IEC 62047-21

Edition 1.0 2014-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Semiconductor devices – Micro-electromechanical devices – Part 21: Test method for Poisson's ratio of thin film MEMS materials

Dispositifs à semiconducteurs – Dispositifs microélectromécaniques – Partie 21: Méthode d'essai relative au coefficient de Poisson des matériaux MEMS en couche mince

IEC 62047-21:2014-06(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 21: Test method for Poisson's ratio of thin film MEMS materials

FOREWORD

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International Standard IEC 62047-21 has been prepared by subcommittee 47F: Micro-electromechanical systems, of IEC technical committee 47: Semiconductor devices.

The text of this standard is based on the following documents:

FDIS	Report on voting
47F/185/FDIS	47F/189/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- replaced by a revised edition, or
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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 21: Test method for Poisson's ratio of thin film MEMS materials

1 Scope

This part of IEC 62047 specifies the determination of Poisson's ratio from the test results obtained by the application of uniaxial and biaxial loads to thin-film micro-electromechanical systems (MEMS) materials with lengths and widths less than 10 mm and thicknesses less than 10 μm.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62047-8:2011, *Semiconductor devices – Micro-electromechanical devices – Part 8: Strip bending test method for tensile property measurement of thin films*

ASTM E 132-04:2010, *Standard test method for Poisson's ratio at room temperature*

3 Terms, definitions, symbols and designations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
Poisson's ratio
ν
ratio of transverse strain multiplied by (-1) to the corresponding longitudinal strain resulting from uniformly distributed longitudinal stress below the proportional limit of the material, expressed as $-\varepsilon_t/\varepsilon_l$, where ε_t is transverse strain, and ε_l is longitudinal strain

3.2 Symbols and designations

Symbols and designations of two types of test pieces are presented in Figure 1 and Table 1, respectively.