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

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**Semiconductor devices - Time-dependent dielectric breakdown
(TDDB) test for inter-metal layers**

半导体器件 内部金属层间的时间相关介电击穿 (TDDB) 试验

(English Translation)

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Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Test equipment
5 Test sample
5.1 General
5.2 Test Structure
6 Test Procedure
6.1 Overview
6.2 Pre-test
6.3 Test conditions
6.4 Failure criteria
7 Lifetime Estimation
7.1 General Principles
7.2 Acceleration Model
7.3 E model formula
7.4 Lifetime Estimation Step
8 Correlation between lifetime and dielectric area between metal layers
9 Explanation
Appendix A (Informative) Engineering Supplementary Notes on Lifetime Estimation
A.1 Typical value of acceleration factor
A.2 Process of plotting data using Weibull statistics
Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is equivalent to IEC 62374-1:2010 "Semiconductor devices Part 1: Time-dependent dielectric shock between internal metal layers" Wear (TDDB) Test. This

document adds a chapter on "Normative References". The following minimal editorial changes were made to this document.

--- To coordinate with the existing standards, the name of the standard is changed to "Time-dependent dielectric breakdown between metal layers in semiconductor devices" (TDDB) test.

1 Scope

This document describes the test method, test structure and life span of Time Dependent Dielectric Breakdown (TDDB) between metal layers within semiconductor devices. Life time estimation method.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 I_{leak}

When the operating voltage is applied, leakage current flows through the dielectric layer between metal layers.

3.2 I_{leak-0}

Leakage current through the dielectric layer between metal layers before stress voltage is applied.

3.3 Limit current compliance current

The maximum current that a voltage can drive a device.

NOTE: An appropriate value of I_{comp} can be set for a specific test.

3.5 Breakdown time

The sum of stress time from the application of stress voltage to failure of the dielectric between metal layers.

NOTE: In the CVS test, the applied stress voltage is repeatedly interrupted to measure and determine whether breakdown has occurred (see Figure 5).