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Semiconductor devices – Flexible and stretchable semiconductor devices – Part 1: Bending test method for conductive thin films on flexible substrates

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SEMICONDUCTOR DEVICES – FLEXIBLE AND STRETCHABLE SEMICONDUCTOR DEVICES –

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International Standard IEC 62951-1 has been prepared by IEC technical committee 47: Semiconductor devices.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
47/2369/FDIS	47/2384/RVD

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

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

A list of all parts in the IEC 62951 series, published under the general title *Semiconductor devices – Flexible and stretchable semiconductor devices*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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SEMICONDUCTOR DEVICES – FLEXIBLE AND STRETCHABLE SEMICONDUCTOR DEVICES –

Part 1: Bending test method for conductive thin films on flexible substrates

1 Scope

This part of IEC 62951 specifies a bending test method to measure the electromechanical properties or flexibility of conductive thin films deposited or bonded on flexible non-conductive substrates. Conductive thin films on flexible substrates are extensively used in flexible electronic devices and flexible semiconductors. Conductive thin films include any films deposited or bonded onto a non-conductive flexible substrate such as thin metal film, transparent conducting electrode, and thin silicon film. The electrical and mechanical behaviours of thin films on flexible substrates differ from those of freestanding films and substrates due to their interfacial interactions and adhesion between the film and substrate. The object of this standard is to establish simple and repeatable test methods for evaluating the electromechanical properties or flexibility of conductive thin films on flexible substrate. The bending test methods include outer bending test and inner bending test.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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*

IEC 62047-22:2014, *Semiconductor devices – Micro-electromechanical devices – Part 22: Electromechanical tensile test method for conductive thin films on flexible substrates*