

CYPRESS USB SOLUTIONS

MAKING USB UNIVERSAL®
SINCE 1996



CONTENTS

CYPRESS USB PRODUCTS	3
USB SUPERSPEED PERIPHERALS	4
USB HI-SPEED PERIPHERALS	5
USB TRANSCEIVERS	6
USB FULL-SPEED PERIPHERALS	6
USB LOW-SPEED PERIPHERALS	8
USB HUBS	9
USB HOSTS.....	10
WEST BRIDGE® SOLUTIONS	11
WIRELESSUSB™ SOLUTIONS.....	13
CYPRESS USB PORTFOLIO	15

CYPRESS USB PRODUCTS

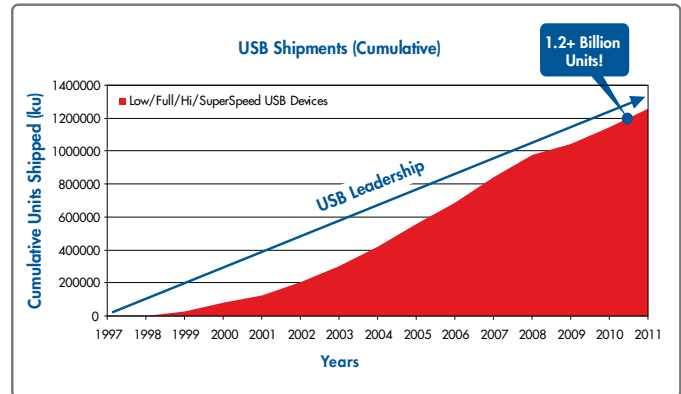
WE BRING YOUR USB IDEAS TO LIFE.

With the industry's broadest selection of USB solutions, Cypress has the right silicon, software, and support for every USB application.

Cypress Semiconductor is the market leader in USB and has shipped over 1.2 billion USB controllers. Cypress entered the USB market in 1996 with the goal of "Making USB Universal®" and has become the leading supplier for a variety of USB applications.

Cypress offers the industry's most complete portfolio of USB devices, including low-, full-, hi-speed and SuperSpeed controllers, embedded hosts, hubs, application-specific bridges, transceivers, and wireless solutions. We are committed to extending our leadership in the future by introducing new technologies such as USB 3.0 solutions.

Cypress also provides reference designs, application notes, USB software, and driver suites to go along with the diverse silicon portfolio. This "whole product" support has helped us forge long-lasting relationships with leading manufacturers worldwide. It helps companies bring USB-enabled products to market faster than competitors.



Cypress's Whole Product Support for USB Solutions

THE EVOLUTION OF USB

USB, a truly universal technology, brings revolutionary ease of use to all computing platforms. Since its inception in 1996, it has quickly become the de facto standard for peripheral connectivity.

USB 2.0

USB 2.0 specification opens the door to new application possibilities by increasing the signaling rate to 480 Mbps and supporting multiple high-bandwidth peripherals running simultaneously.

USB On-The-Go (OTG)

The USB OTG supplement to the USB 2.0 specification has enabled peripheral-to-peripheral communication without a host PC.

USB 3.0

USB 3.0 (SuperSpeed USB) is the next revolution in the wired USB market. Its primary goal is to keep the same ease of use and flexibility at a much higher data rate of 5 Gbps and better power management which is very important for "Sync & Go" applications that need to maintain long battery life.

FEATURES

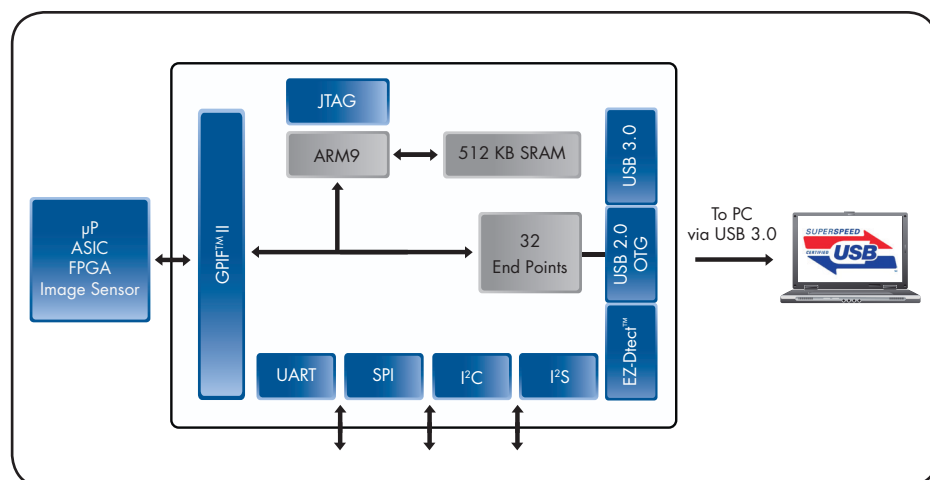
- SuperSpeed It™ with FX3
 - Add USB 3.0 capability to any system
 - Up to 32-bit, 100 MHz, parallel General Programmable Interface (GPIF™ II)
- Enable powerful data processing and customization
 - Fully accessible 32-bit, 200 MHz, ARM9 core with up to 512 KB of embedded SRAM
- Easy code development and integration
 - EZ-USB tools: complete solution with silicon, SDK, APIs, GPIF II Designer GUI, and DVK
- USB 2.0 OTG compliance
 - Hi-Speed On-The-Go (HS-OTG) host and peripheral compliant with On-The-Go Supplement Version 2.0
- Additional connectivity to peripherals
 - Easy connectivity to peripherals using I²C, I²S, UART, SPI, and GPIOs
- Improved battery charging capabilities
 - Compliant with USB BC v1.1

USB SUPER SPEED PERIPHERALS

EZ-USB® FX3™ USB 3.0 PERIPHERAL CONTROLLER

Cypress EZ-USB® FX3™ is the next-generation USB 3.0 peripheral controller, which provides highly integrated and flexible features that enable developers to add USB 3.0 functionality to any system.

