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Semiconductor devices - Micro-electromechanical devices - Part 17: Bulge test method for measuring mechanical properties of thin films

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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July 2015

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**Semiconductor devices - Micro-electromechanical devices - Part
17: Bulge test method for measuring mechanical properties of
thin films
(IEC 62047-17:2015)**

Dispositifs à semiconducteurs - Dispositifs
microélectromécaniques - Partie 17: Méthode d'essai de
renflement pour la mesure des propriétés mécaniques des
couches minces
(IEC 62047-17:2015)

Halbleiterbauelemente - Bauelemente der
Mikrosystemtechnik - Teil 17: Wölbungs-Prüfverfahren zur
Bestimmung mechanischer Eigenschaften dünner
Schichten
(IEC 62047-17:2015)

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The text of document 47F/210/FDIS, future edition 1 of IEC 62047-17, prepared by SC 47F "Microelectromechanical systems" of IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62047-17:2015.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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INTERNATIONAL STANDARD

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**Semiconductor devices – Micro-electromechanical devices –
Part 17: Bulge test method for measuring mechanical properties of thin films**

**Dispositifs à semiconducteurs – Dispositifs microélectromécaniques –
Partie 17: Méthode d'essai de renflement pour la mesure des propriétés
mécaniques des couches minces**



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

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**Semiconductor devices – Micro-electromechanical devices –
Part 17: Bulge test method for measuring mechanical properties of thin films**

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Partie 17: Méthode d'essai de renflement pour la mesure des propriétés
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES –
MICRO-ELECTROMECHANICAL DEVICES –****Part 17: Bulge test method for measuring
mechanical properties of thin films**

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

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 17: Bulge test method for measuring mechanical properties of thin films

1 Scope

This part of IEC 62047 specifies the method for performing bulge tests on the free-standing film that is bulged within a window. The specimen is fabricated with micro/nano structural film materials, including metal, ceramic and polymer films, for MEMS, micromachines and others. The thickness of the film is in the range of 0,1 μm to 10 μm , and the width of the rectangular and square membrane window and the diameter of the circular membrane range from 0,5 mm to 4 mm.

The tests are carried out at ambient temperature, by applying a uniformly-distributed pressure to the testing film specimen with bulging window.

Elastic modulus and residual stress for the film materials can be determined with this method.

2 Normative references

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