Inductors for power circuits

Size 12.4 × 13.1 × 11.5 (mm)

Series/Type: **PCM120T**

Date: April 2021

Size 12.4 x 13.1 x 11.5 (mm)

SMD

Rated inductance 0.4 ... 10 µH
Rated current 12.0 ... 79.8 A

Construction

- Metal rod core
- Magnetically shielded
- Winding: enamel copper wire
- Flat wire connection

Features

- Current-handling capability up to 80 A, soft saturation
- AOI (solder point inspection) suitable
- Lead frame provides good coplanarity and solderability
- High mechanical robustness
- High magnetic shield construction featuring low EMI
- Temperature range up to +165 °C
- Suitable for lead-free reflow soldering as referenced in JEDEC J-STD 020D
- Qualification to AEC-Q200
- RoHS-compatible

Applications

- Primary DC/DC converters (withstands ISO7637 pulses)
- Automotive electronics (PMIC - power management integrated circuits, ECM engine control module, transmission control, power steering control)
- Power supply in servers
- Power supplies in 5G base stations

Terminals

- Base material Cu
- terminal finish Sn (lead-free)
- Electro-plated

Marking

- Marking on component:
  Series name, 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

- 32-mm blister tape, wound on 330-mm ∅ reel
- Packing unit: 250 pcs./reel

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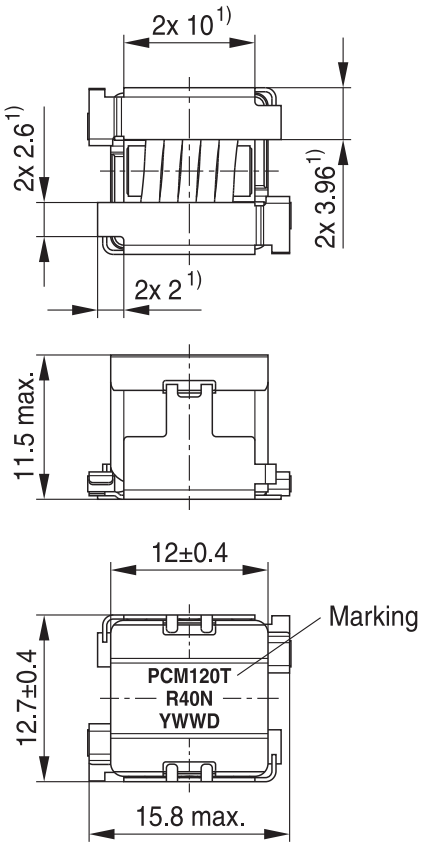
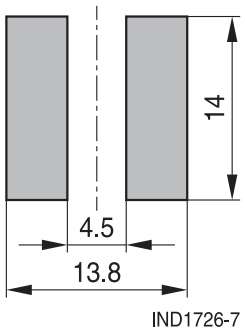
Dimensional drawing and layout recommendation





IND1726-7

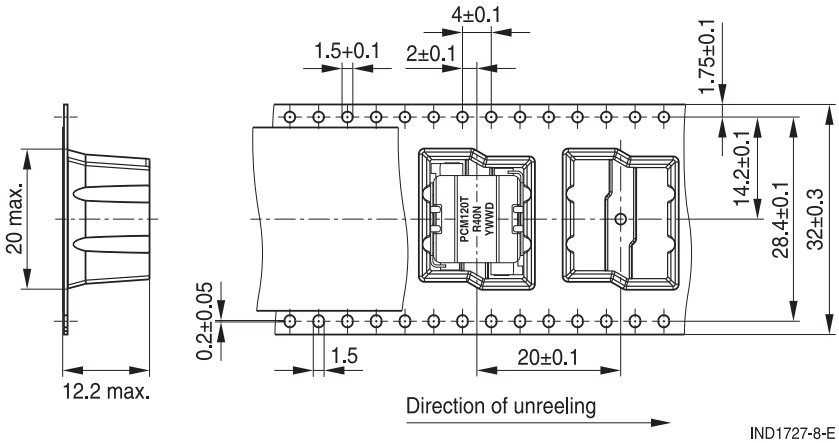
1) Soldering area

IND1725-6-E

Dimensions in mm

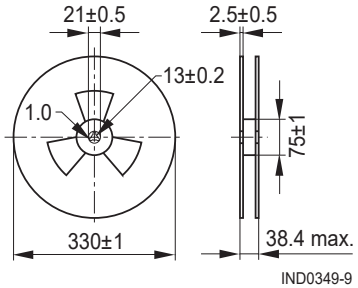
Taping and packing

Blister tape



IND1727-8-E

Reel



IND0349-9

Dimensions in mm

Inductors for power circuits — PCM120T

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SMD

Technical data and measuring conditions

(Measured at room temperature unless otherwise noted)

