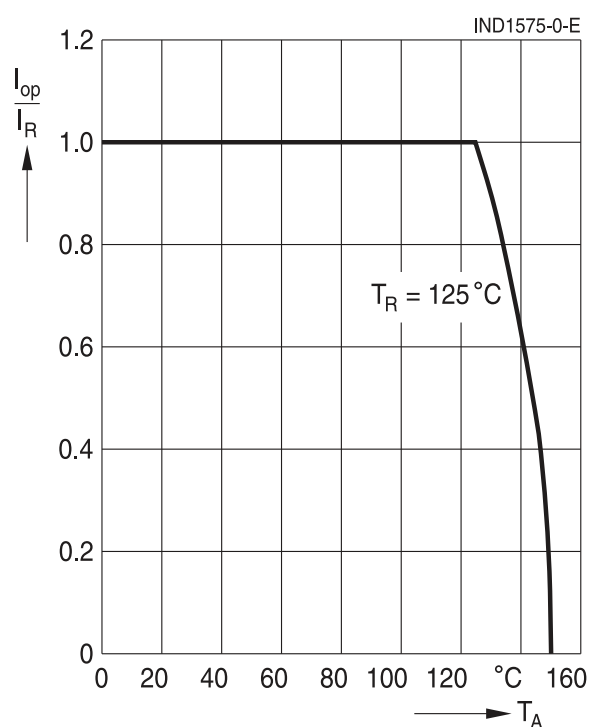
ACT45B-510-2P-TL003



ACT45B-101-2P-TL003



Current derating I_{op}/I_R versus ambient temperature



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.
 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, wire insulation, plastics or glue.
 - The effect of the potting material can change the high-frequency behaviour of the components.
 - Many coating materials have a negative effect (chemically and mechanically) on the winding wires, insulation materials and connecting points. Customers are always obligated to determine whether and to what extent their coating materials influence the component.
 Customers are responsible and bear all risk for the use of the coating material. TDK Electronics does not assume any liability for failures of our components that are caused by the coating material.
- Ceramics / 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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2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
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