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

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Semiconductor devices - Constant current electromigration test

半导体器件 恒流电迁移试验

(English Translation)

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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 62415:2010 "Constant current electromigration test for semiconductor devices". This document adds a chapter on "Normative References".

1 Scope

This document describes the general constant current electromigration test method for metal interconnects, connecting via chains and contact hole chains.

2 Normative references

This document has no normative references.

3.1 Notation

The following symbols apply to this document.

3.1.1 Current density in via J_{via_use}

The maximum current density allowed to flow through the through-hole of an actual product.

3.1.2 Current density in metal interconnect J_{line_use}

The maximum current density allowed to flow in the metal interconnect line of an actual product.

3.1.3 Current density in the via during the test J_{via_test}

Current density in a through-hole test structure during electromigration testing.

3.1.4 Current density in metal interconnects during the test J_{line_test}

Current density in a metal interconnect test structure during electromigration testing.

3.1.5 Failure time $t(x\%)$

The failure time with a cumulative failure probability of $x\%$.

Note: For the calculation method of $t(50\%)$, see Chapter 9.

3.2 Terms and definitions

The following terms and definitions apply to this document.

3.2.1 Test structure TEG

Different test structures of metal interconnects, via chains and contact chains for electromigration testing.

3.2.2 Blechlength

The critical length of the interconnect line, below which electromigration failure is less likely to occur.

NOTE: The drift of metal atoms can lead to the accumulation of stress in metal interconnects, which in turn causes the reflow of atoms.