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

GB/T 44292-2024

**Electrostatic discharge susceptibility test for bypass diode
applied in photovoltaic modules**

光伏组件用旁路二极管静电放电敏感度测试

(English Translation)

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Table of Contents

Preface
1 Scope
2 Normative references
3 Terms, definitions and abbreviations
4 Overview
5 Samples
6 Test Equipment
7 Test methods
7.1 Preparation before testing
7.2 Surge Test
8 Data Analysis
8.1 Analysis of Failure Voltage Using Two-Parameter Weibull Distribution
8.2 Recommended cumulative distribution median rank estimation method
8.3 Recommended least squares linear regression data analysis table
9 Report
Appendix A (Informative) Instructions for use
Appendix B (Informative) Application Examples

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document is equivalent to IEC TS 62916:2017 "Photovoltaic module bypass diode electrostatic discharge sensitivity test". File type the technical specifications of IEC are adjusted to become our country's national standards.

The following minimal editorial changes were made to this document.

To coordinate with the existing standards, the name of the standard is changed to "Electrostatic Discharge Sensitivity Test for Bypass Diodes for Photovoltaic Modules". -

1 Scope

This document describes a test method and data analysis method for the electrostatic discharge sensitivity characteristics of discrete component bypass diodes.

The method is to conduct a gradually increasing electrostatic discharge stress test on the bypass diode, and use the two-parameter Weibull distribution function method to analyze the data and deduce the probability of failure occurring.

The purpose of this paper is to establish a general and reproducible experimental method to determine the diode surge voltage tolerance with respect to photovoltaic module manufacturing.

This is consistent with electrostatic discharge phenomena during (production), packaging, transportation or installation.

It is not the purpose of this document to address the causes of ESD in bypass diodes and to establish their pass or fail ratings.

The level of electrostatic discharge exposure in a specific use environment is the responsibility of the user. The data generated during this test process supports the qualification of new designs, original Quality control of incoming materials and/or to help determine if additional ESD controls are required during the manufacturing process.

This document is not applicable to large energy surge events such as direct or indirect lightning strikes, switching of grid capacitor banks, etc.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies.

in this document.

GB/T 17626.2-2018 Electromagnetic compatibility test and measurement technology
Electrostatic discharge immunity test (IEC 61000-4-2:2008, IDT) IEC TS 61836 Solar photovoltaic energy systems-Terms, definitions and symbols)

3 Terms, definitions and abbreviations

For the purposes of this document, the terms and definitions defined in IEC TS 61836 and listed below apply.

Device under test; DUT the device sample used in the test is referred to as the specimen.

Contact discharge method A test method in which the electrodes of the test generator are maintained in contact with the test equipment and the discharge is controlled by the discharge components within the generator.

Note: In this document, contact refers to contact with electrical leads without electrical insulation material.

Diode check function Use a multimeter with a diode function test to determine if the diode is normal, shorted, or open.

Direct application

Apply the test surge directly to the specimen.

Note: In this document, the surge is applied directly to the bypass diode of the PV module, not to simulate its actual application in the actual PV module (e.g. the sample is in the junction box the test is conducted outside the company and has no connection with PV panels).