



EZ-Link USB-to-USB Networking

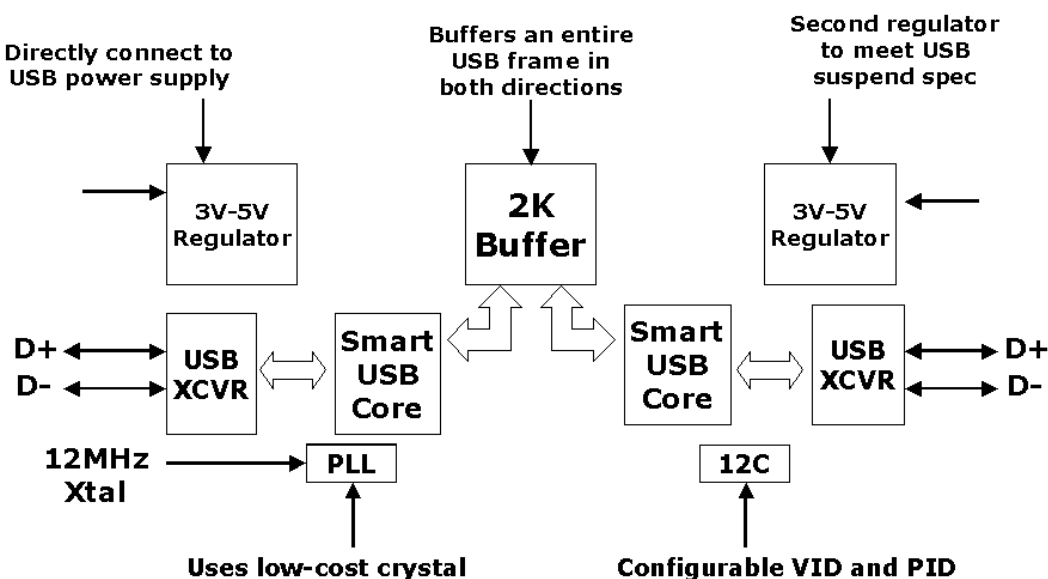
Reference Design
AN2720-RDK

PRODUCT OVERVIEW

Cypress provides a complete EZ-Link reference design with the EZ-Link Instant Network cable that allows you to connect two or more computers together via their USB ports. You can share files, printers, CD ROMS, Tape Back-up Units, and many other devices across your EZ-Link Instant Network. It supports multiplayer games that use standard Ethernet protocols. The EZ-Link Instant Network is perfect for mobile "work teams" that need a quick and easy network or for the laptop owner who wants to use his desktop PC's printer or to share or synchronize files with his desktop PC.

At the heart of the EZ-Link design is the Cypress AN2720SC, providing a single-chip solution for networking two computers via their USB ports. In a USB system, the PC acts as a host, which initiates all USB traffic. USB devices act as slaves, which respond to host requests. It is inherently incompatible to connect two PCs together via a simple USB cable, since a master (host) cannot talk to another master (host). A master can talk only to one or more slave devices.

The AN2720SC overcomes this "peer-to-peer" incompatibility by providing two USB devices, one for each PC. Two independent Serial Interface Engines (SIE) exchange data through a 2 kilobyte FIFO. Thus, USB data transmitted by one computer is made available to the other computer through the AN2720SC. The connection is full duplex – data can be transferred in both directions simultaneously.



AN2720SC Block Diagram System Application

FEATURES

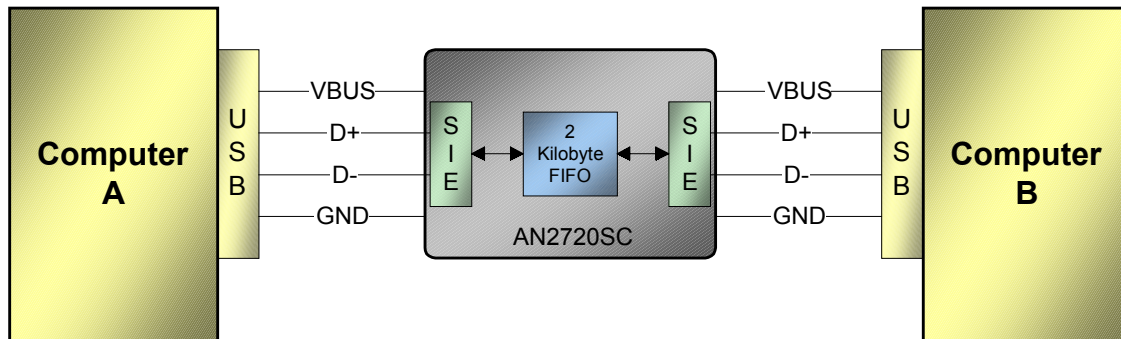
- Smallest completely integrated solution in the market - 32 pin TQFP
- Only requires a single crystal and small 16 byte serial EEPROM for full implementation
- Meets difficult suspend current of 500 uA for both hosts
- 2K data buffer
- Greater than 5 Mbps data transfer rate
- Low power – Less than 100 mW power

