USB EVALUATION KITS AND REFERENCE TOOLS

A quick start to developing your USB-enabled products
TRANSCIEVERS

USB TRANSCEIVERS ISP110X, ISP111X
ISP110x, ISP111x transceiver evaluation kit
(HBCC, TSSOP version)
Demonstrates transceiver functionality using 16-pin HBCC or TSSOP format.

Contents
- Evaluation board with ISP110x transceiver (HBCC or TSSOP package)
- User manual, application notes, schematics

ISP110x, ISP111x transceiver evaluation kit
(HVQFN version)
Demonstrates transceiver functionality using HVQFN package. Supports 14- and 16-pin formats.

Contents
- Evaluation board with ISP110x transceiver (HVQFN package)
- User manual, application notes, schematics

USB TRANSCEIVER WITH UART BYPASS ISP1110
ISP1110 transceiver evaluation kit
Demonstrates USB transceiver functions with UART signaling mode.

Contents
- Evaluation board with ISP1110 transceiver (HBCC16 package)
- User manual

USB OTG CARKIT TRANSCIEVER ISP1302
WITH 50-MA CHARGE PUMP
ISP1302 evaluation kit
Demonstrates USB OTG transceiver functions. Includes I²C-bus interface for configuring ISP1302 operating modes, accessing OTG status, and adjusting control registers. Also includes analog audio interface.

Contents
- Evaluation board with ISP1302 (HVQFN24 package)
- Test software
- User manual

ULPI TRANSCEIVERS ISP150X, ISP151X, ISP170X, ISP171X
ISP150x/151x/170x/171x evaluation kit
Demonstrates ISP150x/ISP151x/ISP170x/ISP171x performance. Connects to USB cores via connector compliant with the ULPI Transceiver and Macrocell Tester (T&MT) interface.

Contents
- ISP150x/ISP151x/ISP170x/ISP171xx evaluation board
- User manual, schematics
- Application note
HOST CONTROLLERS

USB HOST CONTROLLER ISP1160 FOR EMBEDDED APPLICATIONS

ISP1160 PCI/DOS evaluation kit
For printer and speaker applications; connects directly to PCI slot of PC. Uses DOS-based software stacks for easy porting. MP100 software: monitors port, demonstrates USB enumeration, performs test bulk transfer, displays contents of ATL buffer, can erase contents of host controller buffer memory. Kenobi2 software: accepts print image and WAV files, and supplies controls for PrinterFile, Bulk, AudioFile, and ISO.

Contents
- ISP1160 evaluation board with PCI interface
- DOS-based MP100 software for USB host and USB mouse functions
- DOS-based Kenobi2 software for USB audio and printer functions
- Programming guide, user manual, schematics

ISP1160 PXA25x/WinCE evaluation kit
Add-on kit for PXA250 and PXA255 development platforms. Uses device class drivers from WinCE and ISP1160 host stack (included with kit) to demonstrate host functions at full- and low-speed data transfer rates. Add-on card has two host ports.

Contents
- ISP1160 add-on card for use with PXA250/5 development platforms
- Production-quality host stack
- Programming guide, user manual, schematics

ENHANCED LOW-POWER HI-SPEED USB PCI HOST CONTROLLER ISP1568A WITH TWO DOWNSTREAM PORTS

ISP1568A LQFP PCI evaluation kit
ISP1568A TFBGA PCI evaluation kit
Add-on card connects to the PCI slot of any PC installed with Windows 2000 SP4, Windows XP SP2, or Windows Vista. Offers simple, reliable overcurrent protection scheme and LEDs that simplify debugging. Power management options support testing of system wake-up (useful for motherboard and notebook designs).

Contents
- ISP1568A add-on card
- User manual, schematics
- Application note
**HOST CONTROLLERS (CONTINUED)**

**ISP1568A PCIe converter kit**
An add-on card connects to the PCI slot of the PCIe-to-PCI bridge board, which can connect to a PCIe slot of any PC installed with Windows 2000 SP4, Windows XP SP2, or Windows Vista. It offers a simple, reliable overcurrent protection scheme and LEDs that simplify debugging. Power management options support testing of system wake-up (useful for motherboard and notebook designs).

**Contents**
- ISP1568AA add-on card
- PCIe-to-PCI bridge board
- User manual, schematics
- Application note

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**ST-Ericsson offers a freely available USB controller driver called FlexiUSB stack for the ISP1568A that supports multi-threading and multi-tasking environments. This mature, OS-independent driver ports easily to popular RTOSs, including pSOSTM, μITRON, VxWorks™, and Nucleus®. For more information, contact your local ST-Ericsson sales office.**

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**HI-SPEED USB SLAVE HOST CONTROLLER ISP1760 FOR EMBEDDED APPLICATIONS**

**ISP1760 PCI/Linux evaluation kit**
Standalone board connects to the PCI slot of a Linux-based PC. Uses device class drivers from Linux and ISP1760 host stack [included with kit] to demonstrate host functions at high-, full-, and low-speed data transfer rates. Board includes a CPLD for configuring ISP1760 control signals and has three host ports.

**Contents**
- ISP1760 evaluation board with PCI interface
- Production-quality host stack
- Programming guide, user manual, schematics

**ISP1760 PCI/WinCE evaluation kit**
Same as Linux kit but with support for WinCE OS.

**Contents**
- ISP1760 evaluation board with PCI interface
- Production-quality host stack
- Programming guide, user manual, schematics
HOST CONTROLLERS (CONTINUED)

ISP1760 PXA255/Linux evaluation kit
Add-on kit for PXA250 and PXA255 development platforms. Uses device class drivers from Linux and ISP1760 host stack (included with kit) to demonstrate host functions at high-, full-, and low-speed data transfer rates. Add-on card has three host ports.

Contents
- ISP1760 add-on card for use with PXA250/5 development platforms
- Production-quality host stack
- Programming guide, user manual, schematics

ST-Ericsson offers a freely available USB controller driver called FlexiUSB stack for the ISP1760 that supports multi-threading and multi-tasking environments. This mature, OS-independent driver ports easily to popular RTOSs, including pSOS™, μITRON, VxWorks™, and Nucleus®.

For more information, contact your local ST-Ericsson sales office.

HOST/PERIPHERAL CONTROLLER

USB DUAL-ROLE (HOST/PERIPHERAL) CONTROLLER
ISP1161A1 FOR EMBEDDED APPLICATIONS

ISP1161A1 PCI/DOS evaluation kit
For printer and speaker applications; connects directly to PCI slot of PC. Uses DOS-based software stacks for easy porting. MP100 software: monitors port, demonstrates USB enumeration, performs test bulk transfer, displays contents of ATL buffer, can erase contents of host controller buffer memory. Kenobi2 software: accepts print image and WAV files, and supplies controls for PrinterFile, Bulk, AudioFile, and ISO.

Contents
- ISP1161A1 evaluation board with PCI interface
- DOS-based MP100 software for USB host and USB mouse functions
- DOS-based Kenobi2 software
- Programming guide, user manual, schematics

ISP1161A1 PXA25x/WinCE evaluation kit
Add-on kit for PXA250 and PXA255 development platforms. Uses device class drivers from WinCE and ISP1161A1 host stack (included with kit) to demonstrate host functions at full- and low-speed data transfer rates. Add-on card has three ports: two host controller ports and one peripheral controller port.

