SMT power inductors

Size 12.5 x 12.5 x 8.5 mm

Series/Type: **B82477R4**
Ordering code:

Date: April 2015

EPCOS AG is a TDK Group Company.

Rated inductance 0.82 ...1000 µH

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

Features
- High mechanical stability
- Temperature range up to +150 °C
- High rated current
- Increased current handling capability compared to B82477P4 series (I_{sat} +30%)
- Qualified to AEC-Q200
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- RoHS-compatible
- Halogen Free in the meaning of Cl ≤ 900ppm, Br ≤ 900pm, Cl+Br ≤ 1500 ppm

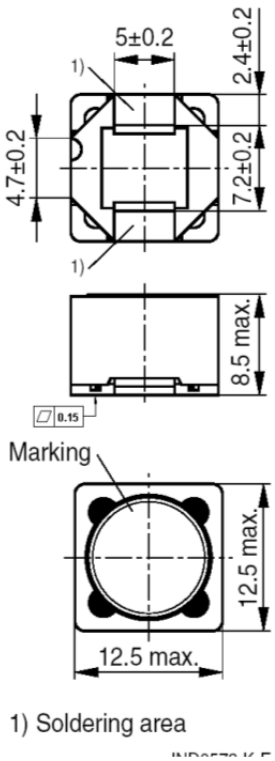
Applications
- Filtering of supply voltages
- Coupling, decoupling
- DC/DC converters
- Automotive electronics

Terminals
- Base material
  Cu (L ≤ 10 µH), CuSn6P (L > 15 µH)
- Layer composition Ni, Sn (lead-free)
- Electro-plated

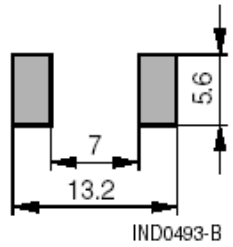
Marking
- Marking on component:
Manufacturer, L value (µH, coded),
manufacturing date (YWWD)
- Minimum data on reel:
Manufacturer, ordering code, L value,
quantity, date of packing

Delivery mode and packing unit
- 24-mm blister tape, wound on 330-mm reel
- Packing unit: 350 pcs./reel

