TUSB2136TPS2149PDK : Getting Started   SLLL007

This document lists the documents and software intended for use with the keyboard product development kit (TUSB2136TPS2149PDK.) The TUSB2136TPS2149PDK may be used to evaluate the TUSB2136 universal serial bus micro-controller and TPS2149 USB power controller from Texas Instruments.

What comes with the kit ?

1. *Hardware-* Evaluation Module for the TUSB2136 / TPS2149 (the printed circuit board in this kit.) The evaluation module is a printed circuit board with a resident TUSB2136, TPS2149, and a separate mini keyboard input pad. The TUSB2136 can be tested with the keypad via connection to a USB-enabled host.
2. *Software/Firmware* – located at http://www.ti.com/sc/usb-kbdkit
    a. Driver: An object code version of the device driver to load binary 8052 code to TI micro-controller based USB devices. Currently this device driver supports Windows 98, Windows ME, Windows 2000, and Windows XP.
    b. Firmware: Object code that is suitable for a keyboard is preloaded on the EEPROM. Source code for firmware is available with a software licensing agreement. The agreement can be made online at the kit web page.
3. *Literature* – located at the following URL: http://www.ti.com/sc/usb-kbdkit
    a. The TUSB2136 Keyboard Evaluation Board User's Guide (SCAU003): This manual includes hardware overview and requirements, schematic, board layout and description of jumpers and switches.
    b. The TUSB2136 Data Manual (SLLS466) : This document is a product data sheet
    c. The TPS2149 Data Manual (SLVS401) : This document is a product data sheet
    d. The TUSB2136/3210 Debugging Guide (SLLU027): This document is a general instruction guide on how to debug your firmware on the TUSB2136.
    e. TUSB2136/3210/5052/5152 USB Firmware Architecture (SLLU020): This document discusses the firmware architecture of the TUSB2136.

4. *Not included:*
    a. Utilities for monitoring USB traffic – any generic utility will work with our device.
    b. Compiler - The TUSB2136 is based upon the industry-standard 8052 microcontroller. Since the 8052 is not proprietary, there are several compilers on the market that would be suitable. Some examples are at iar.com, keil.com, and tasking.com
    c. USB cable.

Listed below is a comprehensive list of related kit documents with an identifying literature number, software, and the URL from which they can be downloaded. As an alternative, one can always go to www.ti.com and perform a search on 'TUSB2136' or 'TPS2149' to find all items associated with this product, including free product samples.

TUSB2136 Data Manual   *SLLS466*

This data manual describes TUSB2136 chip features, functions, and includes a functional block diagram, pin assignments, and ordering information. It also contains a detailed functional description, electrical specifications, and includes some application examples. Available at http://www.ti.com/sc/usb-kbdkit for download.

TPS2149 Data Manual   *SLVS401*

This data manual describes TPS2149 chip features, functions, and includes pin assignments and ordering information. It also contains a detailed functional description, electrical specifications, and includes some application examples. Available at www.ti.com/sc/usb-kbdkit for download.

TUSB2136 Generic Evaluation Board User's Guide   *SCAU0003*

This user's guide describes the setup and operation of the TUSB2136 keyboard evaluation board (TUSB2136TPS2149EVM.) It contains EVM schematics and top side silkscreen for convenient reference. Available at www.ti.com/sc/usb-kbdkit for download.

Firmware Programming User's Guide   *SLLU020*

This programming user's guide describes 8052 embedded microcontroller features, USB transfer function, and application firmware programming examples. Available at www.ti.com/sc/usb-kbdkit for download.

TUSB2136/TUSB3210 Firmware Debugging Guide   *SLLU027*

This debugging user's guide describes how to use the TUSB2136 serial interface to debug firmware. It contains sample "C" code and header files. Available at www.ti.com/sc/usb-kbdkit for download.

Boot Code Document for USB to General Purpose Device Controller   *SLLU025*

This user's guide describes the TUSB2136 Bootcode process. It contains an introduction, information on USB firmware flow and function, Bootcode defaults, header format, vendor USB request, programming considerations, and Bootcode file lists. Available at www.ti.com/sc/usb-kbdkit for download.

Software

BootLoader Driver

This is a Windows device driver used to download firmware to the TUSB2136 through the Universal Serial Bus. It can be used not only in the firmware development stage, but also to minimize costs in providing future firmware upgrades. Available at www.ti.com/sc/usb-kbdkit for download.

I^2C EEPROM Header Generator Utility

This is a utility that facilitates the adding of a header to the object-code for the I^2C EEPROM. When firmware source code is compiled to produce a binary file, the binary file can't be downloaded directly to the I^2C EEPROM. The object code needs a header, then the Bootcode of the TUSB2136 can understand what kind of firmware is in the I^2C EEPROM after power-on reset occurs. Available at www.ti.com/sc/usb-kbdkit for download.

Firmware Binary File

The keyboard firmware binary file (object code) comes preloaded on the EEPROM.

Keyboard Firmware Source Code   *License Agreement Required*

Object code that is suitable for a keyboard is preloaded on the EEPROM of the TUSB2136TPS2149PDK. The keyboard source code for TUSB2136 is a full working keyboard program, but is also a good reference for custom HIDs. Source code for firmware is available free of charge, but requires a license agreement. The agreement can be made online at the following URL: http://www.ti.com/sc/usb-kbdkit
The download includes a document that describes how the USB keyboard firmware works and provides firmware comments to ease understanding of what the firmware is doing. In addition, its USB subroutines can also be used on other USB devices.

Technical Questions

Contact the product information center (PIC) at (972) 644-5580,   8am-6pm central time.

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