Rated inductance L_R	Measured with LCR meter Agilent 4284A at frequency f_L, 0.1 V
Operating temperature range	–55 °C … +165 °C
Thermal current I_{temp}	Max. permissible DC with temperature increase of ≤ 40 K (to IEC 62024-2)
Saturation current I_{sat}	Max. permissible DC with inductance decrease $\Delta L/L_0$ of 30% of its nominal value
DC resistance R_{DC}	Measured with Burster Resistomat 2329
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	as referenced in JEDEC J-STD 020D
Climatic category	55/165/56 (to IEC 60068-1)
Storage conditions	Mounted: –55 °C … +165 °C Packaged: –25 °C … +40 °C, ≤ 75% RH
Weight	Approx. 6 g

Characteristics and ordering codes

L_R	Tol.	Meas. freq.	R_{DC}	Rated current			Internal code	Ordering code
				$I_{sat,typ}$	$I_{sat,min}$	$I_{temp,typ}$		
µH		kHz	mΩ	A	A	A		
0.40	±30%	100	0.72 ±30%	79.80	67.8	50.0	B82482M1401N000	PCM120T-R40N-D
0.50	±30%	100	0.72 ±30%	58.7	49.9	50.0	B82482M1501N000	PCM120T-R50N-D
0.68	±30%	100	0.83 ±30%	49.5	40.6	46.6	B82482M1681N000	PCM120T-R68N-D
0.82	±30%	100	1.06 ±30%	49.3	40.5	41.2	B82482M1821N000	PCM120T-R82N-D
1.0	±30%	100	1.06 ±30%	39.5	33.6	41.2	B82482M1102N000	PCM120T-1R0N-D
1.2	±30%	100	1.45 ±30%	38.7	32.9	35.2	B82482M1122N000	PCM120T-1R2N-D
1.5	±20%	100	1.45 ±20%	32.2	27.4	35.2	B82482M1152N000	PCM120T-1R5N-D
2.2	±20%	100	2.45 ±20%	24.8	20.5	27.1	B82482M1222M000	PCM120T-2R2M-D
2.7	±20%	100	3.12 ±20%	26.3	20.4	24.4	B82482M1272M000	PCM120T-2R7M-D
3.3	±20%	100	3.12 ±20%	20.9	16.7	24.4	B82482M1332M000	PCM120T-3R3M-D
4.7	±20%	100	4.30 ±20%	17.0	14.9	20.6	B82482M1472M000	PCM120T-4R7M-D
6.8	±20%	100	6.50 ±20%	15.1	13.2	16.6	B82482M1682M000	PCM120T-6R8M-D
8.2	±20%	100	9.00 ±20%	15.0	11.5	14.1	B82482M1822M000	PCM120T-8R2M-D
10.0	±20%	100	9.00 ±20%	12.0	10.2	14.1	B82482M1103M000	PCM120T-100M-D

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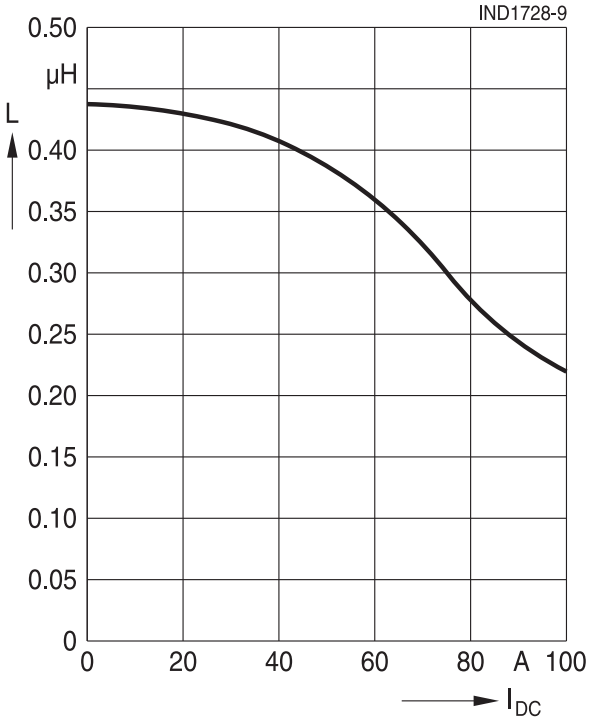
Inductance L versus DC superposition I_{DC}
measured with LCR meter Agilent 4284A and Agilent 42842, typical values at +20 °C

PCM120T-R40N-D



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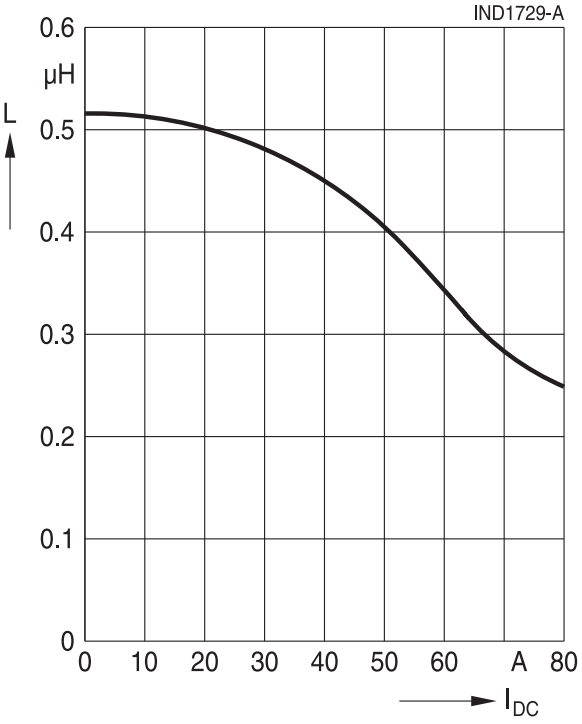

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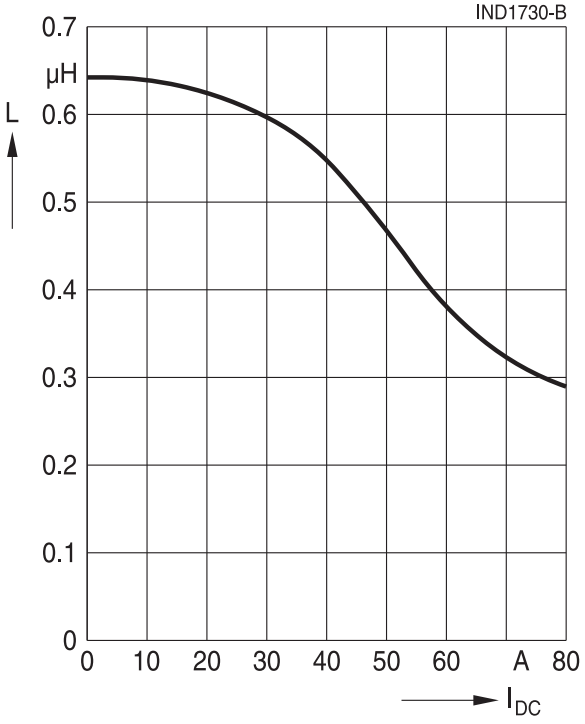
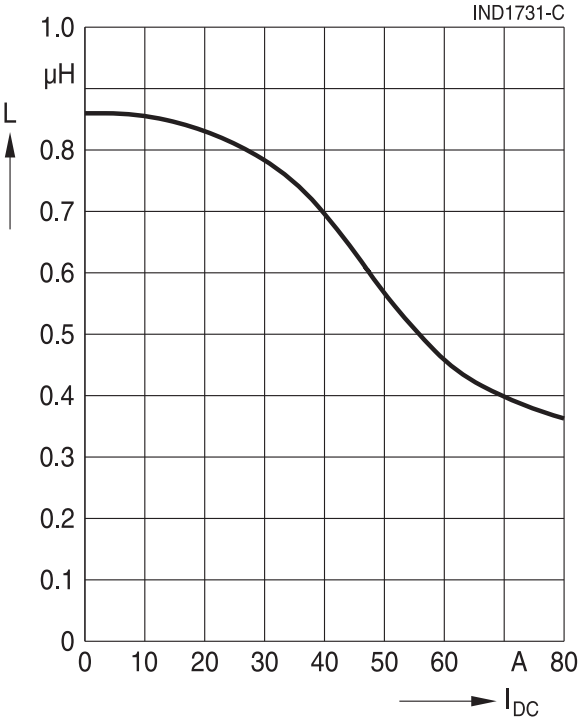