Contents
- ISP1161A1 add-on card for use with PXA250/5 development platforms
- Production-quality host and peripheral stacks
- Programming guide, user manual, schematics
DUAL-ROLE, ON-THE-GO (OTG) CONTROLLERS

SINGLE-CHIP USB OTG DUAL-ROLE (HOST/PERIPHERAL) CONTROLLER ISP1362

**ISP1362 PCI/Linux OTG evaluation kit**
Standalone board connects to PCI slot of Linux-based PC. OTG and host stacks pre-tested for mass storage on OTG, mouse-to-OTG port, USB speaker-to-OTG port, HID class devices, and printer. Full support for Linux OS, with USB Class-compliant software stack (USB Class driver unnecessary). Includes CPLD for local bus control, configuration of ISP1362 control signals, and interaction with integrated JTAG header. EEPROM stores configuration signals.

**Contents**
- ISP1362 evaluation board with PCI interface
- Production-quality host, peripheral, OTG stacks
- Linux OS support
- Linux-based test applets
- Programming guide, user manual, schematics

**ISP1362 PCI/WinCE evaluation kit**
Same as Linux kit but with support for WinCE OS.

**Contents**
- ISP1362 evaluation board with PCI interface
- Production-quality host and peripheral stacks
- WinCE OS support
- Programming guide, user manual, schematics

**ISP1362 PXA255/WinCE kit**
Same as ISP1362 PXA255/Linux kit but with support for WinCE OS and licensable USB Class drivers.

**Contents**
- ISP1362 add-on card
- Production-quality host and peripheral stacks
- WinCE OS support
- Licensable USB Class drivers
- User manual, schematics
**ISP1362 PXA255/Linux OTG evaluation kit**
Add-on kit, for use with PXA250/5 development platforms, with two host ports. Host stacks pre-tested for mass storage, mouse-to-host port, USB speaker-to-host port, HID-class devices, and printer. Full support for Linux OS, with USB Class-compliant software stack [USB Class driver unnecessary].

**Contents**
- ISP1362 add-on card
- Production-quality host, peripheral, OTG stacks
- Linux OS support
- Linux-based test applets
- User manual, schematics

**ISP1362 PCI/DOS OTG mini kit**
Same as ISP1362 PCI/Linux and PCI/WinCE kits but with DOS-based software stacks for easy porting. Wasabi stack supports OTG and host operation: plays music in local and remote OTG peer environments, prints raster images, demonstrates SRP, HNP, hubs, and HID's, and enumerates all devices. OTGC stack supports OTG controller operation: demonstrates SRP and HNP. X2 stack supports host controller operation: monitors host port, demonstrates mouse, performs USB enumeration and memory analysis, has read/write access to host control register.

**Contents**
- ISP1362 evaluation board with PCI interface
- DOS-based Wasabi stack for USB audio and USB printer applications
- DOS-based OTGC stack for OTG controller operation
- DOS-based X2 stack for USB host and USB mouse applications
- User manual, schematics

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ST-Ericsson offers a freely available USB controller driver called FlexiUSB stack for the ISP1362 that supports multi-threading and multi-tasking environments. This mature, OS-independent driver ports easily to popular RTOSs, including pSOS™, μITRON, VxWorks™, and Nucleus®.

For more information, contact your local ST-Ericsson sales office.
HI-SPEED USB OTG DUAL-ROLE (HOST/PERIPHERAL) CONTROLLER ISP1761

ISP1761 PCI/Linux OTG evaluation kit

Standalone board connects to PCI slot of a Linux-based PC. Uses device class drivers from Linux and ISP1761 software stack [included with kit] to demonstrate OTG and host functions at high-, full-, and low-speed data transfer rates. Includes CPLD for configuring ISP1761 control signals. Three ports: two host-controller ports and one combination port for OTG, host, or peripheral controller operation.

Contents
• ISP1761 evaluation board with PCI interface
• Production-quality host, peripheral, OTG stacks
• Programming guide, user manual, schematics

ISP1761 PCI/WinCE evaluation kit

Same as Linux kit but with support for WinCE OS.

