USB GENERIC CORE





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Overview

VinChip's USB device core is compliant with revision 1.1. of the USB Specification. The core consists of a fixed piece of logic consisting of a serial interface engine and control endpoint. To this fixed logic various endpoints can be easily added. This document describes the internal organization of VinChip's USB device core.

Key Features

- USB 1.1 compliant.
- Silicon proven core.
- Technology independent.
- VHDL/Verilog source code available.
- Configurable number of endpoints.
- Support for full speed and low speed devices.

- Support for all USB Standard device requests.
- Support for class specific commands.
- Digital phase lock loop recovery scheme.
- Evaluation board for Keyboard, Mouse, etc., available
- Comprehensive test bench available.

Customizing Options

The core is customizable for different applications. The various points of customization are described below:

Wiring of Endpoints

The device can be tuned with respect to the following parameters.

- Number of configurations and interfaces.
- Number of endpoints.
- Type of each endpoint.
- Maximum packet size of each endpoint
- FIFO-size and FIFO usage pattern.
- Direction of data transfer for each endpoint

Based on the above requirements endpoints have to be attached to the fixed logic in the core. The fixed logic consists of the serial interface engine and the control endpoint. Generic device cores are provided in three flavors:

- Bulk Interrupt core (with isochronous option)
- Control endpoint core.
- Isochronous endpoint core.

The bulk or interrupt endpoint core can also be used as an isochronous endpoint core by setting an ISO Pin.

A separate isochronous endpoint is provided with a ping-pong buffer and most designers would prefer using this ping-pong arrangement for isochronous transfers.

The wiring of the customized endpoints to the fixed core logic is simplified by the tool provided with the core.

CONTROL ROM DATA

The control ROM in the control endpoint consists of device details such as number of endpoints, power requirements, etc., This needs to be programmed into the control ROM. The Control ROM script tool is provided as part of the core release to accomplish this task.

Products & Services

VinChip's suite of soft cores for SoCs includes USB. PCI, Bluetooth and Infiniband controllers. These soft cores come with comprehensive documentation, verifica-tion environment. test suite. Drivers and tech support. Please contact us at info@vinchip.com for more information on our products and services.

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