EZ-USB FX3 has a fully configurable, parallel, general programmable interface (GPIF™ II), which can connect to any processor, ASIC, image sensor, or FPGA. GPIF II is an enhanced version of the GPIF in FX2LP™, Cypress's flagship USB 2.0 product. It provides easy and glueless connectivity to popular industry interfaces such as synchronous Slave FIFO, asynchronous SRAM, asynchronous and synchronous address data multiplexed interface and parallel ATA among others.



FX3 Block Diagram

EXAMPLE APPLICATIONS OF FX3

VIDEO

USB 3.0 can support uncompressed HD video transfer of up to 360 MB/s and can enable applications such as DSC, DVC, webcams, security cameras, smart cameras for machine vision, medical imaging, and surveillance equipment. The key value that EZ-USB FX3 offers here is the ability to route HD video traffic through a USB 3.0 port.

PC PERIPHERALS

PC peripherals such as printers, scanners, and multifunction peripherals need to offload a large amount of data within a short span of time. The EZ-USB FX3 solution can satisfy their increased bandwidth requirements.

USB HI-SPEED PERIPHERALS

Cypress's complete portfolio of Hi-Speed USB Peripherals encompasses products for both storage and video that are either fully programmable or fixed function. Our devices come in various packages, support different I/O configurations and bundle with the industry's best software toolkit to provide you with the best Hi-Speed USB solution for your design.

EZ-USB FX2LP™ AND MoBl®-USB™ FX2LP18

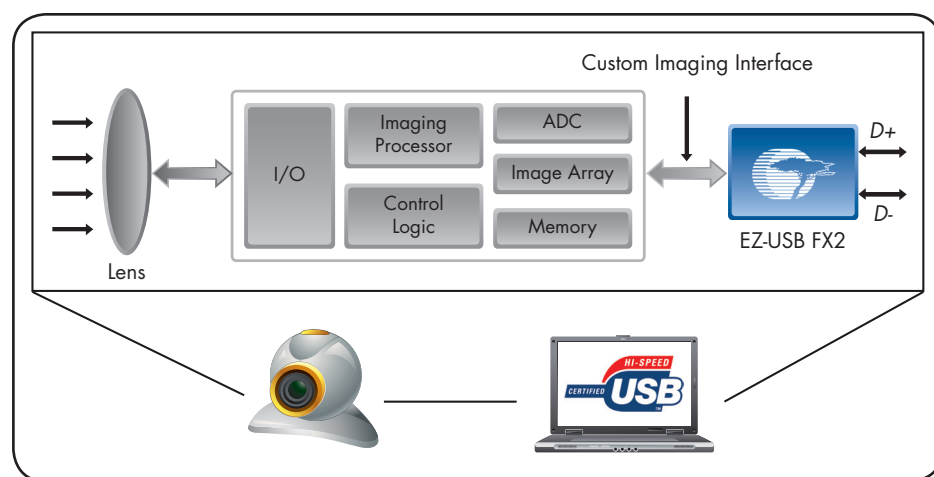
Cypress's EZ-USB FX2LP is one of the most popular programmable Hi-Speed USB controllers in the industry today. FX2LP comes in different flavors depending on design requirements. Cypress offers FX2LP with 24, 26, or 40 programmable I/O pins tailored to suit your application. For applications needing ultra low power, the FX2LP18 USB controller is ideal.

Key Applications: Webcams, set-top boxes, printers and scanners, DTV dongles, mobile phones and MP3 players.

Development Kits:

CY3684 EZUSB FX2LP

CY3687 EZUSB FX2LP18



USB Hi-Speed Solution for Streaming Videos

FEATURES

- Compliant with USB specification version 2.0
- One chip solution
 - Integrated transceiver, SIE, and microprocessor
- Software flexibility
 - 16 KB on-chip RAM for code storage
 - Easy firmware downloads via EEPROM or USB
- Low power
 - Standby current as low as 20 μ A (FX2LP18)
 - 1.8 V core operation for FX2LP18, and 3.3 V for FX2LP
- Broad package options
 - 128-pin TQFP for maximum I/O options
 - 56-pin VFBGA for space constrained applications
 - QFN and SSOP packages also available



COMPARISON OF AT2LP AND NX2LP

Features	AT2LP	NX2LP
Ease of use	Fixed function design requires no firmware	SLC NAND support for both 512 B and 2 KB page sizes
	Multiple package options (QFN, SSOP, TQFP)	Up to 8 flash single-device chips supported
Compliance	Complies with ATA/ATAPI-6 specification	Complies with USB mass storage specification
	48-bit addressing for large HDDs	Certified for bus or self powered USB 2.0 operation
	Supports ATA security features	—
Flexibility	Support for one or two ATA/ATAPI devices	Integrated enhanced 8051 microcontroller core
	Enable additional features with custom GPIOs	12 fully programmable GPIO pins
	Compact flash support	—

FEATURES

USB TRANSCEIVERS - TX2UL

- Integrated passive components save valuable board space
- Ultra-low power
 - 5 μ A nominal sleep mode
 - 30 mA nominal active hi-speed transfer
- Multiple frequency support

EXTERNAL MASS STORAGE SOLUTIONS

HI-SPEED USB 2.0 TO ATA/ATAPI BRIDGE AND HI-SPEED USB 2.0 NAND FLASH CONTROLLER

- **EZ-USB AT2LP™** — Programmable USB to PATA bridge for external hard disk drive (HDD), optical drives, and multi-role storage applications
- **EZ-USB NX2LP-Flex™** — Programmable USB NAND flash controller for multi-role NAND flash drives

Key Applications: External HDD, USB NAND flash drives, biometric security and set-top boxes.

