

## **Data and signal line chokes**

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

**Series/Type:**            **ACT45B**

**Date:**                    October 2019

**SMD**

**Rated voltage 50 V DC**

**Rated inductance 51 ... 100  $\mu$ 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**

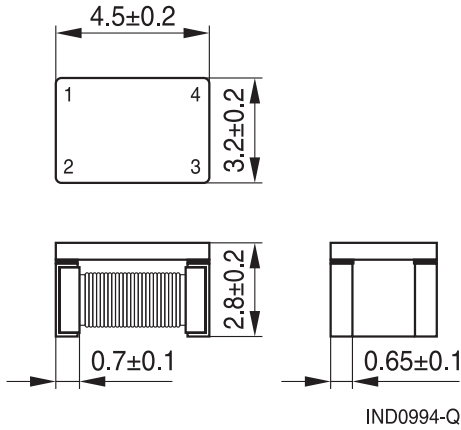
- Marking on component: L value ("G" = 51  $\mu$ H, "H" = 100  $\mu$ H), date of manufacture (YWWDD), two last digits of production order (underlined)

**Delivery mode and packing unit**

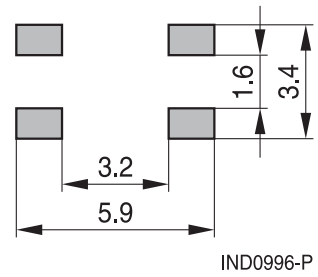
- 12-mm blister tape, wound on 330-mm  $\varnothing$  reel
- Packing unit: 2500 pcs./reel

**SMD**

**Dimensional drawing and pin configuration**

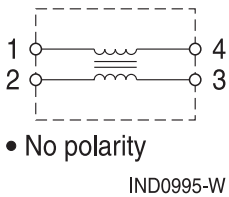


**Layout recommendation**



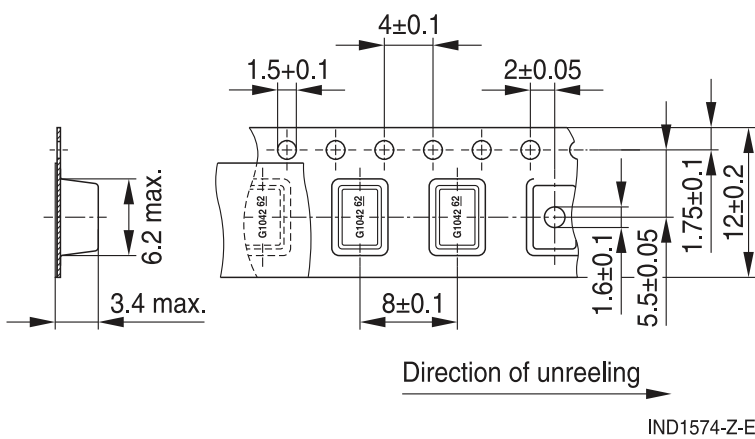
Dimensions in mm

**Circuit diagram**

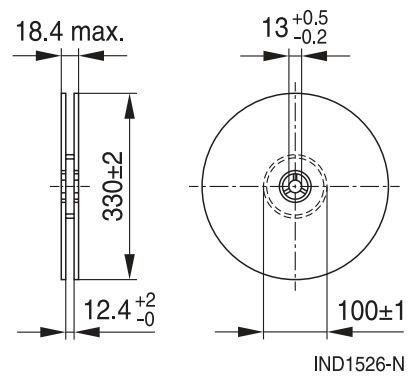


**Taping and packing**

Blister tape



Reel



Dimensions in mm

**SMD**
**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<br>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,<br>typical values  |
| DC resistance $R_{\text{max}}$          | Measured at +20 °C, specified per winding  |
| Insulation resistance (min)             | 10 M $\Omega$ , measured at 50 V DC  |
| Rated impedance $Z_{\text{min}}$        | Measured at +20 °C, 10 MHz, 100 mV in common-mode  |
| Rated impedance $Z_{\text{typ}}$        | Measured at +20 °C, 10 MHz, 100 mV in common-mode  |
| Solderability                           | Dip and look method Sn95.5Ag3.8Cu0.7:<br>+(245 $\pm$ 5) °C, (3 $\pm$ 0.3) s<br><br>Wetting of soldering area $\geq$ 90%<br><br>(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, $\leq$ 75% RH   |
| Weight                                  | Approx. 0.14 g   |

