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

GB/T 37977.32-2019

**Electrostatics -- Part 3-2: Methods for simulation of electrostatic
effects -- Machine model (MM) electrostatic discharge test
waveform**

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Table of Contents

Foreword

1 Scope

2 Terms and definitions

3 equipment

3.1 MMESD Current Waveform Generator

3.2 Waveform verification equipment

Foreword

GB/T 37977 "Electrostatics" is expected to release the following parts.

---Part 2-3. Test methods for resistance and resistivity of antistatic solid planar materials;

--- Part 3-1. Simulation method of electrostatic effect Electromagnetic discharge test waveform of human body model (HBM);

---Part 3-2. Simulation method of electrostatic effect Electrostatic discharge test waveform of machine model (MM);

--- Part 5-1. General requirements for electrostatic protection of electronic devices.

This part is part 3-2 of GB/T 37977.

This section uses the translation method equivalent to IEC 61340-3-2:2006 "Electrostatics Part 3-2. Electrostatic effect simulation method machine

Electrostatic discharge test waveform of the model (MM).

This section has made the following editorial changes.

--- In order to distinguish the two test loads in Figure 1, a dashed box is added to "7" and "8";

--- Corrected the incomplete description in Table 1, adding "+/-" in the "Charging Voltage" column;

--- For ease of understanding and application of this section, Table 1 adds the note "500ohm resistive load is only suitable for discharge of +/-400V charging voltage

Current waveform verification."

1 Scope

This part of GB/T 37977 specifies the electrostatic discharge (ESD) current waveform used to simulate the machine model (MM) and is used to generate sum

The basic requirements for devices that verify these waveforms.

This section applies to ESD sensitivity tests used in general test methods, as well as in materials, electronic components, components or products.

Or the MMESD current waveform used in the performance evaluation test. The specificity of these MMESD current waveforms in a non-powered semiconductor device

The application is specified by IEC 60749-27.

2 Terms and definitions

The following terms and definitions apply to this document.

2.1

Test sample unitunder test; UUT

Materials, electronic components, components or products that are subjected to the MMESD test.

2.2

Test sample failure failure of unit under test

The UUT has one or more parameters that fail after the MMESD test.

2.3

ESD withstand voltage electrostatic discharge withstand voltage

Does not cause the parameter to be out of tolerance, the maximum ESD voltage that can be applied, below which all UUTs can pass.

3.1 MMESD Current Waveform Generator

A device that generates a simulated MMESD current waveform. The equivalent circuit and test load of the waveform generator are shown in Figure 1.

3.2 Waveform verification equipment

The equipment shall include at least a waveform recording system, a high voltage resistor and a current sensor capable of verifying the MMESD current specified in this section.

Waveform.

3.2.1 Waveform Recording System

The single-bandwidth of the waveform recording system should be no less than 350MHz.

3.2.2 Test load

Verify that the waveform generator functions with the following two test loads.

- a) Load 1. short wiring;

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