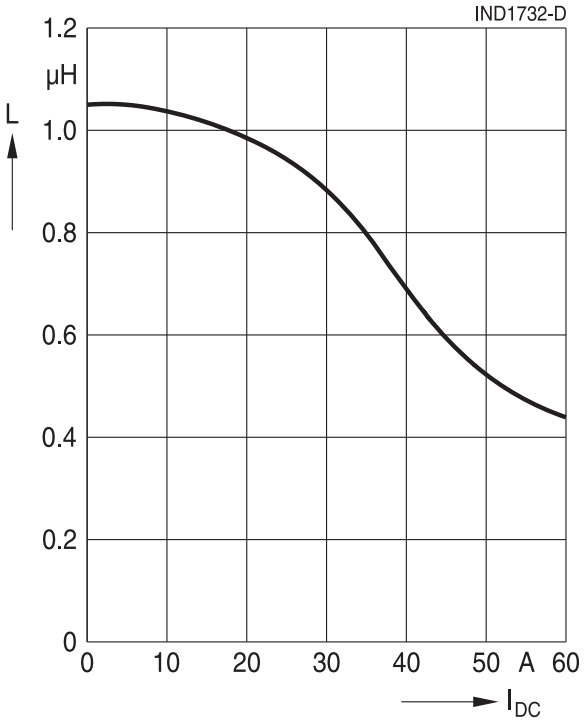
PCM120T-R82N-D



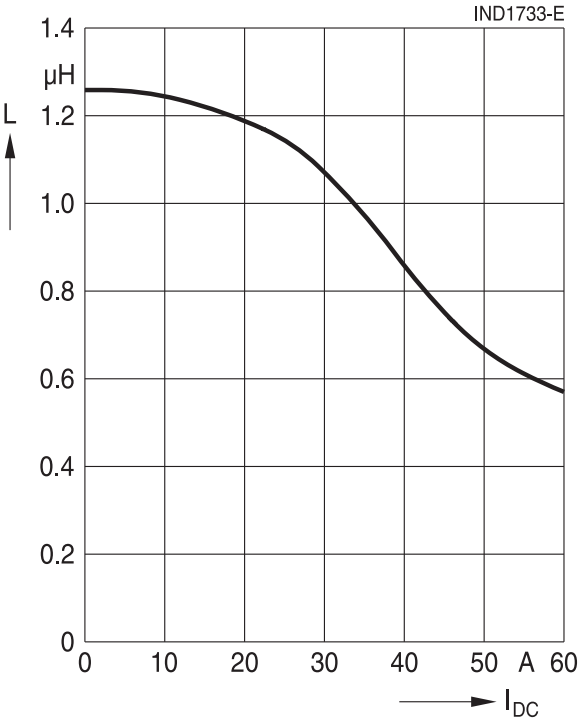
Size 12.4 x 13.1 x 11.5 (mm)

