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

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**Micro-electromechanical system (MEMS) technology - Test
method for coefficient of linear thermal expansion of
micro-electromechanical solid-state material**

微机电系统（MEMS）技术 微机电固态材料线性热膨胀系数测试方法
(English Translation)

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Foreword

Drafting.

This document is equivalent to IEC 62047-11:2013 "Semiconductor devices -

Microelectromechanical devices - Part 11: Microelectromechanical systems without external support" Test method for linear thermal expansion coefficient of support material.

The following minimal editorial changes have been made to this document.

---To harmonize with existing national standards, the standard name has been changed to "Micro-Electro-Mechanical Systems (MEMS) Technology. Linear Micro-Electro-Mechanical Solid-State Materials".

"Methods for Testing the Coefficient of Thermal Expansion";

---To ensure consistency in the representation of variables in the formula, the symbols for all variables in formula (2) are added in parentheses in the corresponding text.

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 Microelectromechanical Systems (SAC/TC336).

1 Scope

This document describes solid materials, including metals, ceramics, and polymers, used in microelectromechanical systems, micromachines, and other microfabrication processes.

Methods for measuring the linear coefficient of thermal expansion.

This document applies to dimensions ranging from 0.1mm to 1mm in length, 10 μ m to 1mm in width, and 0.1 μ m to 1mm in thickness, with a temperature range of...

The range is the linear thermal expansion coefficient of a solid material from room temperature to 30% of its melting point.

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.

IEC 62047-3 Semiconductor devices - Microelectromechanical devices - Part 3: Standard test pieces for tensile testing of thin films (ting)

3.1 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

3.2 Symbols

The following symbols are applicable to this document, see Table 1.

Table 1 Symbols and Explanations

Symbol	Unit	Explanation
L0	μm	Initial length of the sample
LT	μm	Sample length at temperature T
T	°C	temperature
t	μm	sample thickness
w	μm	sample width