SMT current sense transformers

Series/Type: B82801A

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B82801A0824A100	B82801A1824A100	2018-12-21	2019-06-30	2019-09-30
B82801A0743A030	B82801A1743A030	2018-12-21	2019-06-30	2019-09-30
B82801A0404A070	B82801A1404A070	2018-12-21	2019-06-30	2019-09-30

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B82801A0333A020	B82801A1333A020	2018-12-21	2019-06-30	2019-09-30
B82801A0304A060	B82801A1304A060	2018-12-21	2019-06-30	2019-09-30
B82801A0214A050	B82801A1214A050	2018-12-21	2019-06-30	2019-09-30
B82801A0185A150	B82801A1185A150	2018-12-21	2019-06-30	2019-09-30
B82801A0135A125	B82801A1135A125	2018-12-21	2019-06-30	2019-09-30
B82801A0134A040	B82801A1134A040	2018-12-21	2019-06-30	2019-09-30

Please contact your nearest TDK sales office if you need support in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.tdk-electronics.tdk.com/sales.

Applications

- Switching power supplies
- Feedback control
- Overload sensing
- Load drop/shut down detection

Features

- Very low DC resistance
- Different turns ratios
- Very small package
- RoHS compatible

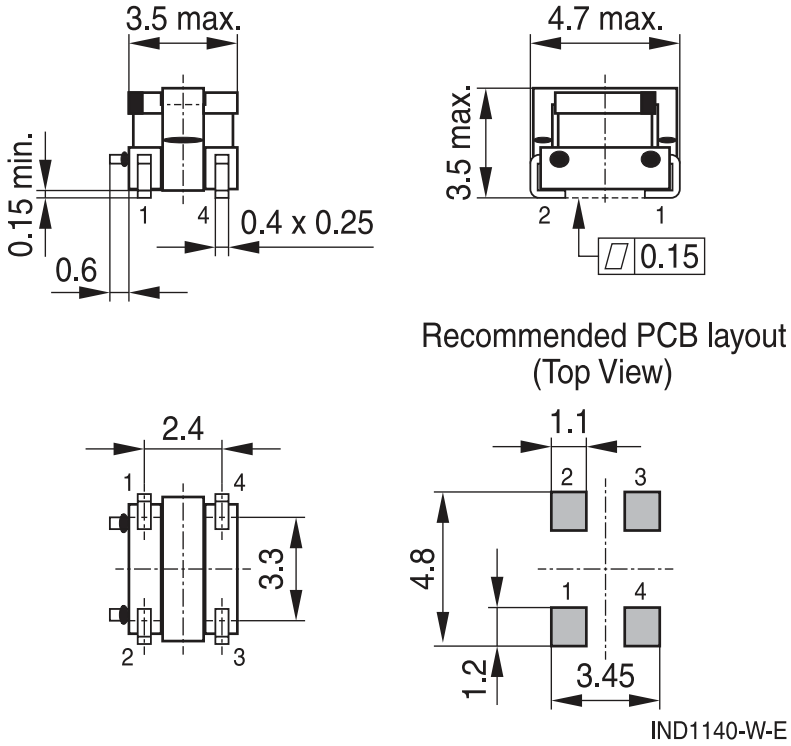
Marking

No marking on component

Delivery mode and packing units

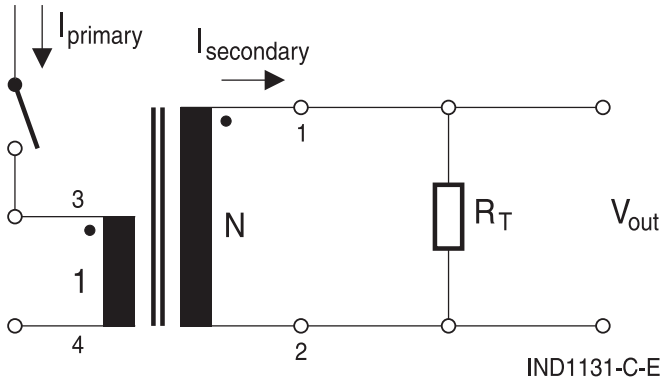
- 12 mm blister tape, 178 mm ∅ reel
- Carton packaging
- Packing units: 600 pcs./reel;
  3000 pcs./carton

