



## **SMT power inductors**

Size 12.5 × 12.5 × 8.5 (mm)

**Series/Type:**            **B82477P4**

**Date:**                    **June 2012**

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**SMD**
**Rated inductance 0.82 ... 1000  $\mu$ H**
**Rated current 0.6 ... 11 A**
**Construction**

- Ferrite core
- Magnetically shielded
- Winding: enamel copper wire
- Winding soldered to terminals
- Injection molded base


**Features**

- High mechanical stability
- High rated current, low DC resistance
- Temperature range up to +150 °C
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- Qualified to AEC-Q200
- RoHS-compatible

**Applications**

- Filtering of supply voltages
- Coupling, decoupling
- DC/DC converters
- Automotive electronics

**Terminals**

- Base material  
Cu ( $L \leq 10 \mu\text{H}$ ), CuSn6P ( $L \geq 15 \mu\text{H}$ )
- Layer composition Ni, Sn (lead-free)
- Electro-plated

**Marking**

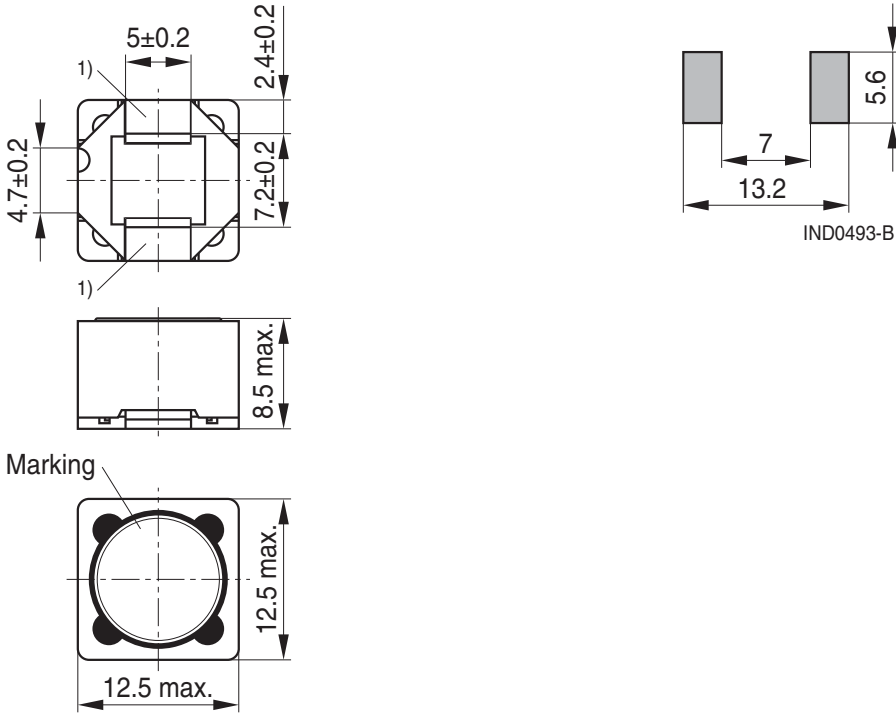
- Marking on component:  
Manufacturer, L value ( $\mu\text{H}$ , coded),  
manufacturing date (YWWD)
- Minimum data on reel:  
Manufacturer, ordering code, L value,  
quantity, date of packing

**Delivery mode and packing unit**

- 24-mm blister tape, wound on 330-mm  $\varnothing$  reel
- Packing unit: 350 pcs./reel