Reference Design:

[CY4615B – EZ-USB AT2LP Hi-Speed USB to ATA/ATAPI](#)

USB TRANSCEIVERS

Cypress's TX2UL™ is the world's smallest USB 2.0 ULPI transceiver. TX2UL is suitable for use in any application that already has a USB controller but requires a ULPI transceiver. TX2UL supports a high variable input voltage range of 3.0 V to 5.775 V, and is configurable to input frequencies of 13, 19.2, 24, and 26 MHz. Along with its ultra small size (2.14 mm x 1.76 mm), TX2UL consumes only 5 μ A in sleep mode, making it ideal for mobile and battery powered applications.

Key Applications: Data cards, mobile phones, digital cameras, portable media players, modem dongles, handsets and other consumer electronic devices.

Development Kit:

[CY3688 – MoBL-USB TX2UL](#)

USB FULL-SPEED PERIPHERALS

Cypress offers a variety of performance levels and feature sets among its full-speed product families for applications that require USB signal rates up to 12 Mbps. These offerings include unique architectures that give developers the freedom and flexibility to choose solutions that best fit their needs. Our full-speed product line features low-cost serial interface engines (SIEs), plus those that include a robust 8-bit RISC processor, or the popular 8051.

USB TO UART BRIDGE CONTROLLER

Cypress's USB to UART Bridge Controller solution brings plug-and-play USB connectivity to legacy UART peripherals. This fully integrated device includes a USB 2.0 Full-Speed controller, voltage regulator and internal EEPROM in a 28-pin SSOP package. The USB to UART Bridge Controller requires no programming, making it ideal for upgrading legacy POS terminals, industrial meters, servers and other such peripherals to USB interface.

Key Applications: Active USB to UART Cables, Servers, Switches, Point of Sales (POS) Terminals, Industrial and Metering Devices, STB and PND

FEATURES

enCoRe II FAMILY

- Reduced system component count through external component integration
- Integrated crystal-less oscillator
- USB PS/2 auto-configurable with no external resistors required
- Low-power consumption with 10 μ A sleep current
- Dedicated 3.3 V regulator for USB PHY
- In-system reprogrammability allows for easy firmware updates
- Enhanced M8C microcontroller core

COMPARISON BETWEEN enCoRe II, enCoRe III, AND enCoRe V

Features	enCoRe II	enCoRe III	enCoRe V
Flash Architecture	8 KB flash memory	16 KB flash memory	32 KB flash memory
	256 B of SRAM	1 KB of SRAM	2 KB of SRAM
	In-system reprogrammable	In-system reprogrammable	In-system reprogrammable
CPU and Peripherals	Low-Speed USB device	Full-Speed USB device	Full-Speed USB device
	Third generation M8 MCU core	M8C core	Enhanced M8C MCU core
	Variable CPU speed up to 24 MHz	Variable CPU speed up to 24 MHz	Up to 24 MHz CPU speed for V_{DD} - 3.0 to 5.5 V
	–	Up to 14-bits incremental and delta-sigma ADCs	LP (<2.15 mA operating at 24 MHz, <1.5 μ A sleep)
	–	6 configurable analog blocks	–
Enhanced Component Reduction	Integrated crystal-less oscillator	Integrated crystal-less oscillator	Integrated crystal-less oscillator
	Integrated pull-up on D-	Integrated pull-up on D+	Integrated pull-up on D+
	Internal 3.3 V regulator to drive optical sensor/radio	–	–

USB LOW-SPEED PERIPHERALS

Cypress has been the leading USB solutions provider since the inception of this breakthrough interface technology.

The **enhanced Component Reduction** (enCoRe II) USB family of products has continued that success. enCoRe II is the second generation of the technology and has a flash memory architecture. This eliminates hassles in the design phase and ensures production continuity in case of code revisions.

Key Applications: Keyboards with and without integrated pointing devices, mice, gamepads, toys, remote controls and secure dongles.

Development Kits:

CY3655-EXT enCoRe II

CY3216 Modular Programmer Kit

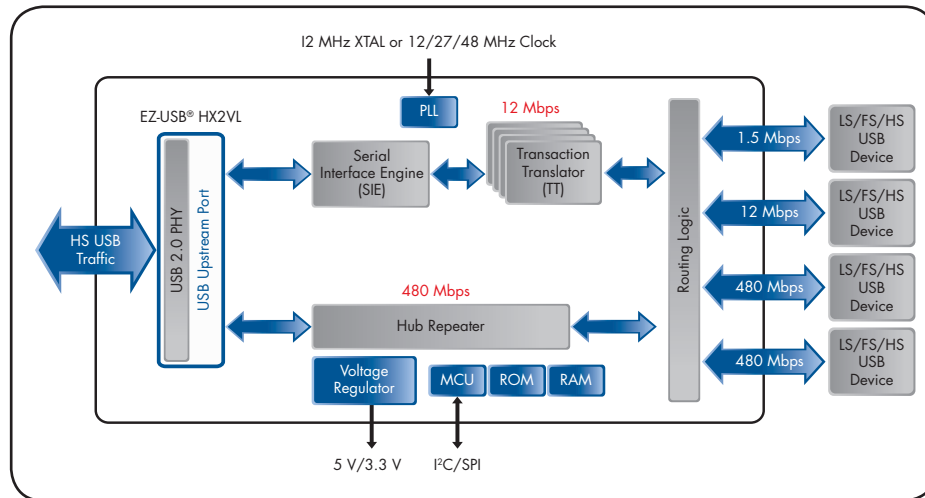
Reference Designs:

CY4623 Mouse Reference Design

2.4 GHz Green Button Certified Media Center Remote Control

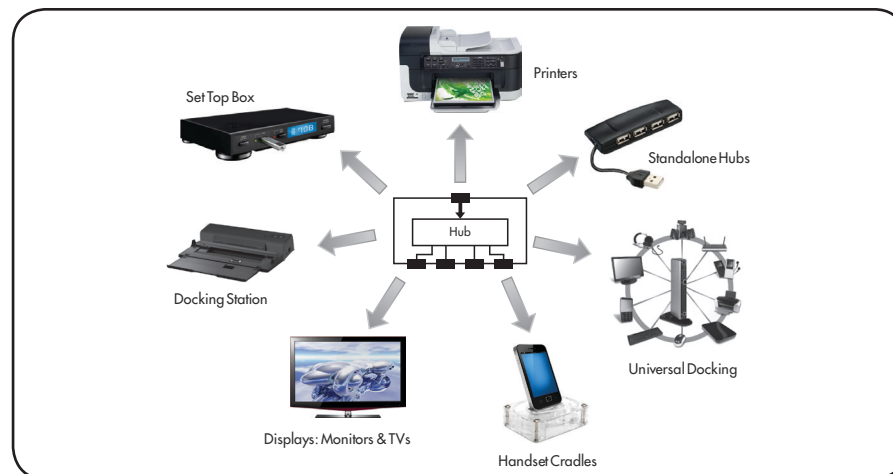
USB HUBS

The increasing ubiquity of USB is expanding the need for more USB ports in many applications today. USB hubs expand a USB host's capability to support more than one USB device. Cypress's USB hubs provide the expandability option for both Full-Speed and Hi-Speed USB. With a complete portfolio of single or multiple transaction translator (TT) hub solutions, Cypress can be the hub solution of choice for any system designer.



HX2VL Block Diagram

Key Applications: Docking stations, digital TVs, monitors, printers, set-top boxes and entertainment systems, standalone hubs, keyboards, KVM switches, data-modems, point of sale (POS) terminals and handset cradles.



Hubs Application Diagram

Reference Designs:

CY4606 – EZ-USB HX2LP Hi-Speed USB 2.0 4-Port Hub

CY4607 – HX2VL Hi-Speed USB 2.0 Low Power 4-Port Hub (48 TQFP version)

CY4608 – HX2VL Hi-Speed USB 2.0 Low Power 4-Port Hub (28 QFN version)

FEATURES

EZ-USB HX2VL™ VERY LOW-POWER USB 2.0 HUB CONTROLLER

- Ultra low-power USB 2.0 hub
- Integrated 3.3 V and 5 V regulator
- Configuration with SPI/I²C EEPROM or GPIO settings
- Supports bus-powered and self-powered modes
- Single and multiple Transaction Translator (TT) product options
- Space saving 48-pin (7 × 7 mm) TQFP and 28-pin (5 × 5 mm) QFN packages

EZ-USB HX2LP™ USB 2.0 HUB CONTROLLER

- Low power single-TT USB 2.0 hub
- Single power supply: Integrated 3.3 V regulator
- Configuration options supported through SPI EEPROM
- Supports bus-powered and self-powered modes
- Automotive AEC Grade Option (−40°C to 85°C)



FEATURES

EZ-HOST™

- The world's first automotive qualified multiport full-speed USB host/peripheral controller
- The 16-bit RISC processor enables it to act as a co-processor or operate in stand-alone mode
- Dual-SIE architecture allows the device to offer several configurations:
 - Four downstream host ports, or
 - Two downstream host ports, or two downstream host ports and one upstream slave port
- Pre-configured translation routines support multiple port selections: IDE, PWM, SPI and EPP

EZ-OTG™

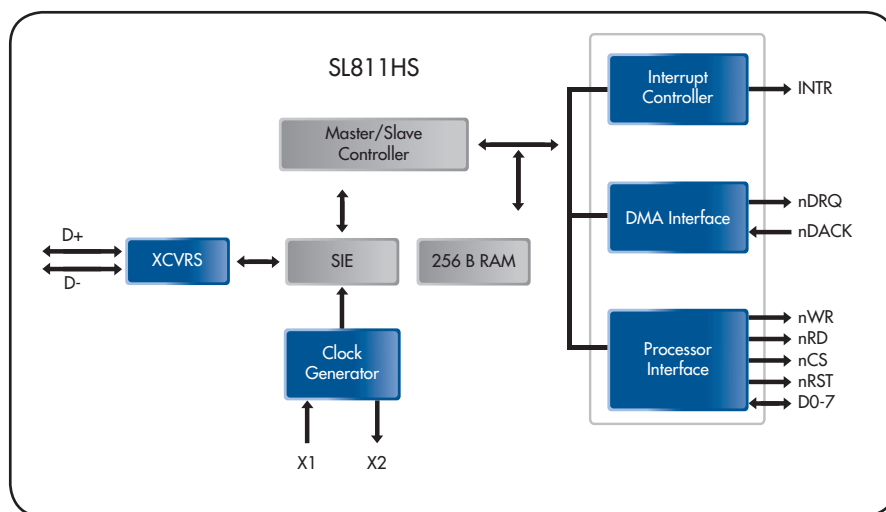
- One-chip programmable dual role USB controller supporting Full- and Low-Speed USB
- Supports two downstream ports in host mode and one peripheral port in peripheral mode

