

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Semiconductor devices – Mechanical and climatic test methods –
Part 12: Vibration, variable frequency**

**Dispositifs à semiconducteurs – Méthodes d'essais mécaniques et climatiques –
Partie 12: Vibrations, fréquences variables**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES – MECHANICAL
AND CLIMATIC TEST METHODS –**
Part 12: Vibration, variable frequency**FOREWORD**

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International Standard IEC 60749-12 has been prepared by IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 2002. This edition constitutes a technical revision.

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

- a) alignment with MIL-STD-883J Method 2007, Vibration, variable frequency.

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

CDV	Report on voting
47/2386/CDV	47/2434/RVC

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 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 12: Vibration, variable frequency

1 Scope

This part of IEC 60749 describes a test to determine the effect of variable frequency vibration, within the specified frequency range, on internal structural elements. This is a destructive test. It is normally applicable to cavity-type packages.

NOTE This test method describes a swept sine test. A random vibration test is described in JEDEC document JESD 22-B103.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Test apparatus

The apparatus for this test shall include equipment capable of providing the required variable frequency vibration at the specified level and the necessary optical and electrical equipment for post-test measurements.

5 Test method

The device shall be rigidly fastened on the vibration platform and the leads or cables adequately secured to avoid excessive lead resonance. The device shall be vibrated with simple harmonic motion having either a peak to peak amplitude of 1,5 mm ($\pm 10\%$) or a peak acceleration of the specified test condition A, B, or C in Table 1, below.

Unless required by the relevant specification, the test conditions detailed in Table 1 below shall be applied. Test conditions shall be amplitude controlled below the crossover frequency and acceleration level controlled above. The vibration frequency shall be varied approximately logarithmically between 20 Hz and 2 000 Hz. The entire frequency range of 20 Hz to 2 000 Hz and return to 20 Hz shall be traversed in not less than 4 min. This cycle shall be performed 4 times in each of the orientations X, Y, and Z (total of 12 times), so that the motion shall be applied for a total period of not less than 48 min.

NOTE Alternative test conditions are listed in IEC 60068-2-6 and JEDEC document JESD 22-B103.