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NET2272

Local Bus to USB 2.0 Hi-Speed Peripheral Controller

Features

- **Overview**
  - 8/16 bit local bus connects gluelessly to most CPUs, DSPs, and DMA controllers
  - Hi-Speed USB 2.0 Peripheral Port
  - Bursting DMA support facilitates data transfers at 480 Mbps
  - High Bandwidth Isochronous Support
  - Low Power(186mW) requirements ideal for USB Bus-Powered Operation
  - Lowest standby power in its class (8.1µW)
  - Variable I/O voltage (1.8V to 5V)
  - Lead Free Packaging
  - 10x10mm 64-Pin TQFP Package
  - 6x6mm, 64-Ball BGA Package

- **Hi-Speed USB 2.0 Interface**
  - USB 2.0 Peripheral Interface
  - Hi-Speed USB with Sustained Bandwidth of up to 40MBytes/sec (at 480 Mbps bursts)
  - Backwards compatible to Full Speed USB connections
  - Utilize up to 30 Independent USB Endpoints using Dynamic Virtual Endpoint Technology ™
  - Support for Bulk, Isochronous, and Interrupt Endpoints
  - Integrated PHY

Optimized for Power and Performance

PLX Technology's NET2272 Local Bus to Hi-Speed USB 2.0 Peripheral Controller is designed for low power and high performance applications.

The NET2272's low power requirements (186mW active, 8.1µW standby) make it ideal for bus-powered or battery-powered applications. USB bus-powered devices are allowed to draw a maximum 500mA (according to the USB specification) of operating current from the PC through the USB cable. The NET2272's low power makes this requirement easy to support. Furthermore, the NET2272's variable I/O voltage (1.8V to 5V) makes it easy to connect to other low power components.

The NET2272 features the highest sustained data transfer speeds on USB – up to 40Mbytes/sec. An optional Split Bus mode allows for simultaneous DMA and CPU access to the NET2272. In this mode, the external DMA controller is connected to upper 8-bits of the data bus, while the local CPU is connect to the lower 8-bits of the data bus. While DMA transactions are taking place, the local CPU can simultaneously access any endpoint buffer not involving the DMA.

The NET2272's Dynamic Virtual Endpoint Technology™ actualizes the maximum number of endpoints (30) allowed by the USB specification. This feature provides the flexibility for applications to route different data through different endpoints to improve quality of service and ease of design.

Add Hi-Speed USB 2.0 to Your Device

The NET2272 can be used to easily add a USB 2.0 peripheral port to any local bus based embedded system. The local bus interface of the NET2272 can often connect gluelessly because its interface looks like an 8 or 16-bit SRAM. Most CPUs and DSPs already have these memory interfaces integrated.

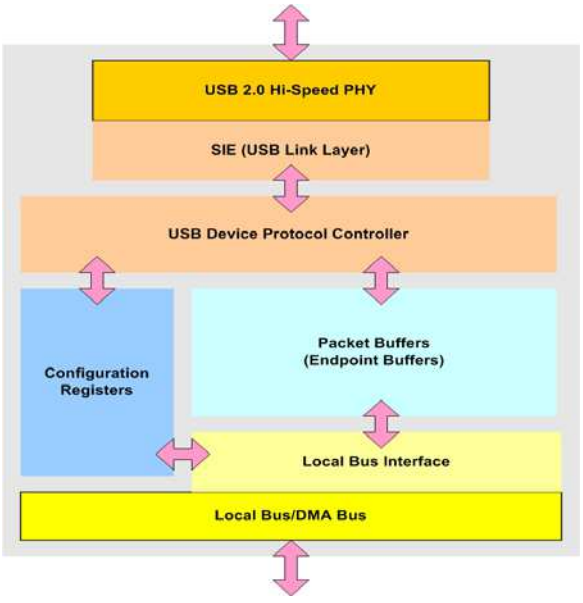

Figure 1: NET2272 Block Diagram

The NET2272's asynchronous bus makes it frequency independent. Accessing the NET2272's registers is as simple as accessing memory.