SL811HS

- World's first Dual Role Device (DRD)
- It can act as an embedded USB host or as a slave controller
- SIE along with internal transceivers allows function at Full- or Low-speed
- Communicates in both Full- and Low-Speed USB modes
- Flexible 8-bit interface allows connectivity to a variety of DSPs, microcontrollers and microprocessors

USB HOSTS

Cypress's host controllers bring the versatility of USB to your design. With single and dual role host/peripheral controllers, USB ports in your designs can now have both device and host capabilities.



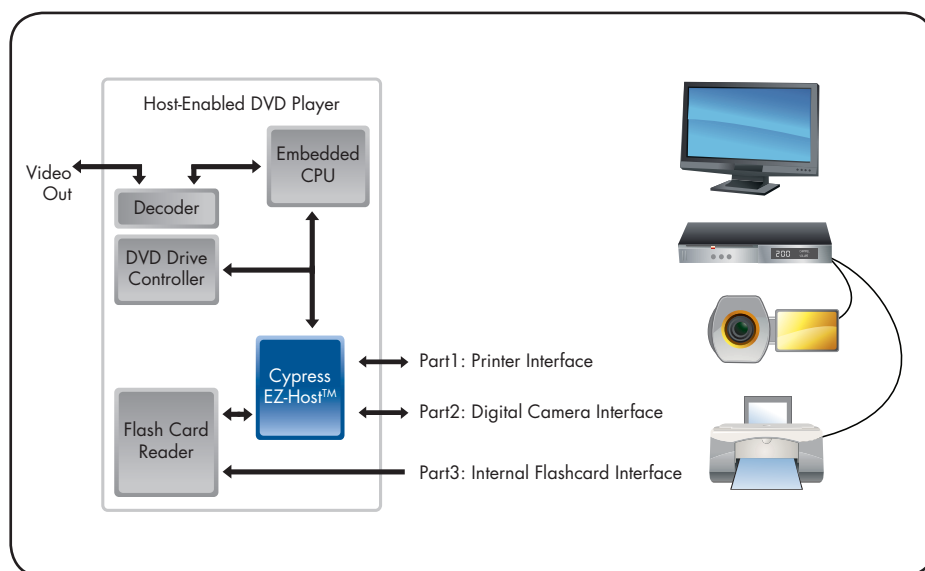
SL811HS Block Diagram

Key Applications: Gaming consoles, medical devices, test and measurement devices, and set-top boxes.

Development Kits:

CY3663 – EZ-HOST/EZ-OTG

CY3662 – EZ-811HS



Set-Top Box with Integrated USB Host Functionality

WEST BRIDGE® A-GENERATION

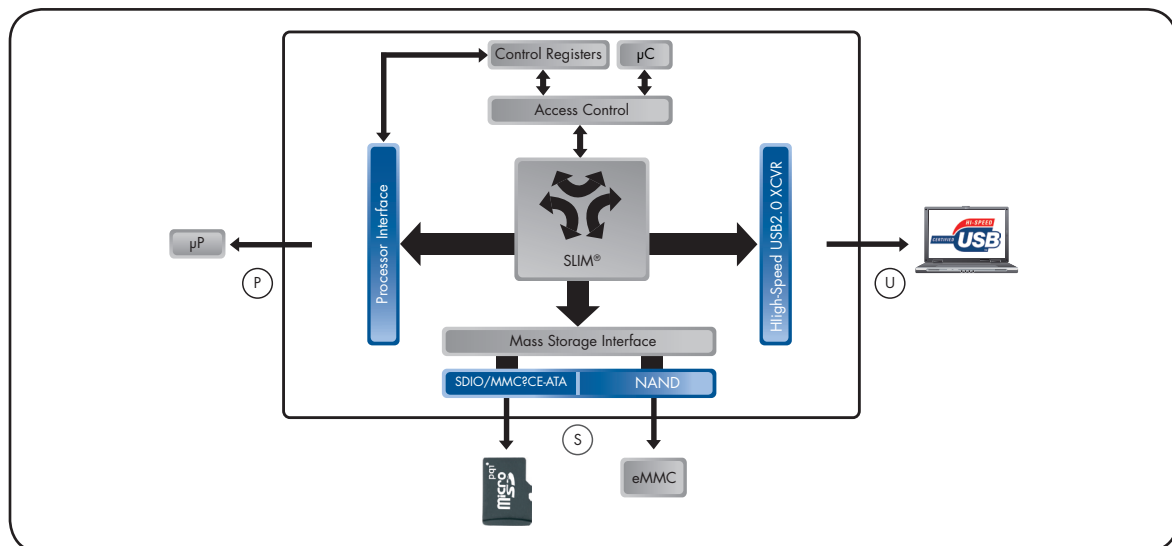
The West Bridge peripheral controller offers a revolutionary architectural enhancement for embedded applications. Utilizing Cypress's unique simultaneous link to independent multimedia (SLIM®) architecture, West Bridge enables a direct connection between peripherals, offloads the main processor, provides support for next generation peripherals, and enables multitasking.