SMD

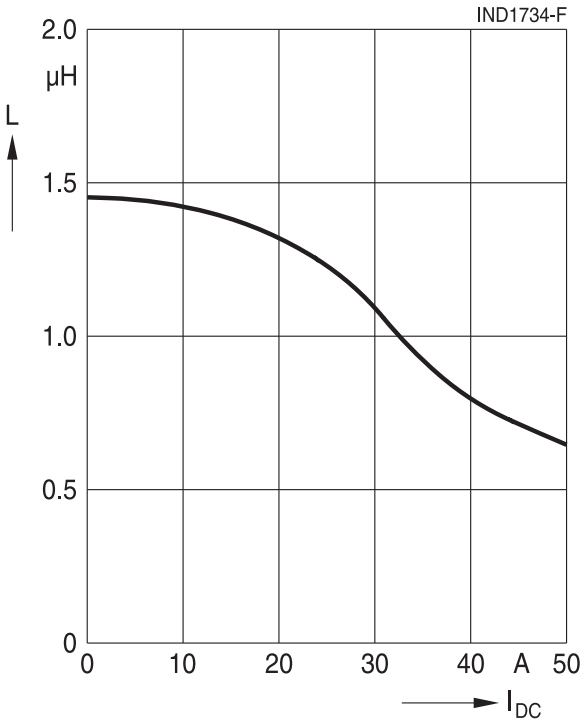
PCM120T-1R0N-D



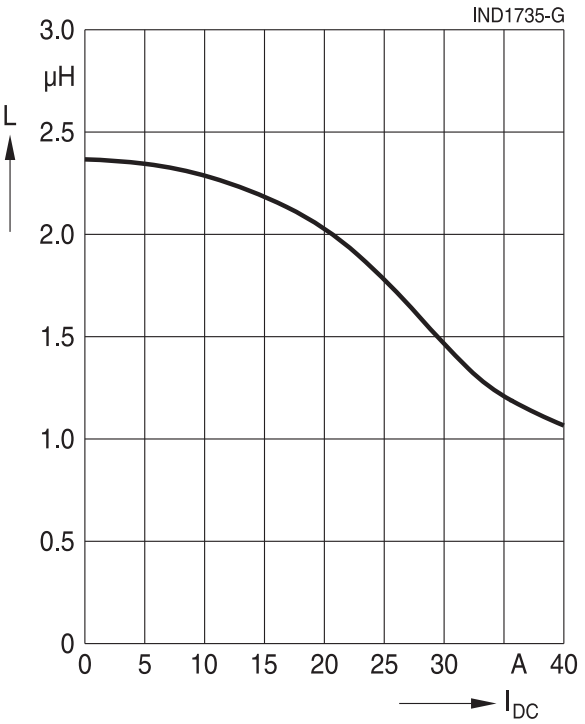
PCM120T-1R2N-D



PCM120T-1R5N-D

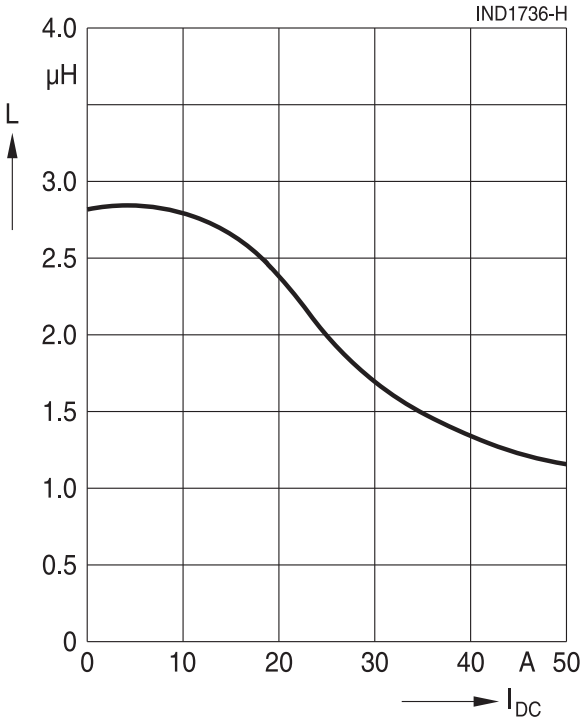


PCM120T-2R2M-D

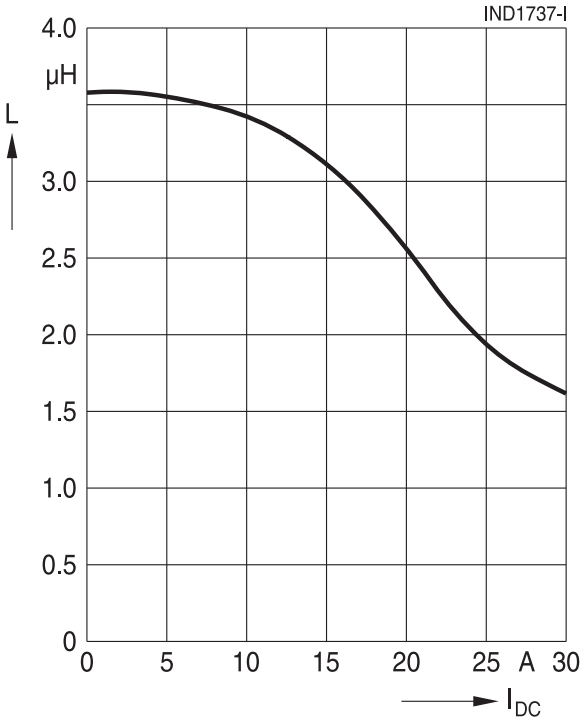


Size 12.4 x 13.1 x 11.5 (mm)