**SMD**

**Dimensional drawing and layout recommendation**



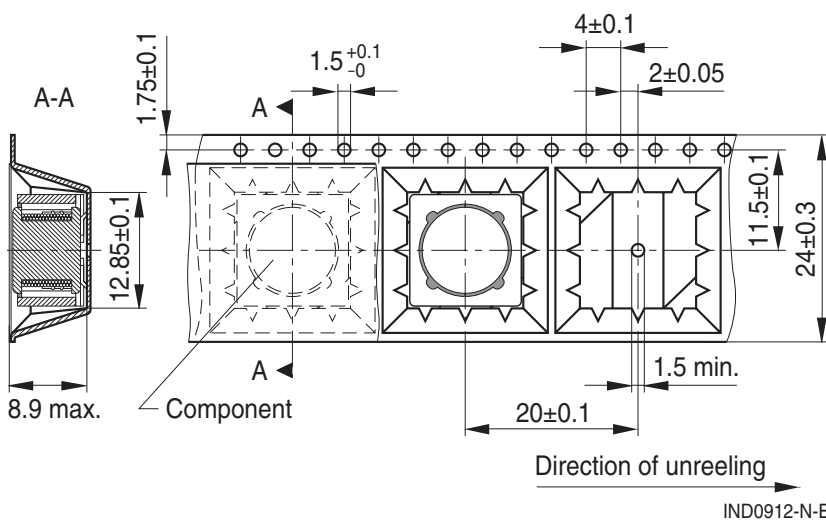
1) Soldering area

IND0572-K-E

Dimensions in mm

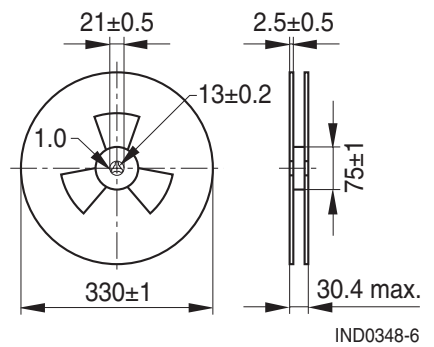
**Taping and packing**

**Blister tape**



Dimensions in mm

**Reel**



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**Technical data and measuring conditions**

|                              |   |
|------------------------------|---|
| Rated inductance $L_R$       | Measured with LCR meter Agilent 4284A at frequency $f_L$<br>0.1 V, +20 °C   |
| Rated temperature $T_R$      | +85 °C  |
| Rated current $I_R$          | Max. permissible DC with temperature increase of $\leq 40$ K<br>at rated temperature  |
| Saturation current $I_{sat}$ | Max. permissible DC with inductance decrease<br>$\Delta L/L_0$ of approx. 10%   |
| DC resistance $R_{max}$      | Measured at +20 °C  |
| Solderability (lead-free)    | Dip and look method Sn95.5Ag3.8Cu0.7:<br>+(245 ±5) °C, (5 ±0.3) s<br>Wetting of soldering area $\geq 90\%$<br>(based on IEC 60068-2-58) |
| Resistance to soldering heat | +260 °C, 40 s (as referenced in JEDEC J-STD 020D)   |
| Climatic category            | 55/150/56 (to IEC 60068-1)  |
| Storage conditions           | Mounted: -55 °C ... +150 °C<br>Packaged: -25 °C ... +40 °C, $\leq 75\%$ RH  |
| Weight                       | Approx. 4 g   |

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**Characteristics and ordering codes**

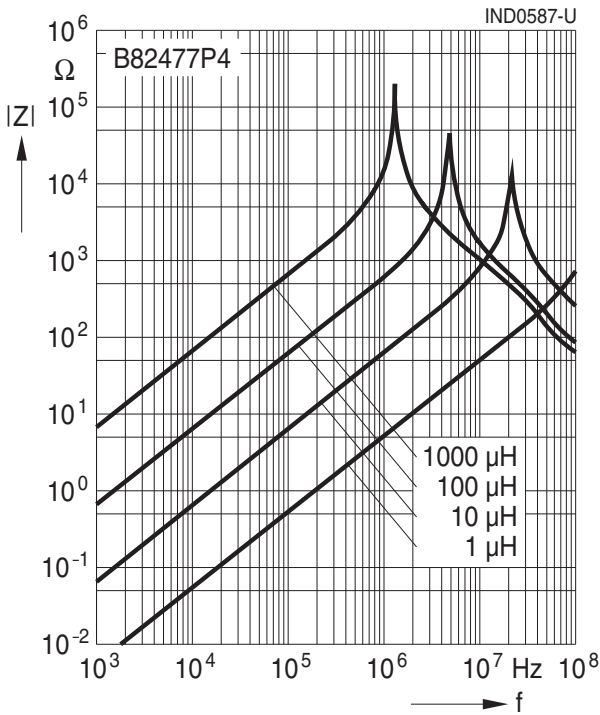
| $L_R$<br>$\mu\text{H}$ | Tolerance               | $f_L$<br>MHz | $I_R$<br>A | $I_{\text{sat}}$<br>A | $R_{\text{max}}$<br>$\Omega$ | Ordering code   |
|------------------------|-------------------------|--------------|------------|-----------------------|------------------------------|-----------------|
| 0.82                   | $\pm 20\% \triangleq M$ | 0.1          | 11.00      | 15.00                 | 0.0055                       | B82477P4821M000 |
| 2.0                    |                         | 0.1          | 8.90       | 11.00                 | 0.0080                       | B82477P4202M000 |
| 3.3                    |                         | 0.1          | 8.10       | 9.60                  | 0.0100                       | B82477P4332M000 |
| 3.9                    |                         | 0.1          | 8.00       | 9.50                  | 0.0100                       | B82477P4392M000 |
| 4.7                    |                         | 0.1          | 7.30       | 8.40                  | 0.0120                       | B82477P4472M000 |
| 5.6                    |                         | 0.1          | 7.15       | 8.30                  | 0.0125                       | B82477P4562M000 |
| 6.8                    |                         | 0.1          | 6.60       | 7.30                  | 0.0150                       | B82477P4682M000 |
| 10                     |                         | 0.1          | 5.80       | 6.40                  | 0.0190                       | B82477P4103M000 |
| 15                     |                         | 0.1          | 4.80       | 5.20                  | 0.0285                       | B82477P4153M000 |
| 22                     |                         | 0.1          | 4.15       | 4.35                  | 0.035                        | B82477P4223M000 |
| 33                     |                         | 0.1          | 3.35       | 3.50                  | 0.052                        | B82477P4333M000 |
| 47                     |                         | 0.1          | 2.80       | 3.00                  | 0.067                        | B82477P4473M000 |
| 68                     |                         | 0.1          | 2.35       | 2.45                  | 0.098                        | B82477P4683M000 |
| 82                     |                         | 0.1          | 2.10       | 2.25                  | 0.120                        | B82477P4823M000 |
| 100                    |                         | 0.1          | 1.87       | 1.95                  | 0.138                        | B82477P4104M000 |
| 150                    |                         | 0.1          | 1.61       | 1.70                  | 0.185                        | B82477P4154M000 |
| 220                    |                         | 0.1          | 1.24       | 1.35                  | 0.305                        | B82477P4224M000 |
| 330                    |                         | 0.1          | 1.02       | 1.15                  | 0.460                        | B82477P4334M000 |
| 470                    |                         | 0.1          | 0.86       | 0.95                  | 0.640                        | B82477P4474M000 |
| 680                    |                         | 0.1          | 0.69       | 0.78                  | 1.05                         | B82477P4684M000 |
| 1000                   | 0.1                     | 0.60         | 0.65       | 1.38                  | B82477P4105M000              |                 |

