

Programmable Connectivity Solution Platform

The world's first ultra-low power, integrated programmable connectivity platform from QuickLogic®

- Integrated, single-chip solution for multiple peripheral host controllers and interfaces to reduce both system BOM cost and board space.
- Flexible platform with configurable Hi-Speed USB 2.0 On-The-Go (OTG), high-speed SDIO, multi-format storage solutions and programmable fabric for additional solutions, intelligence, and custom functions.
- Fast time-to-market with QuickLogic's complete ultra-low power connectivity solutions.



Key Platform Features

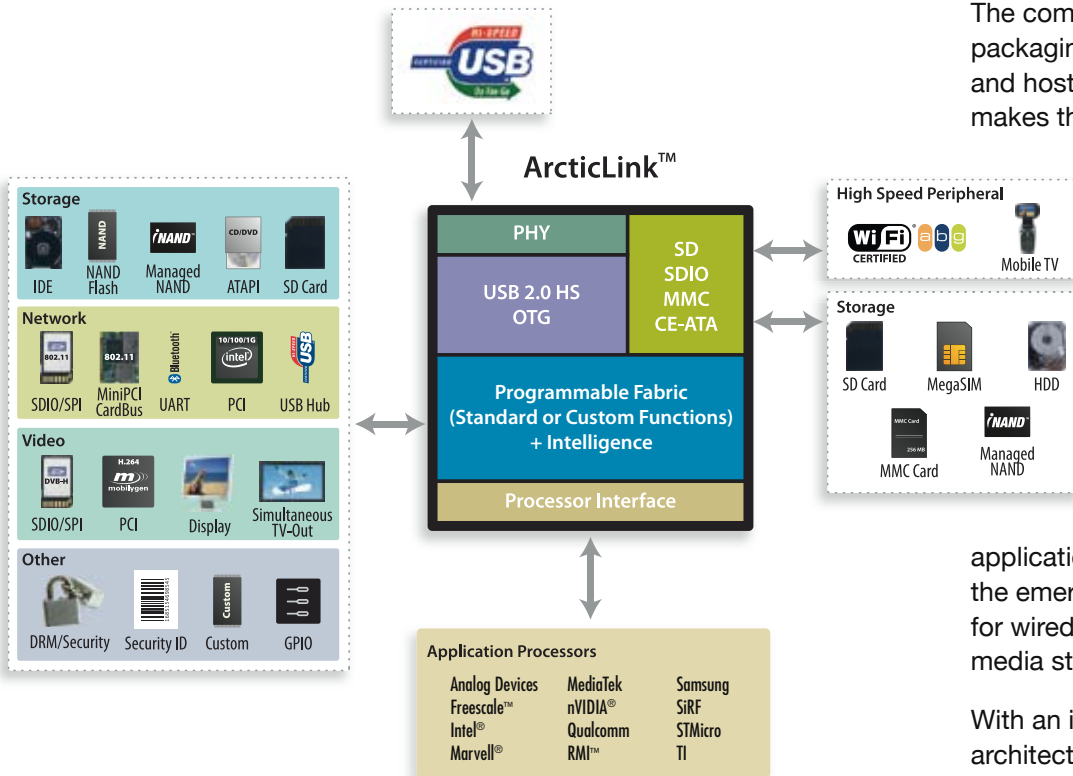
The ArcticLink™ Solution Platform family of programmable connectivity combines interconnect building blocks, such as Hi-Speed USB 2.0 OTG, SDIO and CE-ATA Host Controllers, with an embedded ultra-low power programmable fabric block, all in a single-chip solution.

The combination of small form factor packaging, ultra-low power technology and host bus interface configurability makes this platform ideal for addressing emerging connectivity requirements in power-critical portable and mobile consumer electronics applications.

Through the on-chip programmable fabric, the host bus interface can be tailored to expand the peripheral set of a broad variety of common mobile

application processor families, to meet the emerging connectivity requirements for wired/wireless communications and media storage.

