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

GB/T 42968.3-2025

**Integrated circuits - Measurement of electromagnetic immunity
- Part 3: Bulk current injection (BCI) method**

集成电路 电磁抗扰度测量 第3部分：大电流注入（BCI）法

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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". Drafting. This document is Part 3 of GB/T 42968 "Measurement of Electromagnetic Immunity of Integrated Circuits". GB/T 42968 has the following published... part.

1.General Conditions and Definitions;

---Part 2: TEM Cell and Broadband TEM Cell Methods for Measuring Radiation Immunity;

3.High Current Injection (BCI) Method;

4.Direct Radio Frequency Power Injection Method;

5.Faraday Cage Method for Workbench;

8.Radiated Immunity Measurement - IC Stripline Method;

9.Surface scanning method for measuring radiation immunity. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. 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 Integrated Circuit Standardization Technical Committee (SAC/TC599). This document was drafted by: China Electronics Technology Standardization Institute, Beijing National New Energy Vehicle Technology Innovation Center Co., Ltd., and Henan... Kerry Vehicle Testing & Certification Center Co., Ltd., Tianjin Advanced Technology Research Institute, Xiamen Hainoda Scientific Instruments Co., Ltd., Beijing Zhixin Microelectronics Electronics Technology Co., Ltd., the Fifth Research Institute of Electronics of the Ministry of Industry and Information Technology, Sun Yat-sen University, China Automotive Engineering Research Institute Co., Ltd., Nanjing Rongxiang Testing Equipment Co., Ltd., Beiqi Foton Motor Co., Ltd., China Automotive Technology and Research Center for New Energy Vehicles (Tianjin) Co., Ltd. State Grid Electric Power Research Institute Co., Ltd., Southeast University, China National Accreditation Service for Conformity Assessment, Suzhou Taist Electronic Technology Co., Ltd. Qingdao Municipal Institute of Product Quality Inspection, China Academy of Information and Communications Technology, Beijing Fuce Electronic Instruments Co., Ltd., and Yutong Bus Co., Ltd. Company, China Household Electric Appliance Research Institute (Beijing) Testing and Certification Co., Ltd., Guangzhou Automobile Group Co., Ltd. Automotive Engineering Research Institute, Hunan Jinxin Electronic Technology Co., Ltd. Limited Liability Company, Guangzhou Aipu Electronic Technology Co., Ltd. The main drafters of this document are. Fu Jun, Cui Qiang, Lei Lili, Zhu Sai, Zhu Zuoqing, Ye Chang, Fang Wenxiao, Zou Guangcai, Zhang Hongli, Shao Weiheng, and Huang Xuemei. Wang Wenjie, Sun Jing, Liang Jiming, Xing Liwen, Li Tengfei, Zhang Jie, Yang Zhichao, Zhou Xiang, Liu Jia, Hu Xiaojun, Wang Ziren, Lan Defu, Zhang Gaojie, Zhang Ying Fu Guoliang, Yi Feng, Xue Tao.

To standardize electromagnetic immunity measurement for integrated circuits, and to provide different electromagnetic immunity measurement methods for integrated circuit manufacturers and testing institutions. GB/T 42968 specifies the general conditions, definitions, and test procedures for different measurement methods for measuring the electromagnetic immunity of integrated circuits. The test requirements are proposed to consist of 7 parts.

- 1.General Conditions and Definitions. The purpose is to specify the general conditions and definitions for measuring the electromagnetic immunity of integrated circuits.
- 2.Measurement of Radiation Immunity using TEM Cells and Broadband TEM Cells. The aim is to define the TEM cell and broadband TEM cell methods. Test procedures and requirements for the TEM chamber method.
- 3.High Current Injection (BCI) Method. The purpose is to specify the test procedures and requirements for the high current injection method.
- 4.Direct Radio Frequency Power Injection Method. The purpose is to specify the test procedures and requirements for the direct radio frequency power injection method.

1 Scope

GB/T 42968.3-2025 is the Chinese national standard covering injecting a disturbance straight onto the pins of a chip through a current probe - the method that reproduces at component level what a long wiring harness picks up in a vehicle, and the pass criteria for what the device must keep doing while it happens. Part 3 of the series, first edition, with Part 5 and the emissions series GB/T 44937. It was issued on 2 December 2025 and has been in force since 2 December 2025, as a first edition. The document is under the responsibility of the Ministry of Industry and Information Technology. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the measurement of integrated circuit (IC) immunity using the large current injection (BCI) method in the presence of conducted radio frequency (RF) interference. This method involves testing for conduction RF interference caused by radiated RF interference, for example, by conducting RF interference. This method is only applicable to ICs with external interconnects, such as those connected to external circuitry. Connect to the cable bundle. This test method injects RF current into one or a group of cables. This document establishes a common foundation for evaluating semiconductor devices in equipment when operating in environments without harmful RF electromagnetic waves.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. 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. This document.

GB/T 42968.1-2023 Measurement of electromagnetic immunity of integrated circuits - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 42968.1-2023 apply to this document.

4 General Rules

The RF immunity (or sensitivity) characteristics of an IC are crucial for optimal PCB design, filter selection, and further integration. This is crucial to the entire electronic system. This document defines a method for measuring the immunity of an IC to radio frequency currents generated by electromagnetic interference. This method is based on the BCI (Body

Integration) approach used for devices and systems. The BCI approach simulates the direct coupling of radiated RF signals to devices and systems. The induced current generated on the cables and wires. Typically, in electronic systems, external connections or traces on a PCB can act as antennas for electromagnetic fields. Through this coupling path, this... These electromagnetic fields can induce voltages and currents on the pins of an IC, potentially causing interference. Depending on the specific application of the IC, it is typically used in different... In this configuration, the immunity level of electronic devices is closely related to the ability of ICs to withstand the effects of electromagnetic fields. To characterize the RF immunity of an IC, it is necessary to measure the induced current level that causes functional failure. This is based on GB/T 42968.1-2023. According to the performance classification specified in the standard, functional failures can be divided into 5 levels from A to E. The basic layout of the BCI method is shown in Figure 1.