Version with height 4.8 mm on request (same footprint). Type: B82477P1

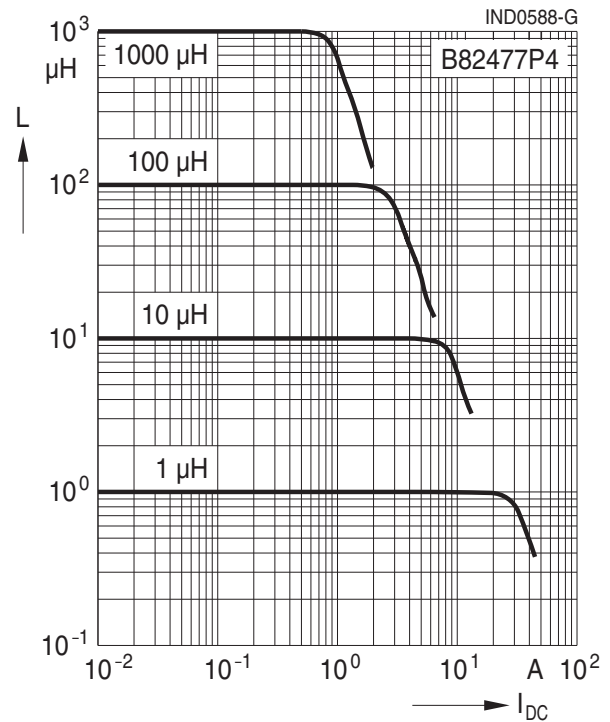
Version with height 6.5 mm on request (same footprint). Type: B82477P2.

**SMD**

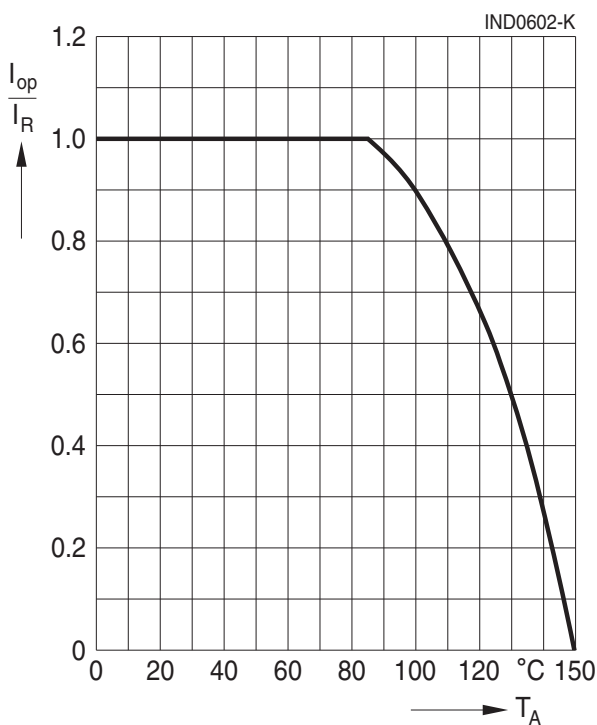
**Impedance  $|Z|$  versus frequency  $f$**   
 measured with impedance analyzer  
 Agilent 4294A, typical values at +20 °C



**Inductance  $L$  versus DC load current  $I_{DC}$**   
 measured with LCR meter Agilent 4275A,  
 typical values at +20 °C



**Current derating  $I_{op}/I_R$**   
**versus ambient temperature  $T_A$**   
 (rated temperature  $T_R = +85$  °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.  
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.

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