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**NATIONAL STANDARD OF THE
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**Test methods for electrical and magnetic properties of
magnetic powder cores**

金属磁粉心电磁特性测量方法

(English Translation)

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References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt IEC 63300:2023 "Methods for measuring electromagnetic properties of magnetic powder cores".

Compared with IEC 63300:2023, this document has undergone the following structural adjustments.

---Swap the positions of Figure A.2b) and Figure A.2c);

---Swap the positions of Figure A.3a) and Figure A.3b);

---A.9 has been deleted;

---E.6 has been added, and subsequent bar numbers will be deferred accordingly.

The following editorial changes have been made to this document.

---Corrected the error in D.3.4;

---The measurement method for quality factor Q in Chapter 10 has been changed from "See Appendix A for detailed measurement procedures" to "Detailed measurement procedures..." See Appendix E for details;

---The measurement of the quality factor has been added (see E.6).

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Technical Committee on Standardization of Magnetic Components and Ferrite Materials (SAC/TC89).

Introduction

Metal magnetic powder cores possess characteristics such as low relative permeability, high saturation flux density, and low loss. Therefore, compared to gapless ferrite cores, metal...

Magnetic powder cores have lower equivalent impedance and larger magnetizing current, requiring high-frequency and high-capacity excitation sources for electromagnetic measurements, which is difficult in practice.

However, the impedance angle of the metal powder core is close to 90° , which makes it very difficult to accurately measure the core loss.

The IEC 62044 series of standards establishes the standards for magnetic cores made of magnetic oxide or metal powder under both high and low excitation levels.

Magnetic property measurement methods. However, the measurement methods described in the IEC 62044 series of standards cannot fully meet the requirements for measuring the magnetic properties of metallic magnetic powder cores.

Quantity requirements. Therefore, it is necessary to develop standards for the measurement methods of magnetic properties of metal magnetic powder cores.

Based on the characteristics of metal magnetic powder cores, in addition to revising traditional measurement methods, this document also introduces a new measurement method-the pulse method.

And the DC power method. Due to the linear characteristics of air-core inductors, this document introduces air-core inductors (single-winding or double-winding) for verification or