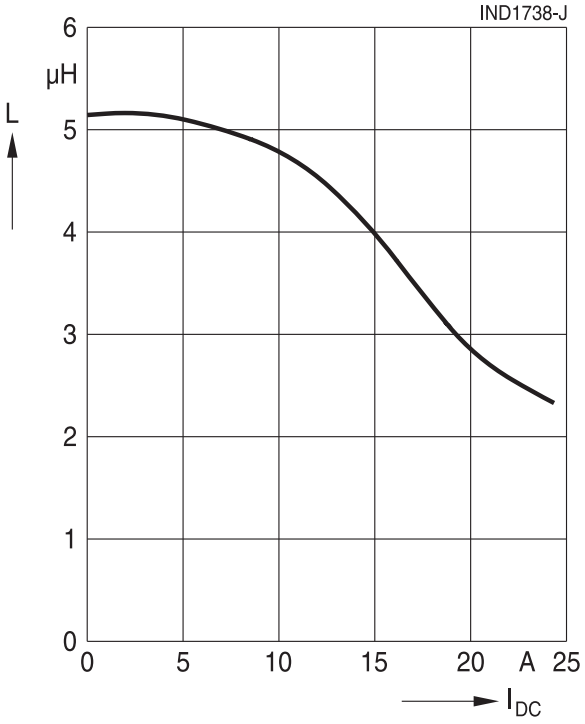
PCM120T-2R7M-D



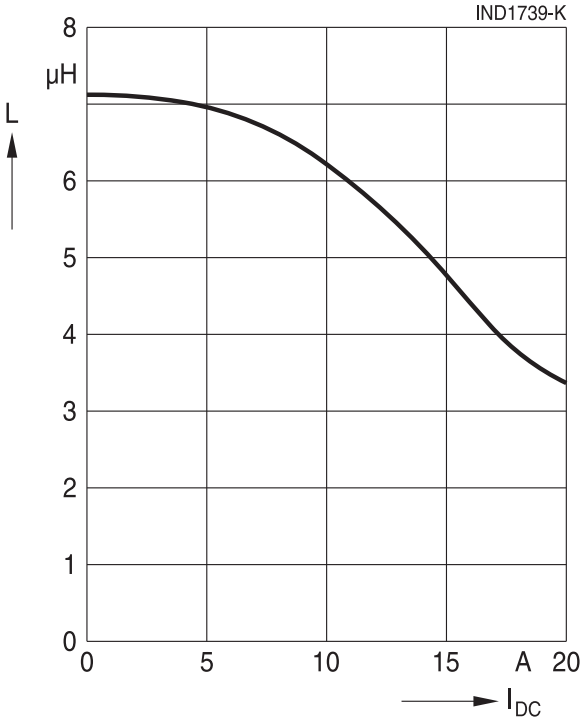
PCM120T-3R3M-D



PCM120T-4R7M-D



PCM120T-6R8M-D



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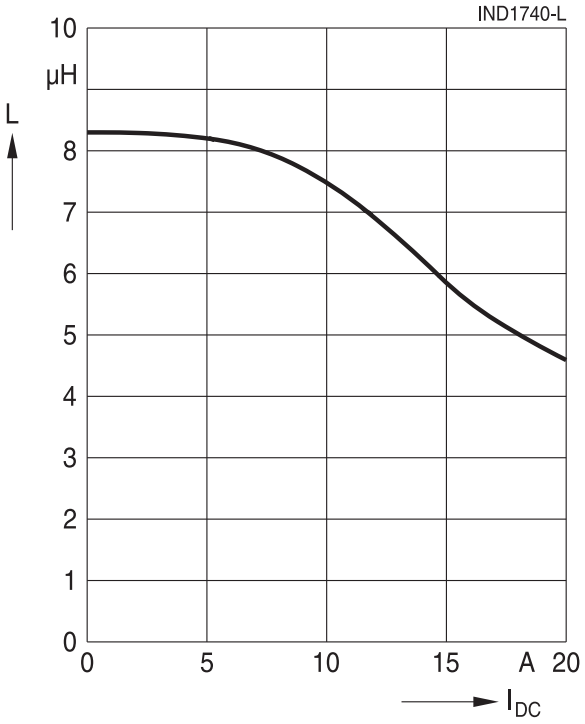
