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I²C Slave器件内部结构设计及VLSI实现

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摘要 I2C总线由于接口简单、协议完善，已经被广泛地应用在消费类电子产品、通信产品和工业电子产品中，成为国际标准。本文提出一种基于两级桥接口的I2C SLAVE器件的内部结构，该结构一方面能够根据系统的需求灵活地集成和裁减各种功能的IP核模块，对于多功能的I2C SLAVE器件的设计有一定的通用性；另一方面它支持各IP核模块工作于自己独立的时钟域，给多时钟域系统设计带来便利。本文以一款密码芯片为实例，对该结构进行了验证和实现，该芯片采用了华虹NEC 0.35μm CMOS工艺。

关键词 I2C总线,两级桥接电路,IP复用,多功能芯片设计

分类号

Design of I2C Slave Device Structure and Its VLSI Implementation

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Abstract

For its simple interface and integral protocol, I2C has become an international standard, which is widely used in consumer electronics, communication products and industrial products. This paper proposed a new structure of Slave device for I2C interface which is based on a two level bridge circuit. First,the structure has a flexibility to add or reduce IP core for different functions. So it can be widely used in the design of multi-function slave device for I2C interface.Second,the structure features that each IP core within the structure can work at its own clock frequency,and this is convenient to design of multi-clock domain system. The proposed structure has been demonstrated in a cipher IC, which is based on HHNEC 0.35μm CMOS technology.

Key words I2C Bus Two level Bridge Circuit IP Reuse Multi-functional Chip Design

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