

## **SMT power inductors**

ERU 13, helically wound

**Series/Type:**            **B82559A\*A013**

**Ordering code:**

Date:                        January 2023

**Rated inductance 0.5 ... 3.9  $\mu$ H**  
**Saturation current 12 ... 30 A**



### Construction

- Ferrite core
- Magnetically shielded
- Winding: enamel copper flat wire
- Self-leaded construction under body termination

### Features

- Very high rated current
- Extremely low DC resistance
- Very low profile and smallest possible footprint
- Suitable for pick and place processes

### Applications

Energy storage chokes for

- DC/DC converters
- VRM modules
- POL converters

### Terminals

- Lead-free tinned

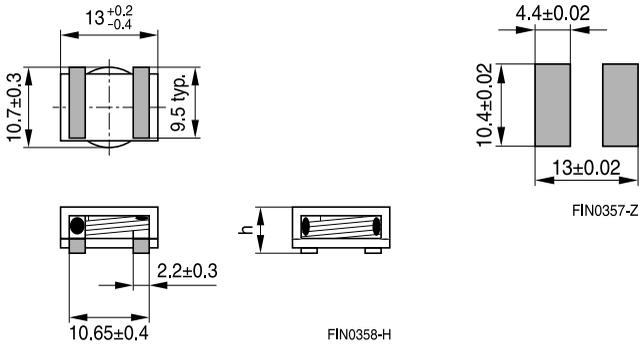
### Marking

- Manufacturer, middle block of ordering code, inductance, date code (YYWW)

### Delivery mode and packing units

- 24-mm blister tape, wound on 330-mm dia. reel
- 4.95 mm height = 750 pcs./reel
- 5.95/6.00 mm height = 500 pcs./reel

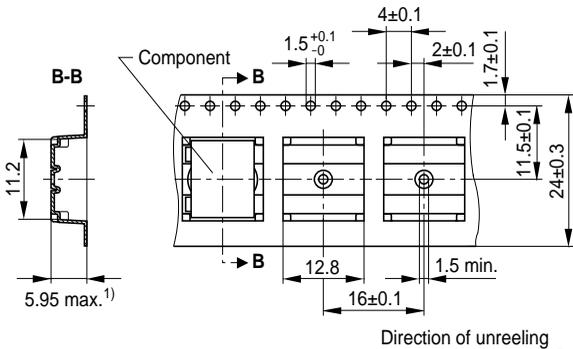
Dimensional drawing and layout recommendation



Dimensions in mm

Taping and packing

Blister tape

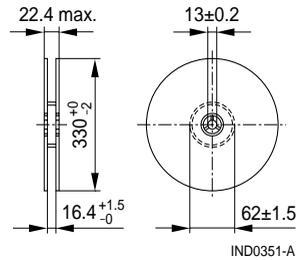


<sup>1)</sup> 6.95 max. for component height = 5.95 mm

IND0398-P-E

Dimensions in mm

Reel



IND0351-A

**Technical data and measuring conditions**

Rated inductance $L_R$	Measured with Wayne-Kerr 3260A/3265B at 10 kHz, 0.1 V, +20 °C
Inductance tolerance	±10%
Saturation current $I_{sat}$	Current that will result in approx. 20% drop in inductance value. Temperature response needs to be verified in specific applications. Test results on request.
DC resistance $R_{typ}$	Measured at +20 °C, tolerance ±10% (closer tolerances on request), typical values
Solderability	+235 °C, 5 s, wetting >90% (IEC 60068-2-58)
Resistance to soldering heat	To JEDEC J-STD 020D
Operating temperature	-40 °C ... +130 °C
Storage conditions (packaged)	-25 °C ... +40 °C, ≤ 75% RH
Weight	2.2 g (height = 4.95 mm), 2.6 g (height = 5.95/6.00 mm)

**Characteristics and ordering codes**

$L_R$ μH	$I_{sat}$ A	$R_{typ}$ mΩ	Height h max. mm	Ordering code
0.50	30	0.78	4.95	B82559A0501A013
0.95	25	1.12	5.95	B82559A0951A013
1.1	20	1.72	4.95	B82559A0112A013
1.4	22	1.50	6.00	B82559A0142A013
2.15	15	3.20	4.95	B82559A0222A013
2.4	16.5	2.76	5.95	B82559A0242A013
3.0	13	4.00	4.95	B82559A0302A013
3.9	12	4.80	5.95	B82559A0392A013