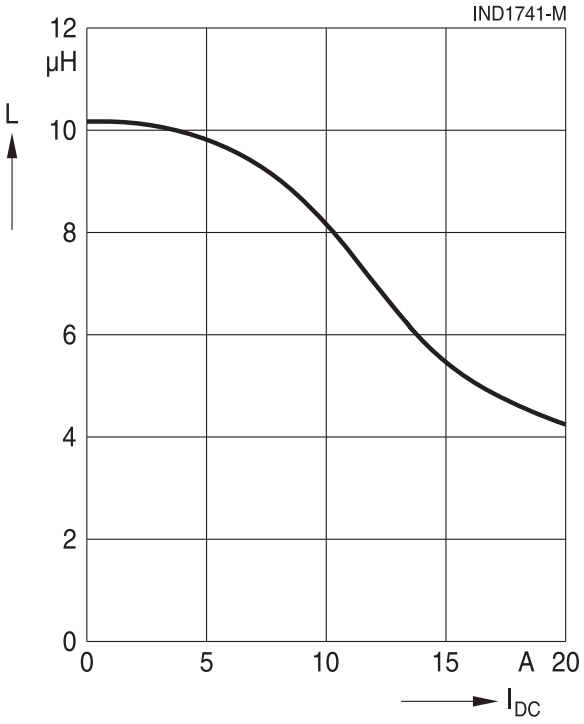
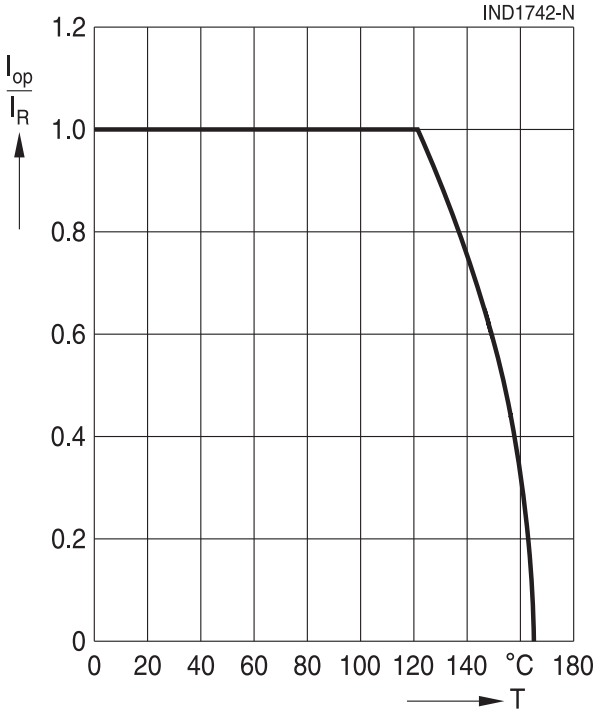


PCM120T-100M-D



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



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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