Dimensional drawing and layout recommendation



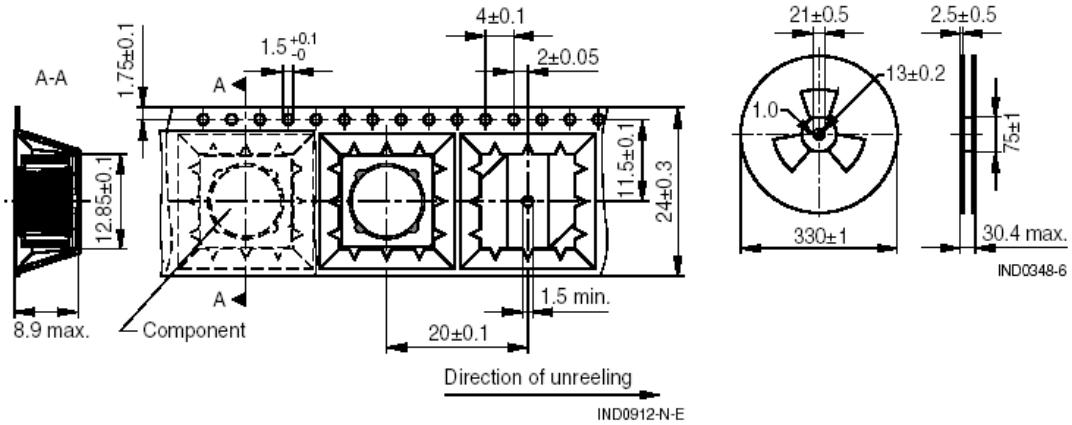
1) Soldering area



Dimensions in mm

Taping and packing

Blister tape



Dimensions in mm

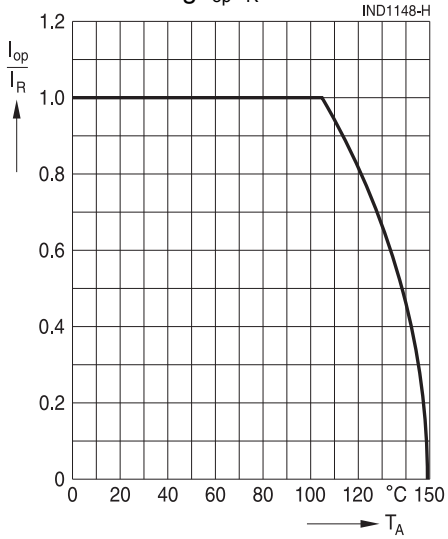
Technical data and measuring conditions

Rated inductance L_R	Measured with LCR meter Agilent 4284A at frequency f_L, 0.1 V. +20°C
Operating temperature range	–55 °C ... +150 °C
Rated current I_R	Max. permissible DC with temperature increase of ≤ 40 K measured at +20 °C
Saturation current I_{Sat}	Max. permissible DC current with inductance decrease $\Delta L/L_0$ of approx. 10%
DC resistance R	Measured at +20 °C
Solderability (lead-free)	Dip and look method Sn95.5Ag3.8Cu0.7: +(245 ±5) °C, (5 ±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	55/150/56 (to IEC 60068-1)
Storage conditions	Mounted: –55 °C … +150 °C Packaged: –25 °C … +40 °C, ≤ 75% RH
Weight	Approx. 4 g

Characteristics and ordering codes

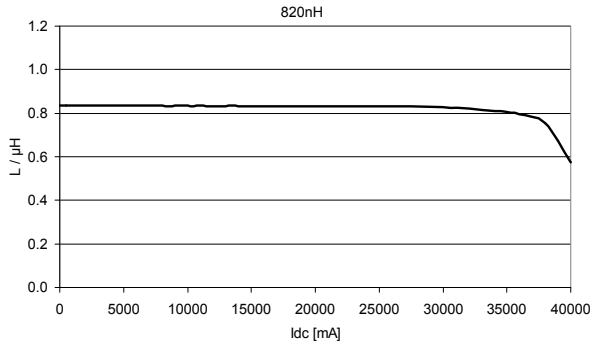
L_R µH	Tolerance	f_L MHz	I_R A	$I_{sat, min}$ A	$I_{sat, typ}$ A	R_{max} mΩ	R_{typ} mΩ	Ordering code
0.82	20% = M	0.1	12.25	27.0	38.0	5.5	3.8	B82477R4821M100
1.50			10.25	20.0	27.0	6.5	4.8	B82477R4152M100
2.00			9.50	18.0	24.0	8.0	5.9	B82477R4202M100
3.00			8.70	15.5	18.0	9.0	6.8	B82477R4302M100
3.60			8.50	13.0	16.0	10.0	7.9	B82477R4362M100
4.70			7.85	12.2	14.25	11.0	8.9	B82477R4472M100
5.60			7.60	11.0	12.75	11.5	9.9	B82477R4562M100
6.80			6.95	10.5	12.0	15.0	11.0	B82477R4682M100
10			6.20	8.75	10.25	18.5	16.4	B82477R4103M100
15			5.00	7.25	8.75	25.0	22.8	B82477R4153M100
22			4.45	6.10	7.25	32.0	28.1	B82477R4223M100
33			3.55	5.20	6.00	50.0	46.3	B82477R4333M100
47			3.35	4.30	4.90	60.0	55.7	B82477R4473M100
68			2.80	3.55	3.90	85.0	80.1	B82477R4683M100
100			2.35	2.90	3.25	120	112	B82477R4104M100
150			1.90	2.40	2.80	175	158	B82477R4154M100
220			1.45	2.00	2.20	290	275	B82477R4224M100
330			1.18	1.70	1.80	425	405	B82477R4334M100
470			1.07	1.35	1.50	605	578	B82477R4474M100
680			0.88	1.10	1.25	860	830	B82477R4684M100
1000			0.72	0.95	1.05	1350	1250	B82477R4105M100

