SLOVENSKI STANDARD
SIST EN 62415:2010

01-september-2010

Polprevodniški elementi - Preskušanje elektromigracije s konstantnim tokom (IEC 62415:2010)

Semiconductor devices - Constant current electromigration test (IEC 62415:2010)

Halbleiterbauelemente - Konstantstrom-Prüfverfahren zur Elektromigration (IEC 62415:2010)

Dispositifs à semiconducteurs - Essai d'électromigration en courant constant (CEI 62415:2010)

Ta slovenski standard je istoveten z: **EN 62415:2010**

ICS:

31.080.01	Polprevodniški elementi (naprave) na splošno	Semiconductor devices in general

SIST EN 62415:2010 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62415

June 2010

ICS 31.080

English version

Semiconductor devices - Constant current electromigration test

(IEC 62415:2010)

Dispositifs à semiconducteurs - Essai d'électromigration en courant constant
(CEI 62415:2010)

Halbleiterbauelemente - Konstantstrom-Prüfverfahren zur Elektromigration
(IEC 62415:2010)

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

The text of document 47/2044/FDIS, future edition 1 of IEC 62415, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62415 on 2010-06-01.

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The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-06-01

Endorsement notice

The text of the International Standard IEC 62415:2010 was approved by CENELEC as a European Standard without any modification.

IEC 62415

Edition 1.0 2010-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Semiconductor devices – Constant current electromigration test

Dispositifs à semiconducteurs – Essai d'électromigration en courant constant

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – CONSTANT CURRENT ELECTROMIGRATION TEST

FOREWORD

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International Standard IEC 62415 has been prepared by IEC technical committee 47: Semiconductor devices.

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

FDIS	Report on voting
47/2044/FDIS	47/2054/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.

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

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

SEMICONDUCTOR DEVICES – CONSTANT CURRENT ELECTROMIGRATION TEST

1 Scope

This standard describes a method for conventional constant current electromigration testing of metal lines, via string and contacts.

2 Symbols, terms and definitions

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

2.1 Symbols

2.1.1
J_{via_use}
the maximum current density permitted to flow in a via of a real product

2.1.2
J_{line_use}
the maximum current density permitted to flow in a line of a real product

2.1.3
J_{via_test}
the current density in a via of a test structure during electromigration test

2.1.4
J_{line_test}
the current density in a line of a test structure during electromigration test

2.1.5
t(x %)
time to failure of *x* % of the population

NOTE The method for calculation of *t* (50 %) is described in Clause 8.

2.2 Terms and definitions

2.2.1
TEG
test element group. This is the test structure used for the test

2.2.2
Blech length
the line length below which electromigration time to failure increases sharply [1][1]

NOTE The drift of metal atoms causes stress build-up in the metal lines, which caused a back flow of atoms.

For short lines the stress gradient is higher than for long lines with the same current density. The forward flow increases more rapidly with current density than the backflow, and consequently the Blech length is inversely proportional to the current density. The Blech length can be determined by using a chain with different line lengths between the vias.

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1 Figures in square brackets refer to the Bibliography.