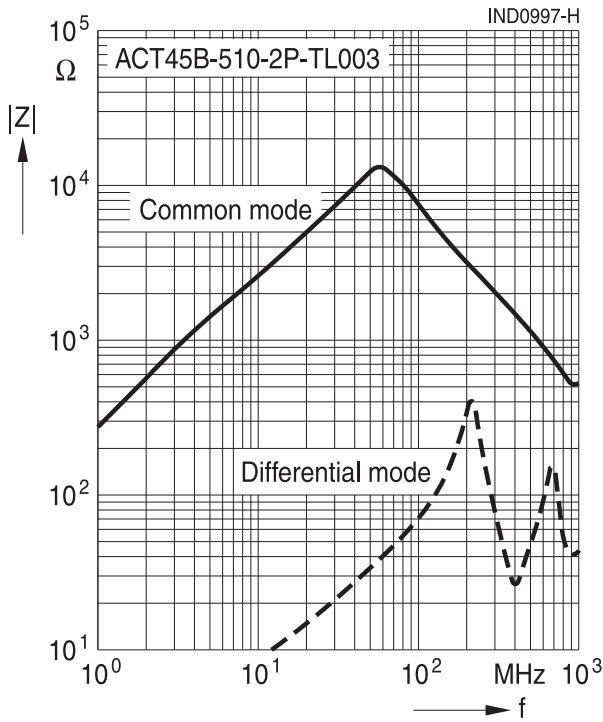
**Characteristics and ordering codes**

| $L_R$<br>$\mu\text{H}$ | $L_{\text{stray,typ}}$<br>$\mu\text{H}$ | $I_R$<br>mA | $R_{\text{max}}$<br>$\Omega$ | $Z_{\text{min}}$<br>$\Omega$ | $Z_{\text{typ}}$<br>$\Omega$ | 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 |

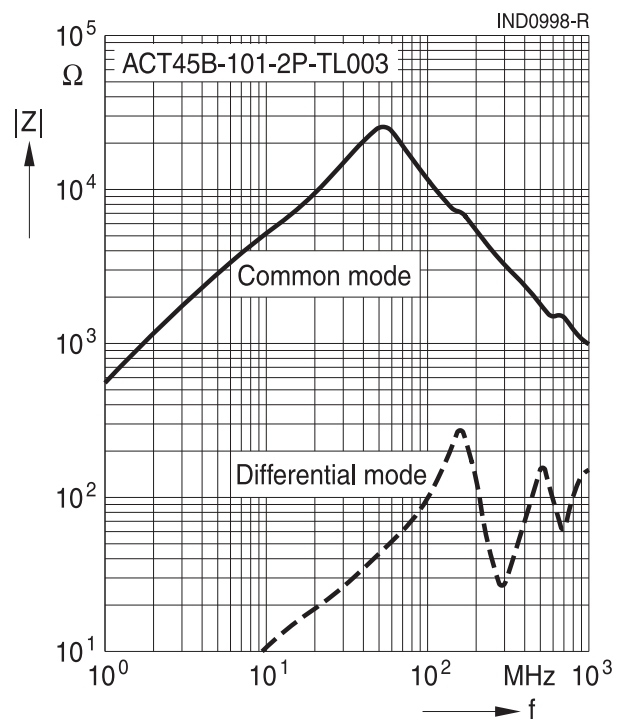
**SMD**

**Impedance versus frequency**

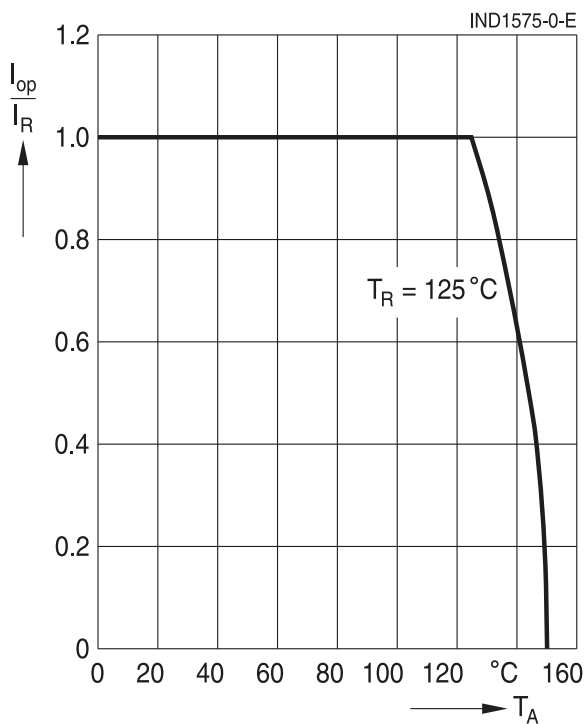
ACT45B-510-2P-TL003



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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