With an innovative internal split bus architecture, the platform enables sustained and concurrent data transfers between slow- and high-speed peripherals, and to/from the common programmable fabric-based host interface.



ArcticLink Connectivity Solutions



Platform Highlights

Hi-Speed USB 2.0 OTG

- Single port, Hi-Speed USB 2.0 OTG controller with integrated PHY
- Supports high-speed 480 Mbits/sec, full-speed 12 Mbits/sec, low-speed 1.5 Mbits/sec operation
- 12-signal ULPI interface available through programmable fabric
- Supports full-speed CEA-936-A I²C carkit interface
- Dedicated DMA controller
- High-speed connectivity to PC, Wi-Fi, HSDPA and WiMAX

SD/SDIO/MMC/CE-ATA

- Supports SD 2.0, MMC 4.1 and CE-ATA 1.10
- 1-bit, 4-bit and 8-bit operation at speeds up to 52 MHz
- 52 MBytes/sec maximum transfer rate
- Supports DMA engine in programmable fabric

Available Interfaces in Programmable Fabric

- PCI, Mini-PCI and CardBus
- IDE for HDD and DVD-ROM
- NAND Flash and Solid State Drives
- SDIO and SPI for Wi-Fi and Mobile TV (DVB, T-DMB, ISDB-T)
- High-speed 3 Mbits/sec UART for Bluetooth 2.0 and GPS
- ULPI-based PHY-less system interconnect

Low Power Programmable Fabric

- Programmable fabric for custom functions
- Flexible host CPU interface
- Innovative split bus architecture for sustained and concurrent data transfer

Lead-Free Packaging

- 121-ball 8 mm x 8 mm, 0.65 mm pitch CTBGA
- 196-ball 12 mm x 12 mm, 0.8 mm pitch TFBGA
- WLCSP and known good die also available

Hi-Speed USB 2.0 OTG Architecture

By combining a Hi-Speed USB 2.0 OTG controller with 8 KB on-chip scratch pad dual-port SRAM memory, the ArcticLink Solution Platform provides Hi-Speed USB 2.0 OTG connectivity, as well as a mechanism for buffering data between a back-end host system and to/from the Hi-Speed USB 2.0 connection. The 8 KB SRAM on-chip buffer memory can be accessed from the dedicated DMA engine in the USB controller or from the programmable fabric-based host interface.

A 12-signal ULPI interface from the Hi-Speed USB 2.0 OTG controller is routed internally to the programmable I/Os and provides a low power, transceiver-less, efficient USB connection to other ULPI-based USB devices within a system.

SD, SDIO, MMC and CE-ATA Architectures

The SD/SDIO host controller port provides seamless and efficient connectivity to any 1-bit or 4-bit SD card with Secure Digital High Capacity (SDHC) or SDIO peripheral components at speeds up to 52 MHz. The Rx/Tx FIFOs can be accessed from either the programmable fabric-based host interface or from a DMA engine within the programmable fabric.

An 8-bit MMC/CE-ATA host controller provides seamless high-speed control of any 1-bit, 4-bit or 8-bit MMC- or CE-ATA-compliant peripherals at speeds up to 52 MHz. The MMC/CE-ATA host controller contains Rx and Tx FIFOs, as well as the CE-ATA command set including CMD-60 and CMD-61. The Rx/Tx FIFOs can be accessed from the programmable fabric-based host interface, thus allowing for the implementation of a DMA engine that manages MMC or CE-ATA data traffic. The ArcticLink Solution Platform supports a dedicated DMA handshake signal (DREQ) to improve processor DMA performance.

Programmable Fabric Architecture

Based on QuickLogic's industry leading ultra-low power PolarPro™ Solution Platform programmable fabric architecture, the ArcticLink Solution Platform provides flexible, intelligent and glueless interfaces to any host processor bus or system without a processor.