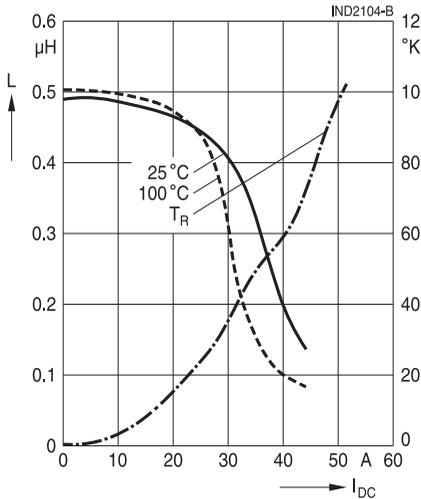
Sample kit available. Ordering code: B82559X001  
For more information refer to chapter "Sample kits".

**Inductance L versus DC load current  $I_{DC}$**

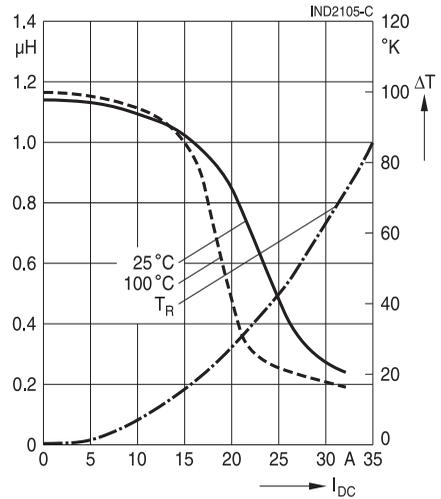
The temperature rise  $\Delta T$  is measured at an ambient temperature of +25 °C. A current is applied for 30 minutes and the temperature is measured on top of the inductor which is mounted on a printed circuit board. No forced air cooling is applied.

The inductance vs current curves are generated by measuring the inductors at +25 °C and +100 °C.