BENEFITS

- Saves board space
- Minimizes board space
- Industry standard - compliant with USB 1.1 specification
- Improves transfer throughput
- High performance solution
- Permits bus powered application

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SYSTEM DIAGRAM



APPLICATIONS AND MARKETS

AN2720SC and the “plug-and-play” nature of USB make connecting two computers (even when powered) very simple and efficient. With the AN2720SC, simple networking can be provided in numerous markets including:

- USB standalone hubs
- Computer monitors with USB hubs
- Standalone USB cables
- Port Replicators
- WinCE Machines
- Set-Top Boxes
- Docking Stations
- PC motherboards (particularly for laptops)

Depending on the driver set used, the AN2720SC can perform the following functions:

- USB networking
- File transfer (including MAC to PC file sharing)
- Windows CE synchronization
- Printer sharing
- Share internet connections (using proxy or bridging software)
- Multi-player gaming



SOFTWARE

The software provided with Cypress' EZ-Link Instant Network runs on Windows 95/98/2000 platforms and is a miniport device driver software which emulates a network interface connector. It manages the USB protocol and the PC-to-PC data flow. The EZ-Link Ethernet device driver is written to the NDIS (Network Driver Interface Specification) standard and provides a standard Windows interface to the resources of the hardware. To the end user, EZ-Link appears and behaves like an Ethernet card even though no physical network interface card is present. Thus, users can use standard Windows interfaces such as Windows Explorer, Network Neighborhood and standard file sharing security features. Bridging software that allows users to access corporate LAN resources, including internet access, is also included.

Unlike other Host-to-Host devices in the market, Cypress provides an entire suite of software utilities which enhance the end user experiences. Such utilities include:

- Specialized Install procedure. The custom install procedure pioneered by Cypress allows immediate network operation without the need for the end user to access the Network Icon in the Control Panel. This makes it easy for “Instant Operation” without the need for the user to understand any networking jargon. Numerous article reviews rave over this feature.

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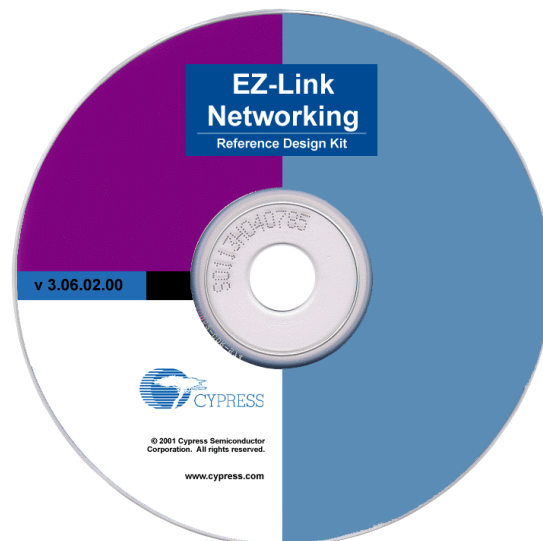
- **Make Disk Utility.** In case an end user does not have the install CD-ROM in possession, the end user can still install the necessary drivers to a floppy disk using this Make Disk Utility. This allows the end user to continue to network to other computers without the need of the install CD-ROM.
- **Electronic On-line Users Manual.** This slick HTML electronic manual includes everything with regards to Networking operation in an easy-to-read format. Such Information includes Getting Started information, installation, various configurations, advanced operations and a background in Networking.
- **EZ-Link Network Manager.** While the user can use Windows Explorer and Network Neighborhood to navigate for data transfer and accessing other computers, it may take up to 5 minutes for the system to recognize all computers connected to EZ-Link. With the EZ-Link Network Manager, the user can access all computers connected to the EZ-Link private LAN immediately. The interface is intuitive and requires no manual for operation.
- **Bridging software.** Sharing a single connection to the internet is an important function with today's home and office networks. This software implements a proxy server, allowing a single computer to be connected to a LAN and the internet, and lets any other computer connected via an EZ-Link network share that same LAN and internet connection simultaneously.

REFERENCE DESIGN KIT (AN2720-RDK)

- The EZ-Link Networking Reference Design Kit is a complete resource for developers to utilize and customize in the development of their own product with the Cypress AN2720 chip.

Each kit includes:

- EZ-Link Retail Package
- Design Notes
- AN2720 Datasheet
- CD-ROM containing:
 - Source Code
 - Complete software suite detailed above
 - Schematics
 - Orcad Source File



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