Programmable Fabric Highlights

- Up to 120 programmable I/Os for I/O intensive solutions
- Embedded dual-port SRAM and FIFO controllers critical for high throughput and low CPU utilization
- Low power fabric and Very Low Power (VLP) mode
- Native DDR I/Os to support DDR and Mobile DDR SDRAM

- Configurable Clock Manager (CCM) provides easy clock synchronization, frequency multiplication and phase shift

The low power programmable fabric can be used to implement additional connectivity solutions or custom functions. QuickLogic provides a connectivity solution portfolio that includes additional Proven System Blocks (PSBs) such as SD/SDIO, NAND flash controller, IDE/ATA, PCI, Bluetooth 2.x UART, SPI, and others. The processor interface is also implemented in the programmable fabric to allow a seamless interface to application processors.

Applications Overview

As illustrated on the first page, the ArcticLink Solution Platform consists of three main modules: Hi-Speed USB 2.0 OTG with PHY, SDIO/SD/MMC/CE-ATA, and programmable fabric. This highly integrated, yet flexible architecture makes it the ideal platform to implement processor companion solutions for smartphones, multi-media phones, portable media players (PMP), portable navigation devices (PND), ePOS terminals, wireless data cards and ExpressCards.

The ArcticLink Solution Platform can be used to replace several discrete components, reducing BOM cost and saving board space. It gives developers the ability to harness a wide variety of interfaces with ultra-low power consumption. QuickLogic also provides IP, software drivers, documentation, reference schematics and support to help accelerate time-to-market.

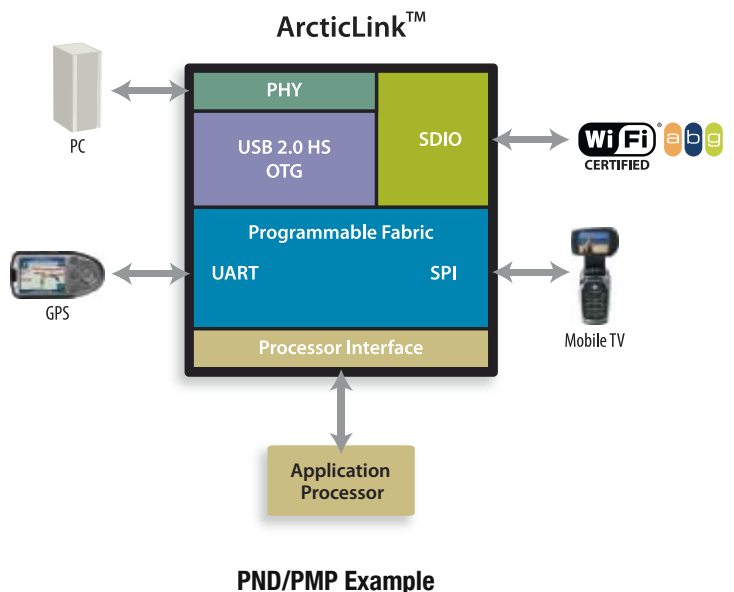
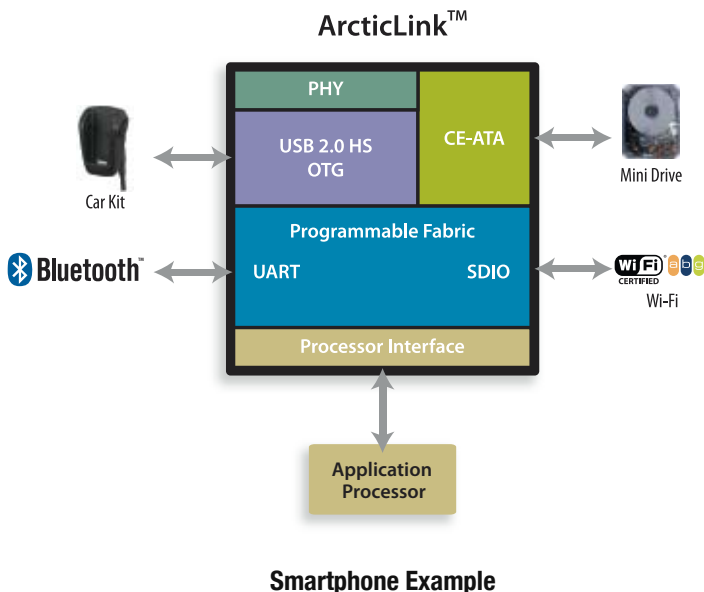
Application Examples