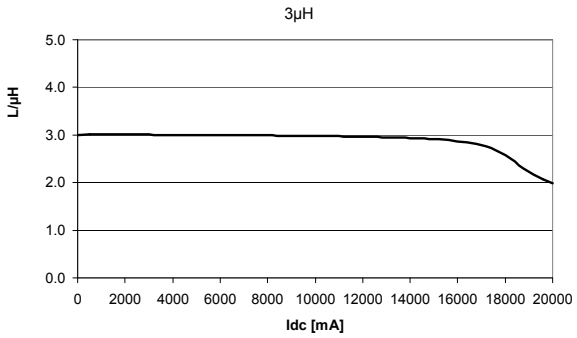
Current derating I_{op}/I_R versus ambient temperature T_A

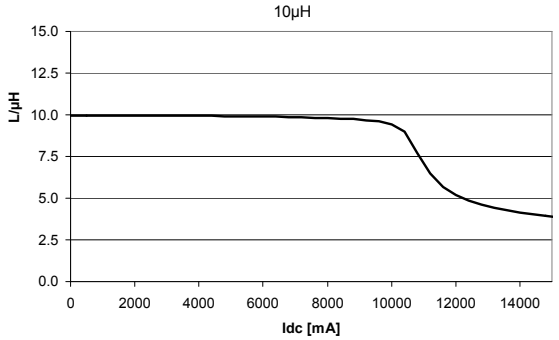


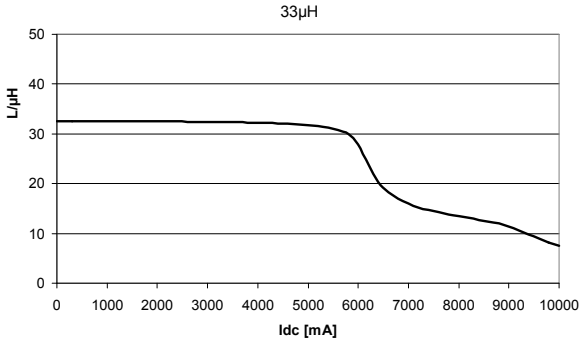
Typical curves:

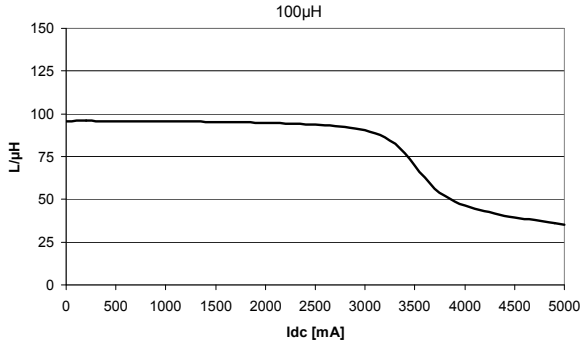
Inductance vs. DC superposition measured with LCR meter Agilent 4284A at T_a= +20 °C

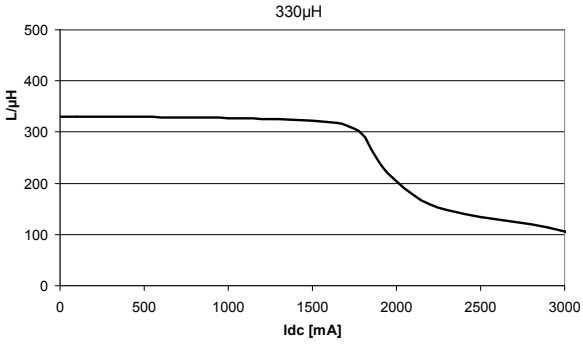


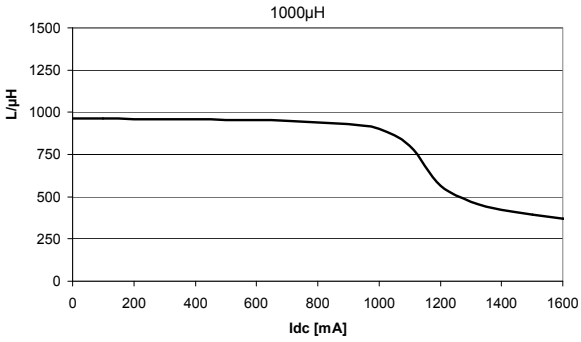












Cautions and warnings

- 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-frequecy 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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