Design Applications

Cell Phones and PDAs

As cell phones and PDAs include more memory for storing rich media, faster USB transfer rates become more important. The NET2272 is designed to easily add Hi-Speed USB 2.0 functionality to today's communication devices.

With the USB Communications Device class driver, PCs can easily use cell phones, connected through USB, to setup a high speed wireless internet connection. PLX provides device firmware supporting the USB Communications Device standard. This means that PCs can recognize these devices without additional host drivers.

The small packaging of the NET2272 (6x6mm) is well-suited for adding Hi-Speed USB to these portable devices. The low power consumption of the NET2272 facilitates the design of bus-powered or battery-powered devices. Flexible I/O voltages (1.8V to 5V) allow the NET2272 to connect gluelessly to a diverse mix of CPUs and DSPs.

Portable Media Players

The NET2272 is designed into many portable media players on the market today. Most portable media players contain a hard disk for media storage, a high-quality LCD display, video input and output connections, and a Hi-Speed USB port for data transfer. The NET2272's small package, high performance, and low power consumption makes it an ideal solution for this battery-powered device.

The NET2272 supports Microsoft's Media Transfer Protocol (MTP), which allows playback of WMA and WMV files with Digital Rights Management (DRM). PLX also provides device firmware supporting the USB Mass Storage standard. This means that PCs can recognize these devices without additional host-side drivers.

Application notes showing sample connections between the NET2272 and various CPUs are available online from the PLX website. These application notes detail schematics, timing diagrams, and register settings.

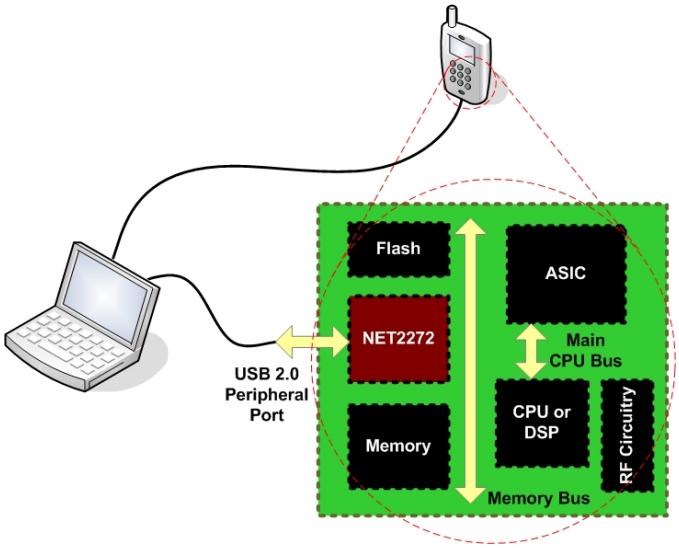

Figure 2: Adding a Hi-Speed USB port to cell phones

Development Tools

The NET2272 PCI-Based Reference Design Kit

The NET2272 PCI-RDK includes a PCI board that easily plugs into any standard PCI slot (3.3V or 5V). This PCI board allows a standard PC to emulate a USB device. With known good hardware, firmware development can begin even before the final device is ready. Schematics, layout, and BOM information is shipped with the kit.

Both USB host and peripheral-side software is included with the NET2272 PCI-RDK. The host-side software consists of USB drivers and test applications. The peripheral-side firmware is used to configure the NET2272 to resemble a standard USB class device (like a printer or mass storage device) for which no USB host drivers will need to be written. For custom applications, firmware APIs are provided to abstract the USB transactions to reads and writes. While this software is available for various operating systems, it is written in standard C with portability in mind. A porting guide is shipped with each kit.

Product Ordering Information

Part Number	Description
NET2272REV1A-LF	Local Bus to USB 2.0 Hi-Speed Peripheral Controller – 10x10mm 64-Pin TQFP Package
NET2272REV1A-BC F	Local Bus to USB 2.0 Hi-Speed Peripheral Controller – 6x6mm 64-Ball BGA Package
NET2272PCI-RDK	NET2272 Reference Design Kit

Please contact your local PLX sales representative for ordering information.

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