Smartphone/Multimedia Phone

- CarKit interface over ULPI interface to allow hands-free use while driving
- CE-ATA controller enables high capacity and small form factor micro hard drive to store multimedia content and digital data
- SDIO based Wi-Fi for voice-over-IP and data download
- High-speed UART supports Bluetooth 2.x with 4 Mbits/sec transmission rate
- Programmable host interface provides glueless interface to mobile application processor
- Internal split bus allows simultaneous access to multiple connectivity solutions

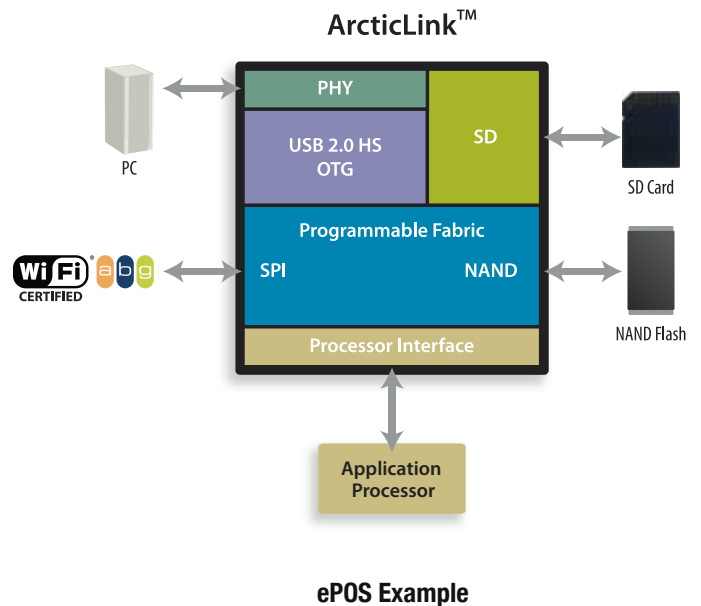
Portable Navigation/Media Player

- Hi-Speed USB 2.0 OTG provides high-speed media and map synchronization with the host PC
- High performance SDIO-based Wi-Fi allows fast media download and map update while on the go
- SPI interface implemented in programmable fabric connects to mobile digital TV chipset
- High-speed UART provides interface to GPS modules
- Programmable host interface provides glueless interface to a wide variety of mobile application processors
- Internal split bus allows simultaneous access to multiple connectivity solutions



Portable Industrial-ePOS Systems

- Hi-Speed USB 2.0 provides fast data synchronization between ePOS terminal and server
- High-speed SD host controller connects to external SD card as secondary storage option for large data base. The ArcticLink Solution Platform supports SDHC that enables plug and play of SD cards with more than 2 GByte capacity
- NAND flash controller in the programmable fabric enables cost-effective embedded NAND flash as the primary storage option for default programs and data
- SPI interface, also implemented in programmable fabric, provides high throughput Wi-Fi connectivity
- Programmable host interface provides glueless interface to mobile application processor
- Internal split bus allows simultaneous access to multiple connectivity solutions



About QuickLogic

QuickLogic Corporation (NASDAQ: QUIK) is the inventor and pioneer of innovative, customizable semiconductor solutions for mobile and portable electronics OEMs and ODMs. These silicon plus software solutions are called Customer Specific Standard Products (CSSPs). CSSPs enable our customers to bring their products to market more quickly and remain in the market longer, with the low power, cost and size demanded by the mobile and portable electronics market. For more information about QuickLogic and CSSPs, visit www.quicklogic.com.



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