

STN	Integrované obvody. Meranie odolnosti proti impulzom. Časť 3: Metóda nesynchronného prechodného injektovania.	STN EN 62215-3 35 8722
------------	--	--

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/14

Obsahuje: EN 62215-3:2013, IEC 62215-3:2013

**Integrated circuits -
Measurement of impulse immunity -
Part 3: Non-synchronous transient injection method
(IEC 62215-3:2013)**

Circuits intégrés -
Mesure de l'immunité aux impulsions -
Partie 3: Méthode d'injection de
transitoires non synchrones
(CEI 62215-3:2013)

Integrierte Schaltungen -
Messung der Störfestigkeit
gegen Impulse -
Teil 3: Asynchrones
Transienteneinspeisungs-Verfahren
(IEC 62215-3:2013)

This European Standard was approved by CENELEC on 2013-08-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 47A/881/CDV, future edition 1 of IEC 62215-3, prepared by SC 47A "Integrated circuits" of IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62215-3:2013.

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) 2014-05-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-08-21

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62215-3:2013 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	Series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 61000-4-4	2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5 + corr. October	2005 2009	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006
IEC 62132-4	2006	Integrated circuits - Measurement of electromagnetic immunity, 150 kHz to 1 GHz - Part 4: Direct RF power injection method	EN 62132-4	2006
ISO 7637-2	2011	Road vehicles - Electrical disturbances from - conduction and coupling - Part 2: Electrical transient conduction along supply lines only	-	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Integrated circuits – Measurement of impulse immunity –
Part 3: Non-synchronous transient injection method**

**Circuits intégrés – Mesure de l'immunité aux impulsions –
Partie 3: Méthode d'injection de transitoires non synchrones**





THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2013 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

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

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 62215-3

Edition 1.0 2013-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Integrated circuits – Measurement of impulse immunity –
Part 3: Non-synchronous transient injection method**

**Circuits intégrés – Mesure de l'immunité aux impulsions –
Partie 3: Méthode d'injection de transitoires non synchrones**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 31.200

ISBN 978-2-8322-0994-3

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 General	8
5 Coupling networks	9
5.1 General on coupling networks	9
5.2 Supply injection network.....	9
5.2.1 Direct injection	9
5.2.2 Capacitive coupling	10
5.3 Input injection.....	10
5.4 Output injection	11
5.5 Simultaneous multiple pin injection.....	12
6 IC configuration and evaluation	12
6.1 IC configuration and operating modes	12
6.2 IC monitoring.....	13
6.3 IC performance classes	13
7 Test conditions	14
7.1 General	14
7.2 Ambient electromagnetic environment	14
7.3 Ambient temperature	14
7.4 IC supply voltage.....	14
8 Test equipment.....	14
8.1 General requirements for test equipment.....	14
8.2 Cables.....	14
8.3 Shielding	14
8.4 Transient generator	14
8.5 Power supply.....	14
8.6 Monitoring and stimulation equipment	14
8.7 Control unit	15
9 Test set up	15
9.1 General	15
9.2 EMC test board	15
10 Test procedure	17
10.1 Test plan	17
10.2 Test preparation	17
10.3 Characterization of coupled impulses	17
10.4 Impulse immunity measurement	17
10.5 Interpretation and comparison of results.....	18
10.6 Transient immunity acceptance level.....	18
11 Test report.....	18
Annex A (informative) Test board recommendations	19
Annex B (informative) Selection hints for coupling and decoupling network values.....	24
Annex C (informative) Industrial and consumer applications	26
Annex D (informative) Vehicle applications	29

Figure 1 – Typical pin injection test implementation	9
Figure 2 – Supply pin direct injection test implementation	10
Figure 3 – Supply pin capacitive injection test implementation	10
Figure 4 – Input pin injection test implementation	11
Figure 5 – Output pin injection test implementation	12
Figure 6 – Multiple pin injection test implementation	12
Figure 7 – Test set-up diagram	15
Figure 8 – Example of the routing from the injection port to a pin of the DUT	16
Figure A.1 – Typical EMC test board topology.....	22
Figure A.2 – Example of implementation of multiple injection structures.....	23
Table A.1 – Position of vias over the board	19
Table C.1 – Definition of pin types	26
Table C.2 – Test circuit values.....	27
Table C.3 – Example of IC impulse test level (IEC 61000-4-4)	28
Table D.1 – IC pin type definition	29
Table D.2 – Transient test level 12 V (ISO 7637-2)	30
Table D.3 – Transient test level 24 V (ISO 7637-2)	31
Table D.4 – Example of transient test specification	32

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INTEGRATED CIRCUITS –
MEASUREMENT OF IMPULSE IMMUNITY –**
Part 3: Non-synchronous transient injection method**FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62215-3 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

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

CDV	Report on voting
47A/881/CDV	47A/890/RVC

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.

A list of all parts in the IEC 62215 series, published under the general title *Integrated circuits – Measurement of impulse immunity* 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 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.

INTEGRATED CIRCUITS – MEASUREMENT OF IMPULSE IMMUNITY –

Part 3: Non-synchronous transient injection method

1 Scope

This part of IEC 62215 specifies a method for measuring the immunity of an integrated circuit (IC) to standardized conducted electrical transient disturbances. The disturbances, not necessarily synchronized to the operation of the device under test (DUT), are applied to the IC pins via coupling networks. This method enables understanding and classification of interaction between conducted transient disturbances and performance degradation induced in ICs regardless of transients within or beyond the specified operating voltage range.

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 60050 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at <<http://www.electropedia.org>>)

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2005, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 62132-4:2006, *Integrated circuits – Measurement of electromagnetic immunity 150 kHz to 1 GHz – Part 4: Direct RF power injection method*

ISO 7637-2:2011, *Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN