

CAST

USBHS-DEV-SS

USB Hi-Speed Device Software Stack

The USBHS-DEV Software Stack is a USB 2.0 compliant software layer dedicated to support applications built upon a variety of different microprocessors. It provides a device Application Programming Interface (API), which allows users to develop their own software without detailed knowledge of the USB hardware.

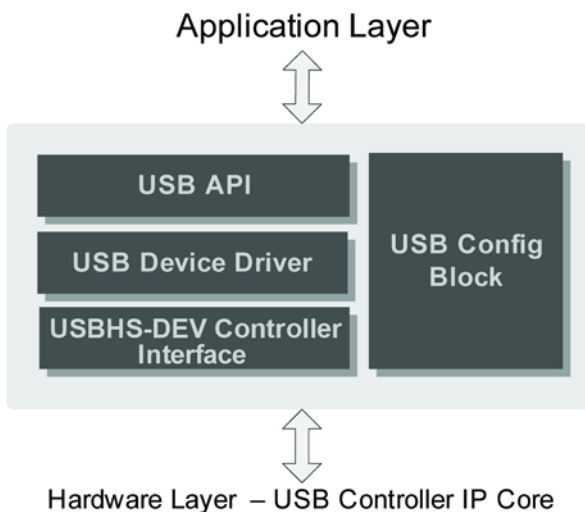
The rich set of optional applications reduces the learning curve and enables writing robust embedded software for the CAST USB Hi-Speed IP core. The configuration file allows the selection of the debug or non-debug, disabling and enabling of some features, and other USB resources.

The USBHS-DEV-SS is an ideal choice for using USB in an embedded device as it is optimized for small footprint and portability.

Benefits

- Minimal memory footprint (simple applications requires 14 Kbytes)
- Does not require detailed knowledge of USB hardware
- High configurability
- Layer-structured architecture

Block Diagram



Features

- Complies with USB 2.0 specification
- Complies with USB Command Verifier tests
- Support for devices with many configurations and interfaces
- Highly portable embedded architecture
- Scalable (allows choosing of the required features)
- Complete support for the Evatronix USB 2.0 Hi-Speed device controller:
 - High and Full and speed data rates
 - Control, bulk, interrupt and isochronous transfers
 - Power saving modes
- Written in ANSI-C
- CPU independent
- OS independent
- Linux-like API to USB Driver Module

Applications

- Interrupt transfer
 - Game pad
 - Mouse
 - Joystick
 - Keyboard
 - Volume control
 - Vendor interrupt specific device: communication with PC through custom PC USB driver
- Isochronous transfer
 - Video device - camera
 - Speaker and microphone
- Bulk transfer
 - Mass storage for HDD (complies with USB Command Verifier tests)
 - Mass storage for Compact Flash
 - Vendor bulk specific device: communication with PC through custom PC USB driver

Functional Description

The USBHS-OTG-MPD Software Stack is partitioned into modules as shown on the block diagram and described below.

CUSB2 Controller Interface

This module translates requests coming from higher stack layers to a given USB core. It operates directly on the USB controller registers. The interface creates a link between hardware and USB protocol stack.

USB Device Driver

This software part contains a module that supports enumeration process, which is responsible for handling standard requests. In case a specific request emerges, it is forwarded to the user's application layer.

USB API

The Device API is a set of functions used directly by a device application layer. It is responsible mainly for device software stack initialization and data management.

USB Config Block

This module contains the user defined information as for what USB functions should be supported by the USBHS-DEV Software Stack.

Deliverables

- Software Stack C source code
- User documentation
- Example HID application

Related Products

CUSB2 – USB 2.0 Hi-Speed function controller that implements a built-in FIFO-like data port to speed up USB data transfers. The controller supports UTMI and ULPI interfaces for USB PHY, while a generic, AMBA™ or PSCI interfaces are available for the CPU.

Available Class Drivers

- Device mode:
 - USB Audio Class – Microphone Device
 - USB Audio Class –Speaker Device
 - USB CDC ACM Subclass Device
 - USB Mass Storage Class Device
 - USB RNDIS Class Device
 - USB Video Class Device
 - USB Video Extension Unit Device
- Host mode:
 - USB HID Class Host
 - USB Mass Storage Class Host

Support

The software stack as delivered is warranted against defects for ninety days from purchase. Thirty days of phone and email technical support are included, starting with the first interaction. Additional maintenance and support options are available.