Ferrites and accessories

P cores (pot cores)
General information

Date: October 2022

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P cores (**P**ot cores) are available in a wide range of sizes; 7 types in our product line comply with IEC 63093-2. We offer a choice of different SIFERRIT materials, which permits the cores to be used for a large variety of applications to over 100 MHz. Since the wound coil is completely enclosed by the ferrite core, P cores feature low magnetic leakage. They can be easily and precisely adjusted to the most manifold inductor requirements.

We naturally also supply the appropriate accessories for each core version. Most of the cores are available with threaded sleeves and screws for precision inductance adjustment. Adjustment curves are given for this purpose. These relate to the particular recommended combination of screw core/core material A_L value and must be understood as typical values.

2 Applications

The cores are suitable for:

- High-quality resonant circuit inductors (filters) with high inductance stability (materials K1, M33, N48).
- Low-distortion broadband small-signal transformers in materials T38 and N30 with high A_L value
- Power applications. Here, pot cores without center hole made of material N87 are used as standard. As a result of their larger effective magnetic cross-sectional area, these types are characterized by a higher A_L value, better flux density distribution and, consequently, a reduced power loss.

3 Marking

The material and the A_L value are always stamped on P cores with a diameter > 5.8 mm, the material and “o. L.”(= without air gap) are stamped on ungapped cores. Only one core half of the two comprising a set carries the marking. With cores having an unsymmetrical air gap (the total air gap is ground into one half) the ground half carries the marking, with cores including a glued-in threaded sleeve the half without sleeve is marked.

4 Power loss

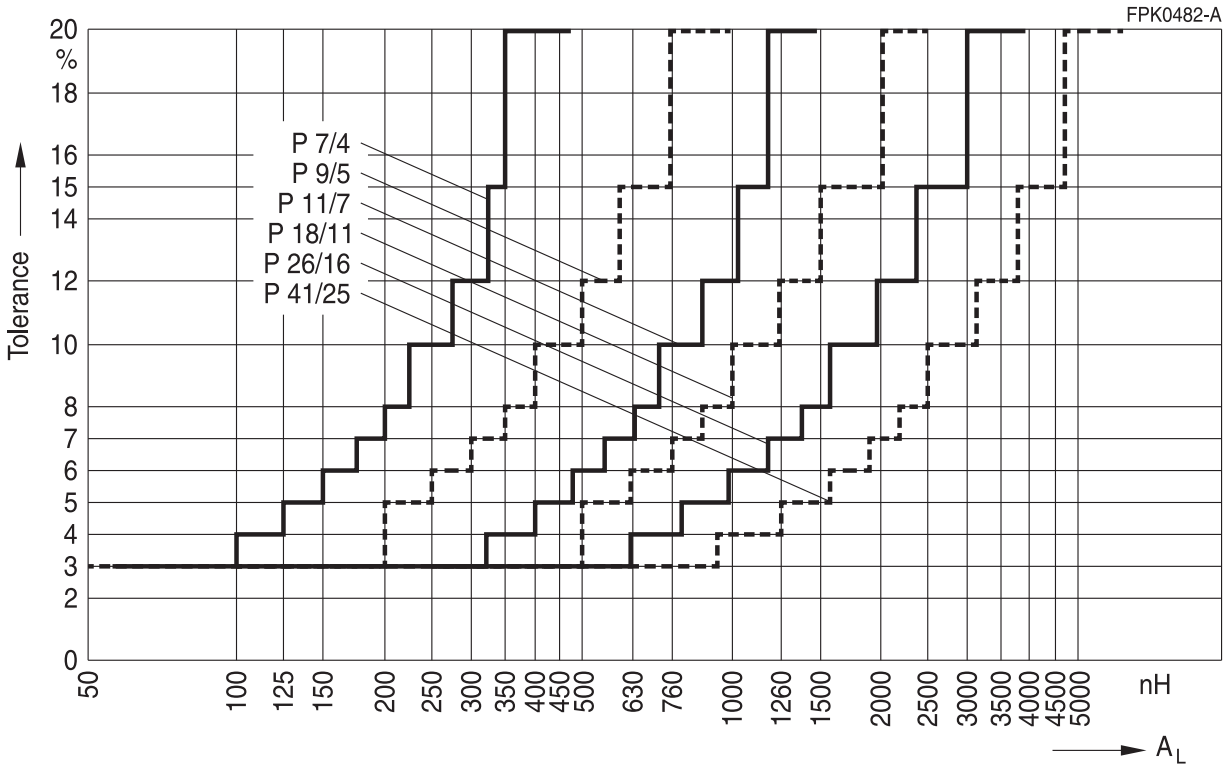
For each core type with power materials the maximum power loss is specified in W/set. The flux density has been calculated on the basis of a sinusoidal voltage and is referred to the minimum cross-sectional area A_{min}.

5 Tolerances for P cores

The A_L value tolerances for P cores have consequently been defined with consideration of optimized process parameters for all materials with an initial permeability μ_i in the region of 2200 to 10000 as a step function (see figure below).

The “quantized” A_L step values should be preferably used. They are still available in their respective lower tolerance ranges. Thus a tolerance of ±10% can be determined for a P 9/5 made of N48 material for an A_L value of 500 nH.

With this type of tolerance definition, TDK Electronics has defined standard A_L values and the associated tolerance for the first time. Based on initial permeability tolerance can be slightly lower or higher.



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