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BSI Standards Publication

Application of ISO 26262:2011-2012 to semiconductors

Part 1: Application of concepts

bsi.

National foreword

This Published Document is the UK implementation of ISO/PAS 19451-1:2016.

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Contents

Page

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

ISO/PAS 19451 consists of the following parts, under the general title *Application of ISO 26262:2011-2012 to semiconductors*:

— *Part 1: Application of concepts*

— *Part 2: Application of hardware qualification*

Introduction

This document is an informative guideline which provides users of the ISO 26262 series of standards recommendations and best practices which can be utilized when applying ISO 26262 to semiconductor components and parts. This document was created by a group of industry experts including semiconductor developers, system developers, and vehicle manufacturers in order to clarify concerns seen after the initial release of the ISO 26262 series of standards and when possible to align on common interpretations of the standard.

This document serves to augment the existing normative and informative guidance in the ISO 26262 series of standards. The approach is similar to that taken in writing ISO 26262-10:2012, Annex A, "ISO 26262 and microcontrollers," with extension to additional types of semiconductor technologies and relevant topics.

Application of ISO 26262:2011-2012 to semiconductors —

Part 1:
Application of concepts

1 Scope

This document is applicable to developers who are evaluating the use of semiconductor components or parts in hardware components, systems, or items developed according to ISO 26262.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 26262-1, *Road vehicles — Functional safety — Part 1: Vocabulary*

ISO 26262-2:2011, *Road vehicles — Functional safety — Part 2: Management of functional safety*

ISO 26262-9:2011, *Road vehicles — Functional safety — Part 9: Automotive Safety Integrity Level (ASIL)-oriented and safety-oriented analyses*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 26262-1 and the following apply.

3.1
base failure rate
BFR
failure rate of a hardware element in a given application use case used as an input to functional safety analysis according to ISO 26262-5:2011, 8.4.3

3.2
guest machine
virtual instance of a *processing element* (3.7)

3.3
host machine
processing element (3.7) which implements a *hypervisor* (3.4) and one or more *guest machines* (3.2)

3.4
hypervisor
software or hardware that instantiates and manages one or more virtual design elements

Note 1 to entry: A hypervisor is sometimes referred to as a virtual machine monitor.

3.5
microkernel
μ-kernel
software which provides the minimal mechanisms needed to implement an operating system