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Variable frequency vibration test method

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PUBLICLY AVAILABLE SPECIFICATION



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JEDEC STANDARD

Test Method B103-A Vibration, Variable Frequency

JESD22-B103-A

(Revision of Test Method B103 previously published in JESD22-B)

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VARIABLE FREQUENCY VIBRATION TEST METHOD

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IEC-PAS 62187 was submitted by JEDEC and has been processed by IEC technical committee 47: Semiconductor devices.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
47/1460/PAS	47/1493/RVD

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TEST METHOD B103-A**VIBRATION, VARIABLE FREQUENCY**

(From JEDEC Council Ballot JCB-89-34, formulated under the cognizance of JC-14.1 Committee on Reliability Test Methods for Packaged Devices.)

1. PURPOSE

The variable frequency vibration test is performed to determine the effect of vibration, within the specified frequency range, on the internal structural elements.

This is a destructive test, intended for device qualification. It is normally applicable to cavity-type packages.

2. APPARATUS

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

3. PROCEDURE

The device case shall be rigidly fastened on the vibration platform and the leads adequately secured to avoid excessive lead resonance. The devices shall be vibrated with simple harmonic motion having an amplitude of either 0.060" (1.5 mm) double amplitude (maximum total excursion) or the peak acceleration of 20G, whichever is less. The vibration frequency shall be varied from 20 to 2,000 Hz. The entire frequency range of 20 to 2,000 Hz and return to 20 Hz shall be traversed in not less than 4 minutes. This cycle shall be performed 4 times in each of the orientations X, Y, and Z (total of 12 times).

3.1 Measurements

Hermeticity tests, for hermetic devices, visual examination, and electrical measurements that consist of parametric and functional test, shall be specified in the applicable procurement document.

3.2 Failure Criteria

A device will be defined as a failure if hermetic limits are exceeded for hermetic devices, if parametric limits are exceeded, or if functionality cannot be demonstrated under nominal and worst-case conditions specified in the applicable procurement document.

Mechanical damage such as cracking, chipping, or breaking of the package (10X to 20X magnification) will also be considered a failure, provided such damage was not included by fixturing or handling.

4. SUMMARY

The following details shall be specified in the applicable procurement document:

- (a) Electrical measurements.
- (b) Sample size and quality level.
- (c) Disposition of failures.
- (d) Test conditions, if different from paragraph 3.
- (e) Hermeticity limits for hermetic devices, if other than specified in JEDEC Standard JESD22-A109, Hermeticity.