Dimensional drawing



Dimensions in mm

Application circuit and pinning



Technical data and measuring conditions

Frequency range	50 kHz ... 1 MHz
Hi-pot	500 V AC, 50 Hz, 2 s (winding to winding)
Inductance L (1-2)	100 kHz, 100 mV, @ +25 °C
DC resistance R_{max}	Measured at +25 °C
Sensed current	The max. primary current of 7 A causes approx. +40 °C temperature rise
Solderability	≥ 99.9 Sn, lead-free. Or Sn96.5Ag3.0Cu0.5: +(245 ±5) °C, (3 ±0.3) s Wetting of soldering area ≥ 95% (to IEC 60068-2-58)
Resistance to soldering heat	+(260 ± 5) °C, (10 ± 1) s to IEC 60068-2-58
Storage conditions	–20 °C … +40 °C, ≤ 75% RH
Operating temperature range	–40 °C … +125 °C
Weight	Approx. 0.15 g

$$B_{max} = \frac{V_{sense,\,max} \cdot \delta_{max}}{n_s \cdot A_e \cdot f_{osc}}$$

With:

B_{max} Maximum magnetic flux density in the ferrite core of the current sense transformer
$V_{sense,max}$ Maximum output voltage of the measurement signal
δ_{max} Maximum duty cycle
n_s Number of turns of the secondary winding of the current sense transformer
A_e Effective magnetic area of the ferrite core
f_{osc} Operating frequency of the switching operator IC

Typical value for A_e: 1.44 x 10^{-6} m^2

Typical B_{max}: 200 mT

$$R_T = \frac{V_{sense,\,max} \cdot n_s}{I_{prim,\,max}}$$

With:

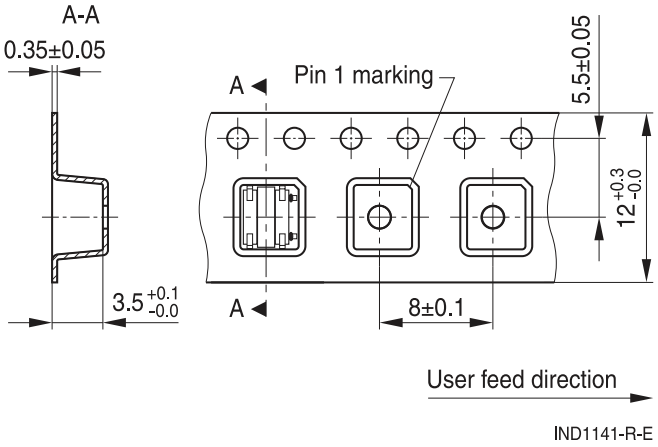
R_T Resistance of burden resistor
$V_{sense,max}$ Maximum output voltage of the measurement signal
n_s Number of turns on the secondary side of the CT
$I_{prim,max}$ Maximum primary current (peak current)

Characteristics and ordering codes

L_{min}	Turns ratio	DC resistance R_{max} (mΩ)		Voltage-time product	Recomm. R_T	Ordering code
µH	N_p : N_s	primary	secondary	V · µs		
33	1 : 20	2.5	320	5.76	20	B82801A0333A020
74	1 : 30	2.5	800	8.6	30	B82801A0743A030
132	1 : 40	2.5	1300	11.5	40	B82801A0134A040
205	1 : 50	2.5	2200	14.4	50	B82801A0214A050
295	1 : 60	2.5	3600	17.3	60	B82801A0304A060
400	1 : 70	2.5	4600	20.0	70	B82801A0404A070
820	1 : 100	2.5	8700	28.8	100	B82801A0824A100
1280	1 : 125	2.5	13000	36.0	125	B82801A0135A125
1840	1 : 150	2.5	21000	43.2	150	B82801A0185A150