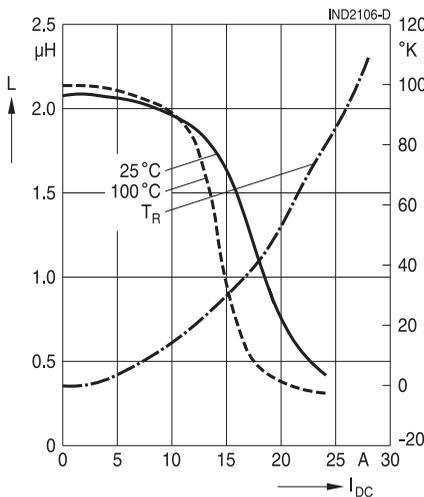
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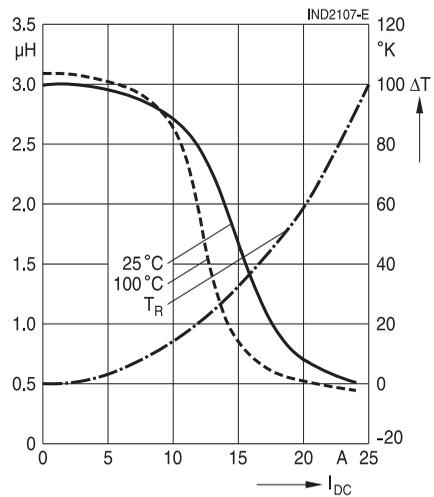
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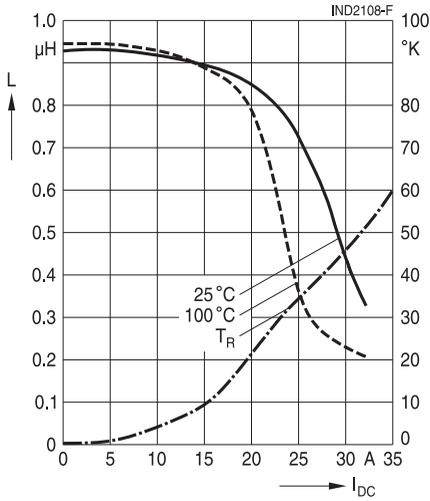
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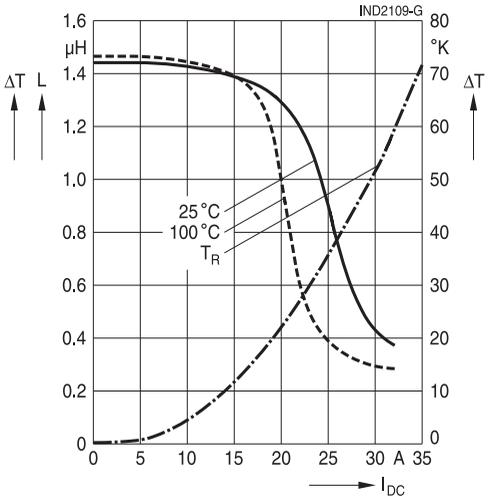
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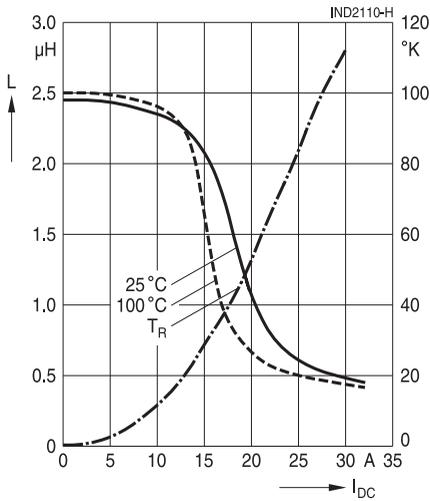
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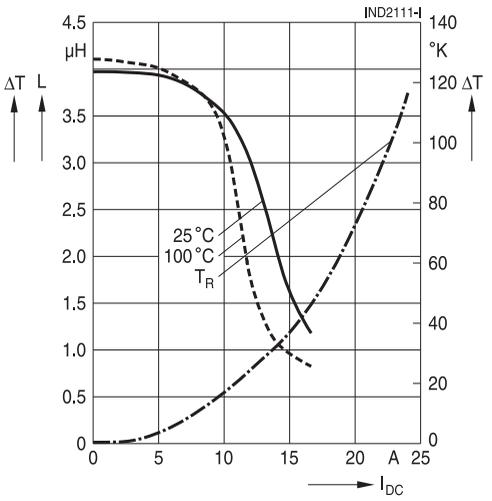
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B82559A0242A013



B82559A0392A013



### Cautions and warnings

- Please note the recommendations in our Inductors data book (latest edition), online catalogs and in the data sheets.
  - Particular attention should be paid to the derating curves, if given. Derating applies in the case the ambient temperature in application exceeds the rated temperature of the component.
  - Ensure the operation temperature of the component in application, not to exceed the maximum specified value or the upper climatic category temperature.
  - 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. 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, sealed, or varnished in customer applications:
  - Many potting, sealing or varnishing 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, sealing or varnishing materials used attacks or destroys the wire insulation, plastics, or glue.
  - The effect of the potting, sealing, or varnishing materials may change the high-frequency behavior of the components.
- Magnetic core materials such as ferrites are sensitive to direct impact. This can cause the core material to flake or lead to breakage of the magnetic core material.
- Any type of tension or pressure on the product may result in damage and affect its functionality and reliability.
  - The products are only to be attached to fixings or mounting holes provided for this purpose in accordance with the data sheet.
  - If additional mechanical forces are applied to the component, e.g., application of gap pads, it is necessary to check whether they attack or destroy any part of the component.
  - It is not permitted for the product specified in the data sheet to assume a mechanical function in the final application.
- Inductance value can drop if external metallic or magnetic parts will be put close to the coil or into the air gap of the coil or core or magnetic material.
- 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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## Important notes

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The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements (“CSR”) TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System**. For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.
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