ICS 31.080.01 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2026

STN	**Polovodičové súčiastky Mechanické a klimatické skúšobné metódy Časť 22-2: Pevnosť spojenia Skúšobné metódy skúšky strihom drôtového spoja**	**STN EN IEC 60749-22-2 35 8799**

Semiconductor devices - Mechanical and climatic test methods - Part 22-2: Bond strength - Wire bond shear test methods

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. 03/26

Obsahuje: EN IEC 60749-22-2:2026, IEC 60749-22-2:2025

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EUROPÄISCHE NORM

EN IEC 60749-22-2

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Supersedes EN 60749-22:2003 (partially)

English Version

Semiconductor devices - Mechanical and climatic test methods - Part 22-2: Bond strength - Wire bond shear test methods (IEC 60749-22-2:2025)

Dispositifs à semiconducteurs - Méthodes d'essais mécaniques et climatiques - Partie 22-2: Robustesse des contacts soudés - Méthodes d'essais de cisaillement des contacts soudés par fil
(IEC 60749-22-2:2025)

Halbleiterbauelemente - Mechanische und klimatische Prüfverfahren - Teil 22: Kontaktfestigkeit - Drahtbond-Scherprüfverfahren
(IEC 60749-22-2:2025)

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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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 60749-22-2:2026 (E)

European foreword

The text of document 47/2959/FDIS, future edition 1 of IEC 60749-22-2, prepared by TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60749-22-2:2026.

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) 2027-01-31
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow) 2029-01-31

This document, together with EN IEC 60749-22-1:2026, supersedes EN 60749-22:2003.

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

This document is read in conjunction with EN IEC 60749-22-1:2026.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60749-22-2:2025 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 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60749-22-1	-	Semiconductor devices - Mechanical and climatic test methods - Part 22-1: Bond strength - Wire bond pull test methods	-	-

IEC 60749-22-2

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INTERNATIONAL STANDARD

Semiconductor devices - Mechanical and climatic test methods - Part 22-2: Bond strength - Wire bond shear test methods

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Semiconductor devices - Mechanical and climatic test methods - Part 22-2: Bond strength - Wire bond shear test methods

FOREWORD

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IEC 60749-22-2 has been prepared by IEC technical committee 47: Semiconductor devices. It is an International Standard.

This International Standard is to be used in conjunction with IEC 60749-22-1:2025.

This first edition, together with the first edition of IEC 60749-22-1, cancels and replaces the first edition IEC 60749-22 published in 2002. It is based on JEDEC document JESD22-B120. It is used with permission of the copyright holder, JEDEC Solid State Technology Association.

This edition includes the following significant technical changes with respect to the previous edition:

a) Major update, including new techniques and use of new materials (e.g. copper wire) involving a complete rewrite as two separate subparts (this document and IEC 60749-22-1).

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

Draft	Report on voting
47/2959/FDIS	47/2981/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60749 series, published under the general title *Semiconductor devices - Mechanical and climatic test methods*, can be found on the IEC website.

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

– reconfirmed,
– withdrawn, or
– revised.

1 Scope

This part of IEC 60749 establishes a means for determining the strength of a ball bond to a die or package bonding surface and can be performed on pre-encapsulation or post-encapsulation devices. This measure of bond strength is extremely important in determining two features:

a) the integrity of the metallurgical bond which has been formed, and

b) the quality of ball bonds to die or package bonding surfaces.

This test method covers thermosonic (ball) bonds made with small diameter wire from 15 µm to 76 µm (0,000 6" to 0,003").

This test method can only be used when the bonds are large enough to allow for proper contact with the shear test chisel and when there are no adjacent interfering structures that would hinder the movement of the chisel. For consistent shear results the ball height will be at least 4,0 µm (0,000 6 ") for ball bonds, which is the current state of the art for bond shear test equipment at the time of this revision.

This test method can also be used on ball bonds that have had their wire removed and on to which a second bond wire (typically a stitch bond) is placed. This is known as "stitch on ball" and "reverse bonding". See Annex A for additional information.

The wire bond shear test is destructive. It is appropriate for use in process development, process control, or quality assurance, or both.

This test method can be used on ultrasonic (wedge) bonds, however its use has not been shown to be a consistent indicator of bond integrity. See Annex B for information on performing shear testing on wedge bonds.

This test method does not include bond strength testing using wire bond pull testing. Wire bond pull testing is described in IEC 60749-22-1.

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 60749-22-1, *Semiconductor devices - Mechanical and climatic test methods - Part 22-1: Bond strength testing - Wire bond pull test methods*