USB338x Series Highlights

- **USB 3.0 Client Interface**
  - USB 3.0 Specification
  - 1 upstream port
  - Supports SuperSpeed, Hi-Speed, Full-Speed modes
  - Four Descriptor-based DMA channels for automatic data transfers
  - Supports USB Duet® Technology
  - USB Auto-Enumeration Technology
  - Support for Bulk, Isochronous, and Interrupt Endpoints
  - USB Power Management
    - USB 3.0 link power management states: U0, U1, U2, U3
    - USB 2.0 link power management states: L0, L1, L2
- **PCI Express Interface**
  - PCI Express Gen 2 (5Gbps)
  - Electrical Compliance to PCI Express Base Specification r2.0
  - Integrated root complex
  - Integrated switch (USB3382 only)
  - Low latency
  - PCI Express Power Management
    - All link power management states: L0, L0s, L1, L2, L2/L3 Ready, and L3
    - Device states: D0 and D3(hot & cold)
    - Vaux, Wake#, Beacon support
  - 256 byte maximum payload size
  - ExpressCard 2.0 compliance
- **General**
  - Four GPIO pins for maximum design flexibility
  - Low power 90nm technology
  - Industrial Temp support
  - Lead-free package

Application:

USB 3.0 Multiple-Input and Multiple-Output (MIMO) Wireless LAN Adapter

PLX Products:

USB338x Series – PCI Express to USB 3.0 Peripheral Controllers

Key Benefit:

High Bandwidth Wireless Communication

Wireless LAN has been widely used in home networking since the low-speed 11 Mbps 802.11b WiFi standard introduced back in 1999. From just internet surfing and emails a decade ago to the recent High-Definition (HD) video streaming a seamless wireless communication will need a much higher bandwidth and more robust network to satisfy the fast growing and demanding consumer market.

By using multiple antennas at both the transmitter and receiver, MIMO technology is able to provide up to 600 Mbps PHY data rate which enables applications such as HD video content delivery to wireless HDTVs and wireless Set-top Boxes (STB). The legacy USB 2.0 Hi-Speed can neither provide the necessary pipe nor enough power for all radios due to the limited 480 Mbps bandwidth and merely 2.5W of power.

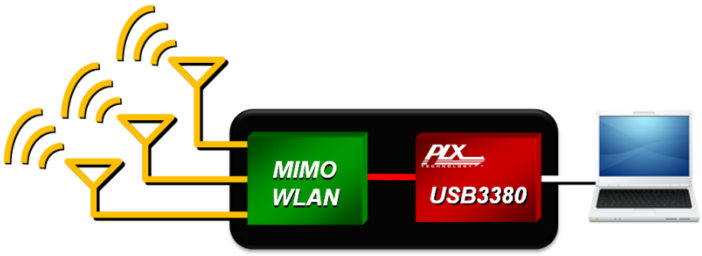
USB 3.0: The Solution for the Next Five to Ten Years

The new 5Gbps bandwidth offered by USB 3.0 SuperSpeed is more than 10X of USB 2.0 Hi-Speed. At 5Gbps of transfer speed, there is plenty room for wireless bandwidth to grow for the next five to ten years. This means multiple HD video content can be streamed simultaneously to TVs in different rooms such as the living room and kid's rooms, while simultaneous PCs and Tablets are backing up gigabytes of data using the new bi-directional communication of USB 3.0. The USB 3.0 standard has also added better power management which can be controlled by either the host or the peripherals on the bus. This will allow the WiFi adapters to enter different low power states depending on the idle time or bus conditions to improve battery life of the mobile devices connected.

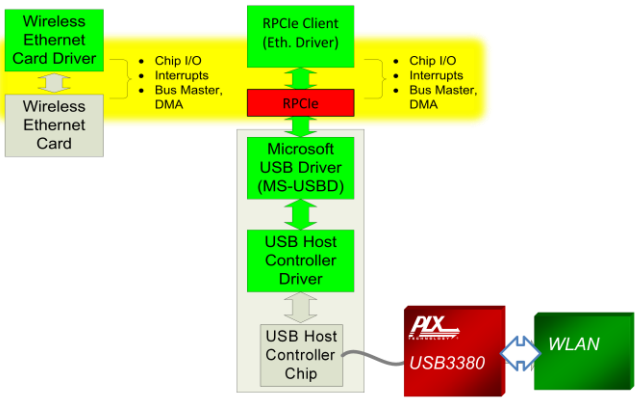
Easiest Way to Convert PCI Express Endpoints to SuperSpeed USB 3.0 Adapters

The PLX USB338x controller family provides a matching bandwidth at 5Gbp/s between the PCI Express Gen2 bus and the USB 3.0 SuperSpeed bus. The controllers can easily add a USB 3.0 client port to an existing PCI Express system, as well as convert existing PCI Express functions (endpoints) to a USB 3.0 product. The USB3380 can be easily added to any PCI Express system as a simple PCIe endpoint to provide a SuperSpeed USB 3.0 peripheral port. The USB3382 provides one additional PCI Express port for more connection flexibility. The internal high performance switch of the USB3382 can configure the two PCI Express ports into one x1 upstream plus one x1 downstream; one x2 upstream; two x1 downstream; or one x2 downstream port. This flexibility allows different system configurations to achieve the maximum performance of the product.

To convert a PCI Express (PCIe) endpoint such as a MIMO wireless LAN, the USB3380 can be configured as a PCI Express Root Complex (RC) and connected to the WLAN controller and configure it via the x1 PCIe port. With PLX's "PCI Express Go" SDK, the PCIe driver of the WLAN controller can be easily converted to a USB driver to control the WLAN chip remotely via the USB 3.0 link for the final USB 3.0 MIMO wireless LAN adapter.



Typically, PCIe driver is a hardware direct interface, and the driver accesses the chip via a hardware abstraction layer (HAL) (e.g. I/O addresses, interrupt pins, bus master). However, USB the driver is a software interface, and the driver accesses the device via MS-USBD using USB request block structure (URB). The RemotePCIe driver in the PCI Express Go SDK is a shim between the modified PCIe driver and the MS-USBD to provide the fastest way to get PCIe chips operating over USB.



Development Tools & Custom Solutions

PLX offers a comprehensive development & support package for the USB338x series including:

Rapid Development Kit (USB3382RDK)

- USB3382 evaluation board with PCI Express configuration modules
- Pre-built firmware application with sources for product demo and evaluation
- Reference design schematics for reduced time-to-market
- Product documentation & application notes

Evaluation Kit (USB3380EVK-RC)

- USB3380 evaluation board
- PCI Express Go SDK
- Reference design schematics for reduced time-to-market
- Product documentation & application notes

Additional PLX Advantages

- Superior USB expertise since 1996
- Abundant Software Selection
- Schematic and Layout Design Reviews
- Signal integrity testing
- Regional support teams for fast time-to-market

Available on PLX Website:

Product Brief, Databook, Design-in Guidelines, Schematics, OrCAD symbols, Application Notes and more

- USB3382 www.plxtech.com/3382
- USB3380 www.plxtech.com/3380