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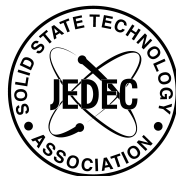
I/O Drivers and Receivers with Configurable Communication Voltage, Impedance, and Receiver Threshold

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I/O DRIVERS AND RECEIVERS WITH CONFIGURABLE COMMUNICATION VOLTAGE, IMPEDANCE, AND RECEIVER THRESHOLD

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Foreword

This standard attempts to aid the design of electronic Systems comprised of components that operate at several different supply voltages. This standard is developed around the following principles:

If two or more chips of different voltages are in communication, the communication voltage should be equal to the lowest supply voltage. Thus drivers and receivers should be configurable in their communication voltage.

The reference or switch point of the receiver should track with the communication voltage. The reference may be either externally or internally supplied. Thus receiver mode should be configurable.

The impedance of the driving circuits should be matched to the load, independent of the communication voltage. Thus the driving circuit impedance should be configurable.

Introduction

This standard is the compilation of 4 separate JEDEC documents covering respectively configurable I/O voltage, receiver type and switchpoint, and driver impedance.

The intent of sections 1 and 2 is to guide designs of interface driver and receiver circuits to allow communication between chips of different supply voltages VDD. Although the communication voltage VDDQ may exceed the supply voltage, this standard is intended to guide designs of interface circuits that operate with VDDQ at or less than VDD. The use of circuits which operate at more than one well defined interface voltage will allow communication between chips of different supply voltages with a minimum effect on I/O delay, speed, reliability, or chip area. These sections cover power supply voltages VDD from 3.3 V to 1.8 V and 1.5 V to 0.8 V.

The intent of section 3 is to guide designs of interface receiver circuits to allow operation with more than one method of defining the receiver switch point or reference voltage. As circuit speeds increase and circuit operating voltages decrease, different circuit techniques may be employed. Broadly described, the techniques can be separated into two types: those circuits that use an external voltage reference to define a switch point, and those circuits that use an internal reference, contained wholly within the chip, to define a receiver switch point. This section covers both types of receivers and describes how to switch from one type to the other. It is expected that the switch from externally referenced receivers to internally referenced receivers will in general result in some loss of common mode noise rejection.