Contents
• ISP1761 evaluation board with PCI interface
• Production-quality host and peripheral stacks
• Programming guide, user manual, schematics

ISP1761 PXA25x/Linux evaluation kit

Add-on kit for PXA250 and PXA255 development platforms. Uses device class drivers from Linux and ISP1761 host stack [included with kit] to demonstrate host functions at high-, full-, and low-speed data transfer rates. Add-on card has three ports: two host controller ports and one combination port that supports OTG, host, or peripheral controller operation.

Contents
• ISP1761 add-on card for use with PXA250/5 development platforms
• Production-quality host and peripheral stacks
• Programming guide, user manual, schematics

ST-Ericsson offers a freely available USB controller driver called FlexiUSB stack for the ISP1761 that supports multi-threading and multi-tasking environments. This mature, OS-independent driver ports easily to popular RTOSs, including pSOS™, μITRON, VxWorks™, and Nucleus®.

For more information, contact your local ST-Ericsson sales office.
**HI-SPEED USB OTG DUAL-ROLE (HOST/PERIPHERAL) CONTROLLER ISP1763A**

**ISP1763A PCI/Linux OTG evaluation kit**
Standalone board connects to PCI slot of a Linux-based PC. Uses device class drivers from Linux and ISP1763A software stack [included with kit] to demonstrate OTG and host functions at high-, full-, and low-speed data transfer rates. Includes CPLD for configuring ISP1763A control signals. Two ports: One host-controller port and one combination port for OTG, host, or peripheral controller operation.

**Contents**
- ISP1763A evaluation board with PCI interface
- Production-quality host, peripheral, OTG stacks
- Programming guide, user manual, schematics

**ISP1763A PCI/WinCE evaluation kit**
Same as Linux kit but with support for WinCE OS.

**Contents**
- ISP1763A evaluation board with PCI interface
- Production-quality host and peripheral stacks
- Programming guide, user manual, schematics

**HUB CONTROLLERS**

**HI-SPEED USB HUB CONTROLLER ISP1520 WITH FOUR DOWNSTREAM PORTS**

**ISP1520 evaluation kit**
Connects to USB or Hi-Speed USB host port of any PC running Windows 98, Me, 2000, XP or Vista, or Mac OS.

**Contents**
- ISP1520 evaluation board
- PCB design guide
- User manual, schematics

**HI-SPEED USB HUB CONTROLLER ISP1521 WITH SEVEN DOWNSTREAM PORTS**

**ISP1521 evaluation kit**
Connects to USB or Hi-Speed USB host port of any PC running Windows 98, Me, 2000, XP or Vista, or Mac OS.

**Contents**
- ISP1521 evaluation board
- PCB design guide
- User manual, schematics
PERIPHERALS CONTROLLERS

USB PERIPHERAL CONTROLLER ISP1181B
(11.1 MBYTE/S, 8/16-BIT PARALLEL BUS)

ISP1181B microcontroller evaluation kit
Interfaces an 8-bit processor and demonstrates general functionality.

Contents
- ISP1181B evaluation board
- Test application program
- USB driver
- ISP1181B firmware, driver
- Programming guide, user manual, schematics

LOW-POWER USB PERIPHERAL CONTROLLER ISP1183
(11.1 MBYTE/S, 8-BIT PARALLEL BUS, DMA)

ISP1183 microcontroller evaluation kit
Interfaces to an 8-bit processor. ISP1183 appears as a memory device to the microcontroller, presenting an 8-bit data bus and a 1-bit address bus.

Contents
- ISP1183 evaluation board
- Test application program
- USB driver
- ISP1183 firmware, driver
- Programming guide, user manual, schematics

LOW-POWER, HI-SPEED USB PERIPHERAL CONTROLLER ISP1582 WITH SIXTEEN ENDPOINTS

ISP1582 Hi-Speed USB PCI/mass storage evaluation kit
Connects to a PC’s PCI slot to demonstrate parallel I/O and DMA capabilities. Supports Generic Processor Mode with separate address and data bus operation. Requires host PC with USB capability and separate peripheral PC running generic PCI code. Mass Storage firmware provides bridge between evaluation board and mass storage device. Pin headers can tap signals from ISP1582. Board supports full- and high-speed USB enumeration.