West Bridge came into the embedded market with the first generation device called Antioch™ launched in 2006. The world's fastest sideloading solution and ideal for handsets, Antioch soon became a run-away hit shipping over 70 million units to date (and counting). West Bridge Astoria™ soon followed in 2007 expanding West Bridge presence in more embedded applications - from portable HDDs to presenter tools. Astoria continues to provide an optimized controller for next generation peripheral connectivity. In 2009, Cypress launched West Bridge Arroyo™ that is optimized for cost-effective handhelds.

Key Applications: Mobile phones, portable media players, digital video cameras, wireless modem cards, tablets, server applications and SDIO expansion.

Development Kit:

CYWBDVK002AB – Astoria



West Bridge A-Generation Block Diagram

COMPARISON BETWEEN WEST BRIDGE ASTORIA, ANTIOCH AND ARROYO

West Bridge		P-Port	S-Port	USB switch included	Turbo-MTP	Sideloading Perf (large file)
Astoria	CSP 3.9 x 3.9 mm	PNAND, SPI	2x SDHC/SDIO/eMMC/CE-ATA Upto 16x SLC NAND	Yes	Turbo-MTP 1.0, 2.0	Up to 30 Mbps MSC Up to 20 Mbps MTP
	BGA 6 x 6 mm	SRAM, ADMUX, PNAND, SPI	2x SDHC/SDIO/eMMC/CE-ATA Upto 16x SLC NAND	Yes	Turbo-MTP 1.0, 2.0	Up to 30 Mbps MSC Up to 20 Mbps MTP
Astoria - Lite	CSP 3.9 x 3.9 mm	SRAM, ADMUX	1x SDHC/SDIO/eMMC	Yes	—	Up to 30 Mbps MSC
Antioch	CSP 3.8 x 3.8 mm	SRAM	1x SDHC/eMMC/CE-ATA	—	Turbo-MTP 1.0, 2.0	Up to 21 Mbps MSC Up to 15 Mbps MTP
	BGA 6 x 6 mm	SRAM	1x SD/SDHC/eMMC/CE-ATA 4x SLC NAND	—	Turbo-MTP 1.0, 2.0	Up to 21 Mbps MSC Up to 15 Mbps MTP
Antioch - Lite	BGA 6 x 6 mm	SRAM	1x SDHC/eMMC/CE-ATA	—	—	Up to 21 Mbps MSC
Arroyo	CSP 3.9 x 3.9 mm	PNAND, SPI or SRAM, ADMUX	1x SD/SDHC/eMMC	—	—	Up to 15 Mbps MSC

FEATURES

- SD 3.0 and eMMC 4.41 support
 - Supports higher performance, larger capacity and better security
- SLIM® II architecture
 - Simultaneous data paths among USB, storage, and processor
- EZ-Dtect support
 - Automatic charger and accessory detection
- Enable powerful data processing and customization
 - Fully accessible 32-bit, 200 MHz, ARM9 core with 512 KB of embedded SRAM
- USB 2.0 OTG compliance
 - Hi-Speed On-The-Go (HS-OTG) host and peripheral compliant with OTG Supplement Version 2.0
- Improved battery charging capabilities
 - Compliant with USB BC v1.1



WEST BRIDGE B-GENERATION

ADVANCED USB SOLUTIONS FOR MOBILE HANDHELDS

West Bridge Benicia offers a revolutionary architectural enhancement for embedded applications. Benicia is the industry's first USB 3.0 solution specifically built for mobile applications. With the support for the latest SD 3.0 (SDXC with UHS-I) and eMMC 4.41 standards, Benicia provides improved storage performance to enhance user experience.

The SLIM II architecture offloads data transfer from the main processor, providing uninterrupted and simultaneous data flow among processor, storage and USB. To facilitate faster battery charging with increased USB 3.0 power regulation, the built-in EZ-Dtect™ feature provides charger and accessory detection without the need for any external power management device.

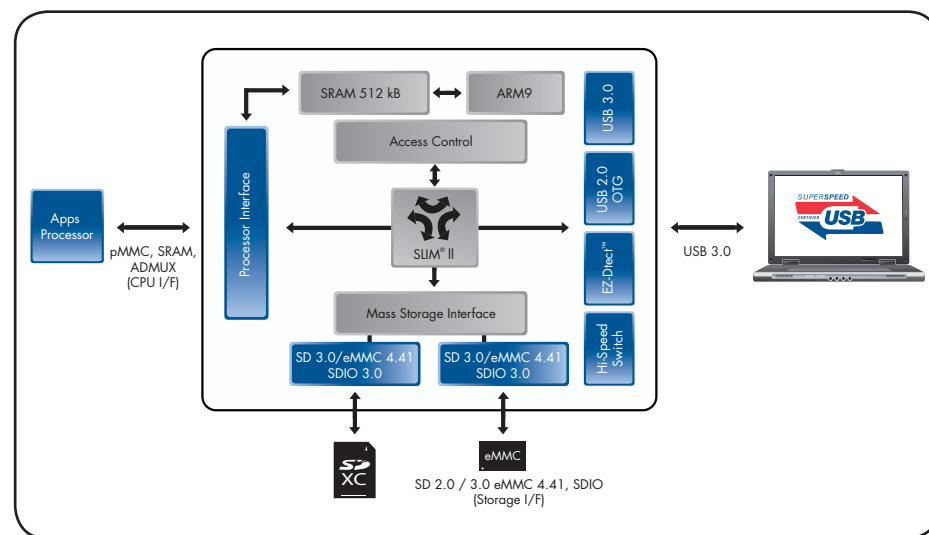
West Bridge Bay offers similar enhancement to storage access over USB 2.0 with additional Hi-Speed USB On-The-Go (OTG) capability.

