Semiconductor devices - Micro-electromechanical devices - Part 13: Bend- and shear- type test methods of measuring adhesive strength for MEMS structures

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EESTI STANDARDI EESSÕNA	NATIONAL FOREWORD
See Eesti standard EVS-EN 62047-13:2012 sisaldab Euroopa standardi EN 62047-13:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 62047-13:2012 consists of the English text of the European standard EN 62047-13:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 06.04.2012.	Date of Availability of the European standard is 06.04.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English version

Semiconductor devices - Micro-electromechanical devices - Part 13: Bend- and shear- type test methods of measuring adhesive strength for MEMS structures
(IEC 62047-13:2012)

Dispositifs à semiconducteurs -
Dispositifs microélectromécaniques -
Partie 13: Méthodes d'essais de types courbure et cisaillement de mesure de la résistance d'adhérence pour les structures MEMS
(CEI 62047-13:2012)

Halbleiterbauelemente -
Bauelemente der Mikrosystemtechnik -
Teil 13: Biege- und Scherprüfverfahren zur Messung der Haftfestigkeit bei MEMS-Strukturen
(IEC 62047-13:2012)

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 47F/109/FDIS, future edition 1 of IEC 62047-13, prepared by SC 47F, "Micro-electromechanical systems", of IEC TC 47, "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62047-13:2012.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-01-03
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-04-03

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Endorsement notice

The text of the International Standard IEC 62047-13:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)
Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 62047-2	2006	Semiconductor devices - Micro-electromechanical devices - Part 2: Tensile testing methods of thin film materials	EN 62047-2	2006

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 13: Bend - and shear - type test methods of measuring adhesive strength for MEMS structures

1 Scope

This part of IEC 62047 specifies the adhesive testing method between micro-sized elements and a substrate using the columnar shape of the specimens. This international standard can be applied to adhesive strength measurement of microstructures, prepared on a substrate, with width and thickness of 1 μm to 1 mm, respectively.

Micro-sized elements of MEMS devices are made up of laminated fine pattern films on a substrate, which are fabricated by deposition, plating, and/or coating with photolithography. MEMS devices include a large number of interfaces between dissimilar materials, at which delamination occasionally occurs during fabrication or in operation. Combination of the materials at the junction determines the adhesive strength; moreover, defects and residual stress in the vicinity of the interface, which are changing by processing condition, strongly affect the adhesive strength. This standard specifies the adhesive testing method for micro-sized-elements in order to optimally select materials and processing conditions for MEMS devices.

This standard does not particularly restrict test piece material, test piece size and performance of the measuring device, since the materials and size of MEMS device components range widely and testing machine for micro-sized materials has not been generalized.

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 62047-2:2006, *Semiconductor devices – Micro-electromechanical devices – Part 2: Tensile testing method of thin film materials*

3 Terms and definitions

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

3.1

adhesive bend strength
nominal strength at failure on adhesive joint area by bending mode

3.2

adhesive shear strength
nominal strength at failure on adhesive joint area by shear mode