Contents
- ISP1582 evaluation board
- PCI Mass Storage firmware
- Generic firmware
- USB driver
- Programming guide, user manual, schematics

ST-Ericsson offers a freely available USB controller driver called FlexiUSB stack for the ISP1582 that supports multi-threading and multi-tasking environments. This mature, OS-independent driver ports easily to popular RTOSs, including pSOS™, μITRON, VxWorks™, and Nucleus®.

For more information, contact your local ST-Ericsson sales office.
LOW-POWER, HI-SPEED USB PERIPHERAL CONTROLLER
ISP1583 WITH SIXTEEN ENDPOINTS, ATA/ATAPI
ISP1583 Hi-Speed USB Split Bus evaluation kit
Implements an 8051-based scanner. Board includes an ISP1583 configured for Split Bus operation, an 8051-based microcontroller, a CPLD that acts as the local DMA controller, and SRAM that stores data from DMA or parallel I/O access.

Contents
- ISP1583 evaluation board configured for Split Bus operation
- ISP1583 firmware, driver
- VHDL code for CPLD
- Programming guide, user manual, schematics

ISP1583 Hi-Speed USB mass storage evaluation kit
Implements a Hi-Speed USB-to-ATAPI bridge for an ATAPI-based storage device, demonstrating ATA/ATAPI interface for hard disk, CD-RW and DVD-RW drives (hard disk, CD, and DVD drives not included.) Performs full- and high-speed USB enumeration and uses pin headers to tap signals from the ISP1583. 8051-based microcontroller included on evaluation board.

Contents
- ISP1583 evaluation board with IDE interface
- Class-compliant Mass Storage firmware
- Programming guide, user manual, schematics

USB PERIPHERAL CONTROLLER PDIUSB12
(2 MBYTE/S, 8-BIT PARALLEL BUS)
PDIUSB12 USB-EPP evaluation kit
Demonstrates PDIUSB12 operation with example DMA timing for scanner, printer, and digital camera applications. Main evaluation board is used as a bridge connecting USB and EPP interfaces (IEEE 1284 parallel port); a daughter-board emulates the EPP function. Evaluation board includes an 8051 microcontroller for USB enumeration, system initialization, EPP negotiation, and DMA control, plus a CPLD programmed to function as a DMA and EPP controller. Supports bidirectional DMA transfer and uses the full USB and EPP bandwidth.

Contents
- PDIUSB12 evaluation board
- EPP-based daughter board
- VHDL code for CPLD and PAL equation
- PDIUSB12 firmware, driver
- Programming guide, user manual, schematics
PDIUSB12 smart evaluation kit
Supports all PDIUSB12 functions except DMA, and operates in three modes (print, scan, loop back) to emulate a variety of applications. On-board 8051 microcontroller performs USB enumeration, system initialization, data flow control, interrupt processing, button sensing and LED control. Microcontroller expansion bus supports use of an in-circuit emulator and D12 expansion bus enables direct connection to an application circuit. Internal watchdog timer improves performance.

Contents
- PDIUSB12 evaluation board
- Firmware
- Intel Hex code
- USB driver
- Programming guide, user manual, schematics

PDIUSB12 mass storage evaluation kit
Emulates a removable drive in Windows environments. Evaluation board includes an 8051 microcontroller for USB enumeration, system initialization, data flow control, interrupt processing, button sensing, LED control, bulk-only transfer protocol, and reduced block commands. Hard disk and portable Flash memory not included. Complies with USB Mass Storage Class Specification (bulk only).

Contents
- PDIUSB12 evaluation board
- Windows 98 USB driver
  (Windows 2000, Me, XP and Vista have native driver support)
- Sample firmware source code
- User manual, schematics

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