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

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**Ceramic copper-clad substrate for power semiconductor
modules**

(English Translation)

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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".

1 Scope

This document specifies the classification and marking of ceramic copper-clad laminates for power semiconductors prepared using the direct copper cladding process (hereinafter referred to as "DBC").

Technical requirements, test methods, inspection rules, as well as marking, packaging, transportation and storage.

This document applies to DBC ceramics used in power semiconductors such as resistor substrates, semiconductor cooling devices, integrated circuits, power modules, and micromotors.

Copper-clad laminates, and other copper-clad ceramic laminates using other copper-clad processes can be used as a reference.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies to this document.

GB/T 2828.1 Sampling Procedures for Inspection by Attributes - Part 1: Sampling Schemes Retrieved by Acceptable Quality Limit (AQL) for Lot-by-Lot Inspection

GB/T 4722-2017 Test methods for rigid copper-clad laminates for printed circuits

GB/T 5593 Structural Ceramic Materials for Electronic Components

GB/T 5594.4 Test methods for the properties of structural ceramic materials for electronic components - Part 4: Dielectric constant and dielectric loss tangent Value testing methods

GB/T 6062 Product Geometric Specification (GPS) - Nominal Characteristics of Contact (Stylus) Instruments Using Surface Structure Profile Method

GB/T 9530 Terminology for Electronic Ceramics

GB/T 9531.1 Technical Requirements for Electronic Ceramic Components

GB/T 39862 Determination of thermal conductivity of high thermal conductivity ceramics

GB/T 45763 Fine Ceramics - Test Method for Room Temperature Bending Strength of Thin Ceramic Plates - Three-Point Bending or Four-Point Bending Method

3 Terms and Definitions

The terms and definitions defined in GB/T 5593 and GB/T 9530, as well as the following terms and definitions, apply to this document.

3.1 Ceramic copper-clad substrate

A ceramic composite plate in which copper is directly bonded to the surface of a ceramic substrate at high temperature.

Note: There are two types. single-sided ceramic copper clad laminate and double-sided ceramic copper clad laminate.

3.2 Sintering bubble blistering

The phenomenon of copper surface bulging at the interface between copper and ceramic substrate during the sintering process.

3.3 Bulge

The surface protrusion is caused by localized accumulation of copper material.