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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 4937.30-2018

**Semiconductor devices -- Mechanical and climatic test methods
-- Part 30: Preconditioning of non-hermetic surface mount
devices prior to reliability testing**

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Foreword

GB/T 4937 "Mechanical and Climatic Test Methods for Semiconductor Devices" consists of the following components.

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- Part 3. External visual inspection;
- Part 4. Strongly accelerated steady-state damp heat test (HAST);
- Part 5. Steady-state temperature and humidity bias life test;
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- Part 40. Plate-level drop test method using tension meter;
- Part 41. Reliability test methods for non-volatile memory devices;
- Part 42. Storage of temperature and humidity;
- Part 43. Guide to the reliability identification scheme for integrated circuits (ICs);

--- Part 44. Test method for neutron beam irradiation single particle effect of semiconductor devices.

This part is the 30th part of GB/T 4937.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the translation method equivalent to IEC 60749-30.2011 "Semiconductor device mechanical and climatic test methods Part 30.

Pre-treatment of unsealed surface mount devices prior to reliability testing.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

Semiconductors - Mechanical and climatic test methods - Part 4. Strongly accelerated steady-state damp heat test

(IEC 60749-4.2002, IDT).

1 Scope

This part of GB/T 4937 specifies the standard procedures for the pre-treatment of non-sealed surface mount devices (SMDs) prior to reliability testing.

This section specifies the pre-processing of SMDs.

SMDs are required to perform appropriate procedures in accordance with the procedures specified in this section before performing the specified indoor reliability test (identification/reliability monitoring).

Pretreatment to evaluate the long-term reliability of the device (affected by weld stress).

Note. GB/T 4937.20 and the moisture-induced stress sensitivity conditions [or moisture sensitivity level (MSL)] in this section and the actual reflow conditions

The relationship between them depends on the temperature measurement of the semiconductor device manufacturer. Therefore, it is recommended to monitor the moisture sensitivity of the highest temperature in real time during the assembly process.

The temperature of the top surface of the SMD package ensures that its temperature does not exceed the component evaluation temperature.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 4937.20-2018 Methods of mechanical and climatic testing of semiconductor devices - Part 20

Combined effects of wet and welding heat (IEC 60749-20.2008, IDT)

Semiconductors - Mechanical and climatic test methods - Part 4. Strong accelerated steady-state damp heat test (HAST)

[Semiconductor devices-Mechanical and climatic test methods-Part 4.Damp heat, steady state, Highly accelerated stress test(HAST)]

Methods of mechanical and climatic test methods for semiconductor devices - Part 5. Steady temperature and humidity bias life test (Semi-

conductor devices-Mechanical and climatic test methods-Part 5.Steady-state temperature humidity

Bias life test)

Methods of mechanical and climatic test methods for semiconductor devices - Part 11. s.

conductor devices-Mechanical and climatic test methods-Part 11.Rapid change of temperature-Two-fluid-bath method)

Methods of mechanical and climatic test methods for semiconductor devices - Part 24. Accelerated

Test (Semiconductor devices-Mechanical and climatic test methods-Part 24.Accelerated methister re-

sistance-Unbiased HAST)

Semiconductors - Mechanical and climatic test methods - Part 25. Temperature cycling (Semiconductor

devices-Mechanical and climatic test methods-Part 25.Temperature cycling)

IEC 60749-33. Mechanical and climatic test methods for semiconductor devices - Part 33

(Semiconductor devices-Mechanical and climatic test methods-Part 33.Accelerated moisture resist-

ance-Unbiased autoclave)

3 General

The welding heat test will increase the pressure of moisture in the SMDs (the SMDs are absorbed during storage), which will cause the SMDs plastic package to break.