Benefits of Benicia:

- SuperSpeed USB 3.0 sideloading
- Higher random IOPS performance
- HD video streaming
- Rapid battery charging

Benefits of Bay:

- Fastest USB 2.0 sideloading
- Higher random IOPS performance
- Storage expansion with dual SD/eMMC
- USB 2.0 OTG for additional host functionality



Benicia Block Diagram

Key Applications: Mobile handhelds (handsets and tablets), digital still camera (DSC), digital video camera (DVC), portable media player (PMP) and other non-handhelds.

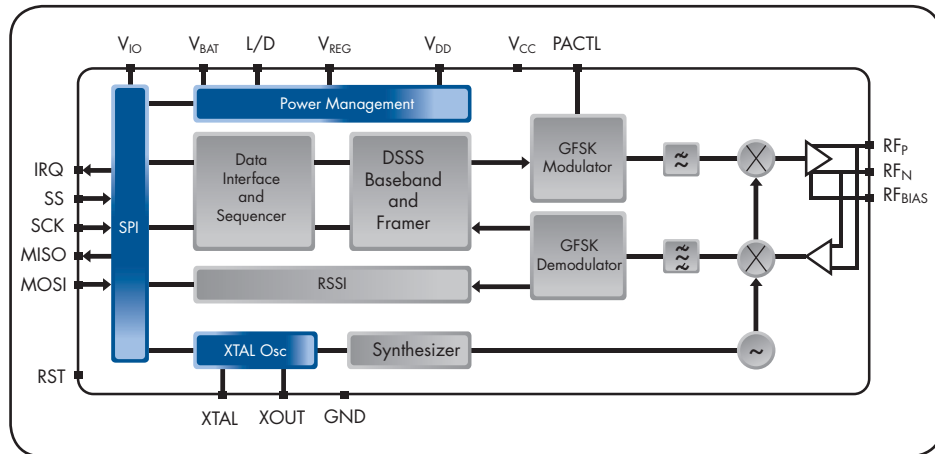
Development Kit: For information about the West Bridge Benicia/Bay Development Kits (DVKs), contact your nearest sales representative.

WIRELESSUSB™ SOLUTIONS

WIRELESSUSB™ LP - LOW-POWER WIRELESS SYSTEM-ON-CHIP

Designed to operate in the 2.4 GHz ISM band, WirelessUSB LP consumes lower power and provides higher throughput than WirelessUSB LS. It maintains WirelessUSB's award-winning interference immunity and superior co-location abilities. The key enhancements include a dramatic reduction in power consumption, support for lower operating voltages, faster data rates of up to 1 Mbps, link layer automation, and the ability to drive supply rails of external devices such as MCUs and optical sensors. This opens up new application possibilities such as mice and keyboards with a year of battery life, game pads, and other applications that can benefit from a simple yet robust 2.4 GHz radio link.

Key Applications: Wireless keyboards and mice, wireless gamepads.



WirelessUSB LP Block Diagram

WIRELESSUSB LP STAR - SECOND GENERATION 2.4 GHz 1 MBPS GFSK RADIO

The CYRF6986 WirelessUSB LP Star radio is Cypress's second generation WirelessUSB radio. It adds a range of enhanced features, including reduced supply current in all operating modes, reduced crystal start up, synthesizer settling and link turnaround times.

WirelessUSB LP Star contains a 2.4 GHz 1 Mbps GFSK radio transceiver, packet data buffering, packet framer, DSSS baseband controller, receiver signal strength indication (RSSI), and SPI interface for data transfer and device configuration. It includes award winning features such as direct sequence spread spectrum (DSSS) and AutoRate™ dynamic data rate reception. These features enable superior RF performance for the WirelessUSB LP Star, including best-in-class noise and interference immunity, co-location capability and long operating range.

FEATURES

WIRELESSUSB LP 2.4 GHz RADIO SOC

- Low power
 - 21 mA TX current (@ - 5 dBm)
 - 21 mA RX current
 - 0.8 μ A sleep current
- Robust link
 - RF transmit power up to +4 dBm
 - Receive sensitivity up to -97 dBm
 - Operating range up to 10 m
- Advanced logic features
 - Auto transaction sequencer
 - Hardware packet framing
 - 16 B TX and RX packet buffers, CRC generation and verification