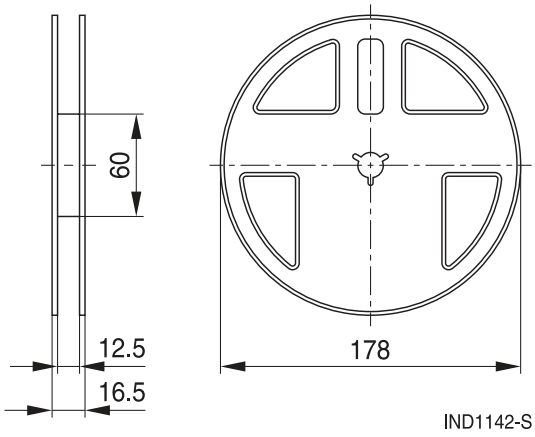
Taping and packing

Blister tape



Dimensions in mm

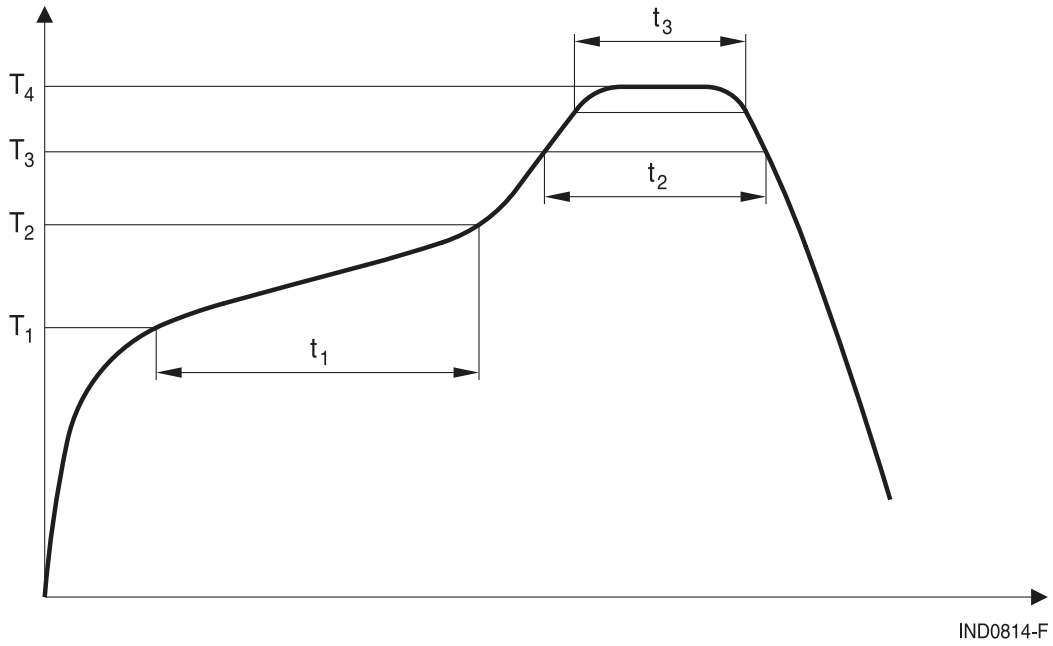
Reel



Dimensions in mm

Recommended reflow soldering curve

Pb-free solder material (based on JEDEC J-STD 020D)



T_1 °C	T_2 °C	T_3 °C	T_4 °C	T_1 sec	T_2 sec	T_3 sec
150	200	217	245	<110	<90	20 ... 40

Max. time from +25 °C to T: 300 seconds

Max. 3 reflow cycles

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 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.

Display of ordering codes for EPCOS products

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications and the website of EPCOS, or in order-related documents such as shipping notes, order confirmations and product labels. **The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products**. Detailed information can be found on the Internet under www.epcos.com/orderingcodes.

Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application.** As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.
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.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.tdk-electronics.tdk.com/material). Should you have any more detailed questions, please contact our sales offices.
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   We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
6. Unless otherwise agreed in individual contracts, **all orders are subject to our General Terms and Conditions of Supply.**
7. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard.** 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.
8. The trade names EPCOS, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

Release 2018-10

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- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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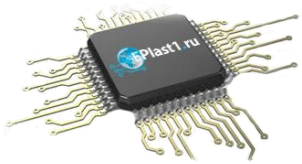
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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