ICS 17.040.30
CCS L 85

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 24468-2025

Replacing GB/T 24468-2009

Test method for semiconductor equipment reliability, availability and maintainability (RAM)

半导体设备可靠性、可用性和维修性（RAM）测量方法

Issued on: October 5, 2025 **Implemented on: May 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

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 supersedes GB/T 24468-2009 "Definition and Measurement Specifications for Reliability, Availability and Maintainability (RAM) of Semiconductor Devices". Compared with GB/T 24468-2009, apart from structural adjustments and editorial changes, the main technical changes are as follows:

a) Changed "purpose" to "scope" and modified the description of the scope (see Chapter 1, Chapter 1 of the.2009 edition);

b) Modified "Single-channel trunking device", "Multi-channel trunking device", "Safety tool", "Non-working time", "Working time", and "Available working time". Terms such as "non-working time", "non-working event", "shutdown", "on", and "cut off" (see Chapter 3, Chapter 4 of the.2009 edition);

c) A new chapter on "Abbreviations" has been added (see Chapter 4);

d) The word "Scope" was changed to "General Provisions," and the provisions regarding the General Provisions were amended (see Chapter 5, Chapter 2 of the.2009 edition);

e) The definition of time has been changed (see Chapter 6, Chapter 5 in the.2009 edition);

f) The formulas for E-Uptime (%) and S-Uptime (%) have been modified (see

7.3.1 and 7.3.2, and

6.3.2 in the.2009 edition);

g) Added specifications for RAM metric testing procedures (see Chapter 8);

h) The measurement of reliability growth or degradation has been changed (see Chapter 10, Chapter 8 in the.2009 edition);

i) Confidence limit coefficients not used in the main text have been removed (Appendix A,.2009 edition). 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 and is under the jurisdiction of the National Technical Committee on Standardization of Semiconductor Equipment and Materials (SAC/TC203). This document was drafted by: China Electronics Technology Standardization Institute, NAURA Technology Group Corporation, and SMIC. Road Manufacturing (Shanghai) Co., Ltd., Qingdao Sirui Intelligent Technology Co., Ltd., Beijing Jingyi Automation Equipment Technology Co., Ltd. Xingqi (Shanghai) Semiconductor Co., Ltd., Changshu Zhaoheng Zhongli Precision Machinery Co., Ltd., Shanghai Yinguan Semiconductor Technology Co., Ltd., Shanghai Cabernet Advanced Materials Technology Co., Ltd., Zhizhen Precision Instruments (Qingdao) Co., Ltd., Shanghai CESI Technology Development Co., Ltd., Shenzhen GlobalFoundries Integrated Circuit Equipment Co., Ltd., Beijing Heqi Precision Technology Co., Ltd., Hangzhou Kunte Magnetic Levitation Technology Co., Ltd., Shanghai Pudat Semiconductor Equipment Co., Ltd., Suzhou Zhicheng Semiconductor Technology

Co., Ltd., Shenzhen Axis Automation Technology Co., Ltd., Chengchuan Technology (Suzhou) (Zhejiang) Co., Ltd., the 13th Research Institute of China Electronics Technology Group Corporation, Shenzhen Aixin Semiconductor Technology Co., Ltd., Yaoguang Semiconductor (Zhejiang) Co., Ltd. Jiang) Co., Ltd., Wuxi Yiwen Microelectronics Technology Co., Ltd., Wuxi Grace Precision Machinery Co., Ltd., Beijing North China Microelectronics Co., Ltd. Equipment Co., Ltd., Changzhou Mingsai Robotics Technology Co., Ltd., Zhuhai Aodewei Technology Co., Ltd., Shenzhen Fengyuansheng Technology Co., Ltd. Limited Company, Dongguan Taijin Precision Technology Co., Ltd., Shanghai Winsun Electronic Technology Co., Ltd., Guangdong Quanxin Semiconductor Co., Ltd. Suzhou Magnesium Technology Co., Ltd. The main drafters of this document are. Nan Jiang, Ren Xiang, Ji Ankuan, Jian Duanduan, Lan Liguang, Ni Hao, Nie Xiang, Zhang Cong, Zhuo Zuliang, Yu Hao, and Zhou Liang. Qi Ying, Yang Shaohui, Liu Jijun, Luo Zhongping, Li Pengtuan, Wen Lieyang, Jiang Xuchu, Wang Zhenhua, Tang Chengyan, Tao Jinweng, Wang Xiangrong, Chen Yingxiang Zhang Xueying, Wei Jiaqi, Cao Zhiqiang, Zhang Xingxing, Liu Fei, Zhong Hua, Zheng Yuqian, Wang Chengxin, Zhang Yin, Qian Wenfang, Yang Shipin, Li Gaoyong, Gu Xiaoyong Zhao Yingwei, Shang Chao, Wang Tao, Sun Wenbin, Qin Chun, Li Changfeng, Gong Bo, He Yiliang, Huang Meilin, Lü Wei, Zhou Tianxi, Qiao Zhixin. The release history of this document and the document it replaces is as follows:

---First published in.2009 as GB/T 24468-2009;

1 Scope

GB/T 24468-2025 is the Chinese national standard covering measuring a fab tool's uptime - the equipment states and how time is allocated between them, the mean time between failures and to repair, the availability figures and the qualification period over which they are established, on numbers written into every tool purchase contract. Issued on 5 October 2025, it has been in force since 1 May 2026, replacing GB/T 24468-2009.

This document describes the measurement methods for the reliability, availability, and maintainability (RAM) of semiconductor devices. This document applies to the reliability, availability, and maintainability (RAM) testing of semiconductor devices.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 reliability The possibility that a device will perform its intended function under specified conditions over a period of time.

3.2 availability When needed, the device is in a state where it can perform its intended functions.

3.3 maintainability The possibility that a device may remain in or be restored to a state in which it can perform its intended functions for a period of time.

3.4 Cluster device clustertool A manufacturing system consisting of mechanically interconnected integrated process modules.

Note. These modules may come from different manufacturers.

3.5 A cluster of devices with only one processing flow.

3.6 multi-path cluster tool Cluster equipment with one or more independent processing steps.

Note. For example, multiple loading ports of the same model, multiple vacuum locks, and multiple process chambers.

3.7 host Intelligent systems that communicate with equipment on behalf of factories and users, and play a supervisory role.