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IEEE Standard for Test Methods and Preferred Values for Silicon PN-Junction Clamping Diodes

STANDARDS

IEEE Power and Energy Society

Developed by the
Surge Protective Devices Committee

IEEE Std C62.59™-2019

IEEE

IEEE Standard for Test Methods and Preferred Values for Silicon PN-Junction Clamping Diodes

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Surge Protective Devices Committee
of the
IEEE Power and Energy Society

Approved 5 September 2019

IEEE-SA Standards Board

Abstract: The basic electrical parameters to be met by silicon PN junction voltage clamping components used for the protection of telecommunications equipment or lines from surges are defined in this standard. It is intended that this standard be used for the harmonization of existing or future specifications issued by PN diode surge protective component manufacturers, telecommunication equipment manufacturers, administrations, or network operators.

Keywords: avalanche breakdown, electrical characteristics, electrical ratings, foldback, forward conduction, IEEE C62.59™, overvoltage protection, punch-through, surge protective component (SPC), test methods, Zener breakdown

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Introduction

This introduction is not part of IEEE Std C62.59–2019, IEEE Standard for Test Methods and Preferred Values for Silicon PN-Junction Clamping Diodes.

IEEE Std C62.35™-2010 covered only voltage clamping components using avalanche breakdown PN-junctions. This standard covers all the voltage clamping technology types: Zener, avalanche, foldback, and punch-through, implemented by using PN-junctions. The content is structured to harmonize with the document structure of recent IEC diode standards, IEC 60747-2:2016 and IEC 69747-3:2013. The companion guide standard to this test standard is IEEE Std C62.42.3™-2017.

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IEEE Standard for Test Methods and Preferred Values for Silicon PN-Junction Clamping Diodes

1. Overview

1.1 Scope

This standard sets terms, test methods, test circuits, measurement procedures and preferred result values for diodes with one or more silicon PN-junctions used for surge voltage clamping in low-voltage systems.

The technology types covered are:

— Forward biased diodes

— Zener breakdown diodes

— Avalanche breakdown diodes

— Punch-through diodes

— Foldback diodes

This standard does not cover thyristor surge protective components; see IEEE Std C62.37 [B18].[1]

1.2 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (shall equals is required to).[2,3]

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (should equals is recommended that).

The word *may* is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).

[1]The numbers in brackets correspond to those of the bibliography in Annex A.
[2]The use of the word *must* is deprecated and cannot be used when stating mandatory requirements, *must* is used only to describe unavoidable situations.
[3]The use of *will* is deprecated and cannot be used when stating mandatory requirements, *will* is only used in statements of fact.