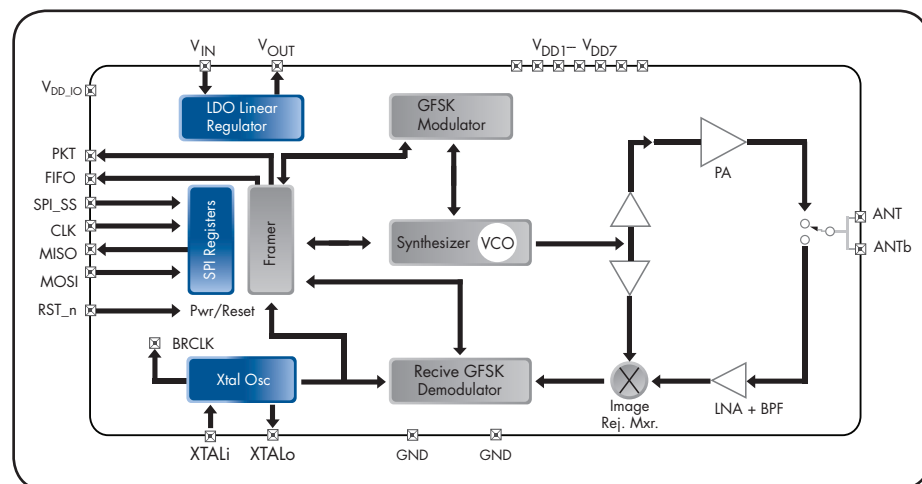
COMPARISON OF LP AND LP STAR

PARAMETER	CYRF69303 PRoC LP STAR	CYRF69103 PRoC LP STAR	CYRF6986 WUSB LP STAR	CYRF6936 WUSB LP STAR
PMU	No	Yes	No	Yes
Input Voltage	2.4-3.6 V _{in}	2.4-3.-3.6 V _{in}	2.4-3.6 V _{in}	2.4-3.-3.6 V _{in}
RX Sensitivity	-77 dBm min.	-80 dBm min.	-77dBm min.	-80 dBm min.
MAX TX Power	+0 dBm typ.	+4 dBm typ.	+0 dBm typ.	+4 dBm typ.
DSSS	Yes	Yes	Yes	Yes
Data Rates	1 Mbps 250 kbps	1 Mbps 250 kbps 125 kbps 62.5 kbps 31.25 kbps 15.625	1 Mbps 250 kbps	1 Mbps 250 kbps 125 kbps 62.5 kbps 31.25 kbps 15.625

PRoC™ LP Star is a complete radio System-on-Chip (SOC) device providing a complete RF system solution with a single device and few discrete components. Integrating a 2.4 GHz 1 Mbps GFSK radio transceiver, DSSS baseband controller, powerful 8-bit microcontroller, 8 KB Flash for user firmware code, 256 bytes of RAM, PRoC LP Star is designed to implement low cost wireless systems operating in the worldwide 2.4 GHz industrial, scientific and medical (ISM) frequency band.

WIRELESSUSB NL - HIGH-QUALITY, LOW-POWER TRANSCIVER

The CYRF8935 WirelessUSB NL is a third-generation offering from Cypress's WirelessUSB Radio System-on-Chip (SoC). Designed to operate in the 2.4 GHz ISM band, CYRF8935 brings the next level of low-power performance and interference immunity into a small 4 mm x 4 mm footprint. Key features include closed loop architecture to eliminate frequency drift, a power efficient wireless protocol and support for up to 255-bytes payload.



2.4 GHz WirelessUSB NL SoC with Closed Loop Modulation

Key Applications: Wireless keyboards and mice, remote controls, wireless game controllers, hobby craft control links, home automation, industrial wireless links, cordless audio and low-rate video.

CYPRESS USB PORTFOLIO

From PC peripherals and consumer electronics to embedded systems, Cypress has the ideal solution for every application imaginable.

	Applications	Cypress USB Portfolio							
Market Segments	Key Applications	Low-Speed Controllers	Full-Speed Controllers	Hi-Speed Controllers	SuperSpeed Controllers	West Bridge® Peripheral Controllers	Embedded Hosts/OTG	Hubs	Transceivers/WirelessUSB™
Personal Communication	Cellular Phones			FX2LP	FX3	Antioch Astoria Arroyo Bay Benicia		HX2VL	TX2UL
	Smartphones								
	Tablets								
	MP3 Players								
	Digital Still Cameras			FX2LP					TX2UL
	Digital Video Camcorders								
	Netbooks								
Human Interface Devices	Mice	enCoRe II	enCoRe III enCoRe V					HX2VL	WirelessUSB LP WirelessUSB LPStar WirelessUSB NL PRoC LP PRoC LPStar
	Keyboards								
	Joysticks								
	Game Pads								
	Remote Controls								
Home Entertainment	TV				FX3	Astoria Arroyo Bay	EZ-OTG EZ-Host SL811HS	HX2VL	TX2UL
	Set-Top Box/ DVR			NX2LP -Flex FX2LP					
	DVD Player								
	Blue-Ray Player								
	Game Consoles								
PC Peripherals	Printers			FX2LP	FX3			HX2VL	TX2UL
	Scanners								
	Web Cameras								
	Docking Stations								
	External HDDs			AT2LP					
	Hubs								
	Bluetooth and Wi-Fi Adaptors		enCoRe V	FX2LP		Arroyo			
Networking	Servers/Routers		enCoRe V			Astoria Arroyo Bay		HX2VL	TX2UL
	Cable/DSL Modems and Gateways			FX2LP					
Automotive	Automotive			AT2LP			EZ-OTG EZ-Host	HX2LP	

CONTACT US

MAKING USB UNIVERSAL® SINCE 1996

CYPRESS HEADQUARTERS**Cypress Semiconductor Corporation**

198 Champion Court

San Jose, CA 95134 USA

Tel: +1 (408) 943-2600

Fax: +1 (408) 943-6848

Toll-free: +1 (800) 858-1810 (U.S. only)

www.cypress.com**FOR MORE INFORMATION:** www.cypress.com/go/usb

TRAINING—

WORKSHOPS/WEBINARS/ON-DEMAND

www.cypress.com/go/training

CYPRESS EDUCATION—

UNIVERSITY ALLIANCE

www.cypress.com/go/university

ONLINE TECHNICAL SUPPORT

www.cypress.com/go/support

CYPRESS DEVELOPER COMMUNITY

www.cypress.com/go/community

CyPros® CERTIFIED CONSULTANTS

www.cypress.com/go/CyPros

CYPRESS ONLINE STORE

www.cypress.com/go/shop

CYPRESS SOLUTIONS LIBRARY

www.cypress.com/go/solutions