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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 40853.2-2023

**High frequency inductive components - Electrical
characteristics and measuring methods - Part 2: Rated current
of inductors for DC to DC converters**

高频感性元件 电特性及其测量方法 第2部分：DC-DC变换器用电感器额定电流
(English Translation)

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Appendix A (informative) Recommended examples of product instructions and catalogs

Reference

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Figure 2 Example of printed circuit board

Figure 3 Resistance method temperature rise measurement circuit

Figure 4 Thermocouple method temperature rise measurement circuit

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Table 2 Width and thickness of conductor copper foil

Table 3 Lead wire diameter

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 Part 2 of GB/T 40853 "Electrical Characteristics of High-Frequency Inductive Components and Their Measurement Methods": GB/T 40853 has been issued the following parts have been published:

---Part 1: Nanohenry-level chip inductors;

---Part 2: Rated current of inductors for DC-DC converters:

This document is equivalent to IEC 62024-2:2020 "Electrical Characteristics of High-frequency Inductive Components and Measurement Methods Part 2: DC-DC Transformers" Rated current of the inductor used in the converter:

This document has made the following minimal editorial changes:

---Replace the letter "E" as the voltage in the IEC standard with the letter "U";

---Added introductory words before the items (see 5.5, 6:4:2, 6:4:3, 8:2, 8:3);

---Added the meaning of unexplained symbols in figures and formulas;

---Added formula number:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

With the continuous development of communication technology, high-frequency inductors have been widely used, and their electrical characteristics and measurement methods have also been widely used, especially. Especially with the continuous development of miniaturization of components and the continuous improvement of material performance and processing capabilities, chip inductors have emerged in large numbers, which has a great impact on its electrical properties and measurement methods also have higher requirements: GB/T 40853 "Electrical Characteristics of High-frequency Inductive Components and Measurement Methods" consists of two parts constitute:

---Part 1: Nanohenry-level chip inductors: Specifies the electrical characteristics of nanohenry-level chip inductive components at high frequencies (above 100kHz) (Inductance, quality factor, impedance, resonant frequency, DC resistance, etc.) and their measurement methods:

---Part 2: Rated current of inductors for DC-DC converters: Specifies the rating of high-frequency inductive components based on their own temperature rise:

Constant current and rated current based on the rate of change of inductance value and their measurement methods:

GB/T 40853 "Electrical Characteristics of High-frequency Inductive Components and Measurement Methods" aims to guide high-frequency inductive component enterprises to organize production and external Unify trade standards and improve the technical level of the inductor industry:

Electrical characteristics of high-frequency inductive components and their measurement methods Part 2: Rated current of inductors for DC-DC converters

1 Scope

This document describes the method for measuring the DC current rating of small inductors:

Users can compare rated currents in different manufacturers' manuals through standardized rated current measurement methods:

This document applies to leaded and surface mount inductors with dimensions in accordance with IEC 62025-1 and a rated current generally less than 22A: It is also applicable to Used for some inductors whose size complies with the requirements of IEC 62025-1 but whose rated current exceeds 22A (the installation area does not exceed 12mmx 12mm) rated current measurement: Typically these inductors are used on PCB boards in electronics, telecommunications equipment and small size switching power supply modules:

DC-DC converter:

This document is only applicable to the measurement of saturation current and temperature rise current under DC current conditions:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 2421-2020 Environmental Testing Overview and Guidelines (IEC 60068-1:2013,IDT)
IEC 62025-1 Non-electrical characteristics of high-frequency inductive components and their measurement methods Part 1: Surface mount fixtures for electronic and communication equipment Note: GB/T 40852.1-2021 Non-electrical characteristics of high-frequency inductive components and their measurement methods Part 1: Surface mounting and fixing of electronic and communication equipment Inductor (IEC 62025-1:2007, IDT)

3 Terms and definitions

The following terms and definitions apply to this document:

ISO and IEC maintain databases of terminology for use in standards at the following address:

- ISO online browsing platform: <http://www.iso.org/obp>:

The maximum DC current value applied when the drop in inductance complies with relevant regulations:

The DC current value applied when the temperature rise caused by the heat generated by the inductor itself meets the maximum temperature rise requirement: