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GB/Z 46809.2-2026

Semiconductor devices - Part 19-2: Smart sensors - Indication of specifications of smart sensors and power supplies for low power operation

半导体器件 第19-2部分：智能传感器 低功耗运行的智能传感器及电源的规格说明

(English Translation)

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Foreword

Foreword

This document is a normative and guiding technical document.

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 2 of GB/T (Z) 46809 "Semiconductor Devices - Part 19: Intelligent Sensors".

The following sections have been released.

--Part 19-1.Control Schemes for Smart Sensors;

--Part 19-2.Specifications for smart sensors and power supplies for low-power operation.

This document is equivalent to IEC TS 60747-19-2:2021 "Semiconductor devices - Part 19-2.Intelligent sensors driving intelligent transmission".

The document "Sensor and Power Supply Specification Requirements for Low-Power Operation of Sensors" has been changed from an IEC technical specification to a national standardization specification in my country.

Guiding technical documents.

The following minimal editorial changes have been made to this document.

Specifications;

--Added figure and table numbers in Appendix A.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Semiconductor Device Standardization Technical Committee (SAC/TC 78).

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Introduction

The intelligent sensing unit consists of three components. an intelligent sensor, a terminal module, and a power supply. However, the control scheme connecting these components is different.

Standardization of specifications and requirements for each component has not yet been fully established. This issue has led to inconsistencies in the specifications and requirements of various components within current intelligent sensing units.

--Part 19-1.Control Schemes for Smart Sensors. The purpose is to specify control schemes for smart sensors.

--Part 19-2.Specifications for Low-Power Operation of Smart Sensors and Power Supplies. The aim is to provide low-power...

This provides guidelines for the design of power-efficient intelligent sensing units, including intelligent sensors, terminal modules, and power supplies.

Semiconductor Devices Part 19-2.Smart Sensors Low-power smart sensors and power supplies Specifications

1 Scope

This document provides specifications for intelligent sensor devices or modules that use autonomous power supplies, including intelligent sensors, terminal modules, and...

The power supply constitutes a low-power intelligent sensing unit capable of transmitting the output data of the intelligent sensor to the outside. This document also provides intelligent...

The sensor's power supply specifications guide. Based on these factors, from the perspective of the newly designed low-power intelligent sensing unit, its three...

The components can be easily selected and combined.

This document applies to the design of low-power smart sensing units (including smart sensors, terminal modules, and power supplies).

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

The URLs for the terminology databases maintained by ISO and IEC for standardization

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are as follows.

An independent power source that uses batteries and/or energy harvesters to extract energy from environmental energy sources such as light, vibration, heat, or bioenergy.

4.1 Datasheet Description of Current Consumption-Time Characteristics

Understanding the power consumption characteristics of smart sensors is crucial for designing low-power smart sensors that utilize their own power sources. Therefore, it is advisable to...

The manual describes its current consumption-time characteristics and related operating conditions.

The datasheet describes an example as shown in Figure 1, which illustrates the current consumption during startup and continuous periodic (intermittent) monitoring operations.

The inter-current characteristics should be described. Figure 1 illustrates the following seven parameters. the current consumption period (tst) during startup, the peak current during startup, etc.

Current consumption (Istpeak), peak current consumption during monitoring operation (Ioppeak), average current consumption during monitoring operation (Iopave), standby Current consumption value (Istandby), current consumption cycle during monitoring operation (top), and monitoring operation cycle time (tcyc).

In addition, the current consumption-time characteristics should be quantified under at least the following two operating conditions.

a) Typical conditions. The applied power supply voltage is the typical voltage, and the operating temperature is room temperature.

b) Extreme conditions. The applied power supply voltage is the maximum voltage within the power supply voltage range, and the operating temperature is within the operating temperature range.

Maximum temperature. Under "extreme" conditions, the smart sensor exhibits the highest temperature within the recommended power supply voltage range and operating temperature range.

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