

Customer Specific Standard Product (CSSP) Solutions

- Offers designers the integration and flexibility to accelerate time-to-market and differentiation in the mobile market
- Includes small footprint packaging, or die, that maximizes printed circuit board (PCB) real estate, hence reducing Bill of Materials (BOM) costs
- Enhances processors to support emerging new standards and customer feature requirements, resulting in improved user experience
- Provides a unique combination of hard logic and ultra-low power programmable fabric based on our patented ViaLink® technology for adapting CSSPs as market conditions change, resulting in longer time-in-market

Answers to Mobile Market Designer Challenges

QuickLogic Corporation helps mobile product system architects and designers face these increasingly difficult design challenges:

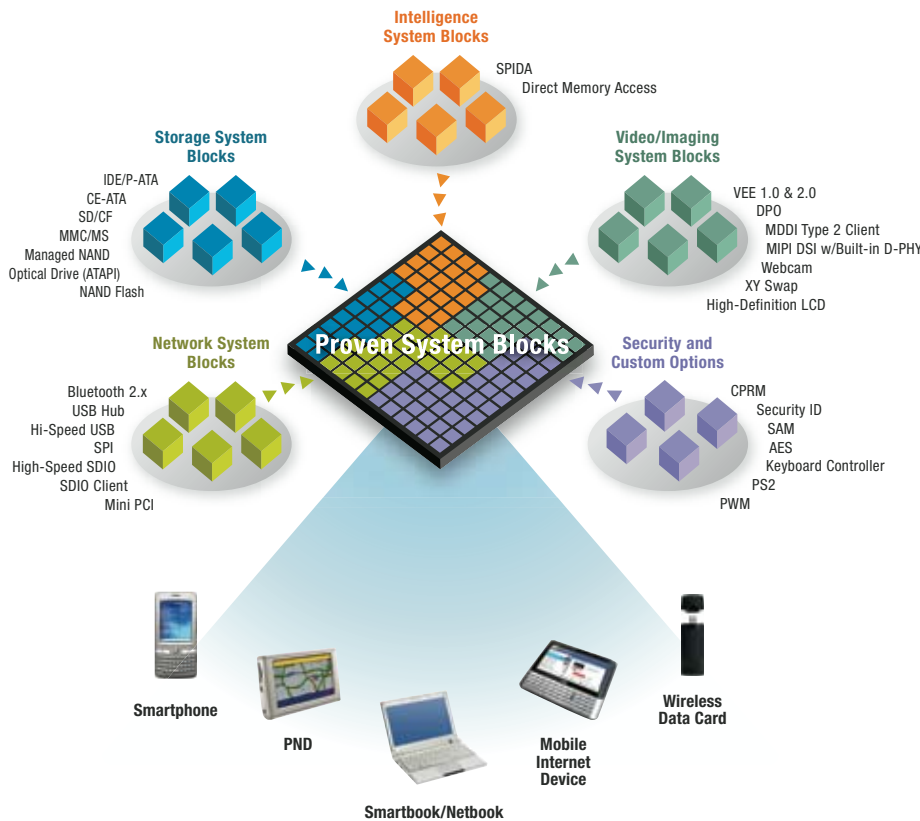
- Desire to move from mass production to mass customization
- More complex products with varying feature sets
- Shrinking product development schedules and budgets
- Consumers' insatiable demands for more features with longer battery life and small product size

These challenges require a more flexible approach to system design once an application or baseband processor has been chosen.

QuickLogic solves these challenges with our award winning PolarPro®, PolarPro II, ArcticLink®, and ArcticLink II Solution Platform families. These solution platforms can be configured to support a varied array of functionality with Proven System Blocks (PSBs) that allow for unique custom designs or product variations in all of these market segments:

- Smartphone/MID
- Smartbook/Netbook
- Wireless Data Card
- Personal Media Player
- Portable Navigation

QuickLogic CSSP Platform Concept



ArcticLink and ArcticLink II Solution Platforms

ARCTICLINK™

The ArcticLink Solution Platforms are designed to effectively support hardwired building blocks

such as Hi-Speed USB 2.0 On-The-Go (OTG), SD/SDIO/MMC/CE-ATA, and other connectivity and custom functions using an ultra-low power array of programmable fabric.

ARCTICLINK™ II

The ArcticLink II Solution Platform family is tailored

for mobile processors and chipsets integrating Visual Enhancement Engine (VEE), Display Power Optimizer (DPO), Framebuffer, MDDI, MIPI DSI controller, and programmable fabric. This highly integrated, yet flexible platform makes it the ideal solution for display and connectivity subsystems of handheld portable devices.

- VEE v2.0 enables sunlight viewability through dynamic range control resulting in TV-quality visual experience
- DPO significantly reduces display power consumption through intelligent control of backlight brightness
- MDDI v1.2 Type 2 Client, MIPI DSI, RGB, or CPU Bus
- Up to 32 Mbits of embedded frame buffer using very lower power Cellular RAM technology

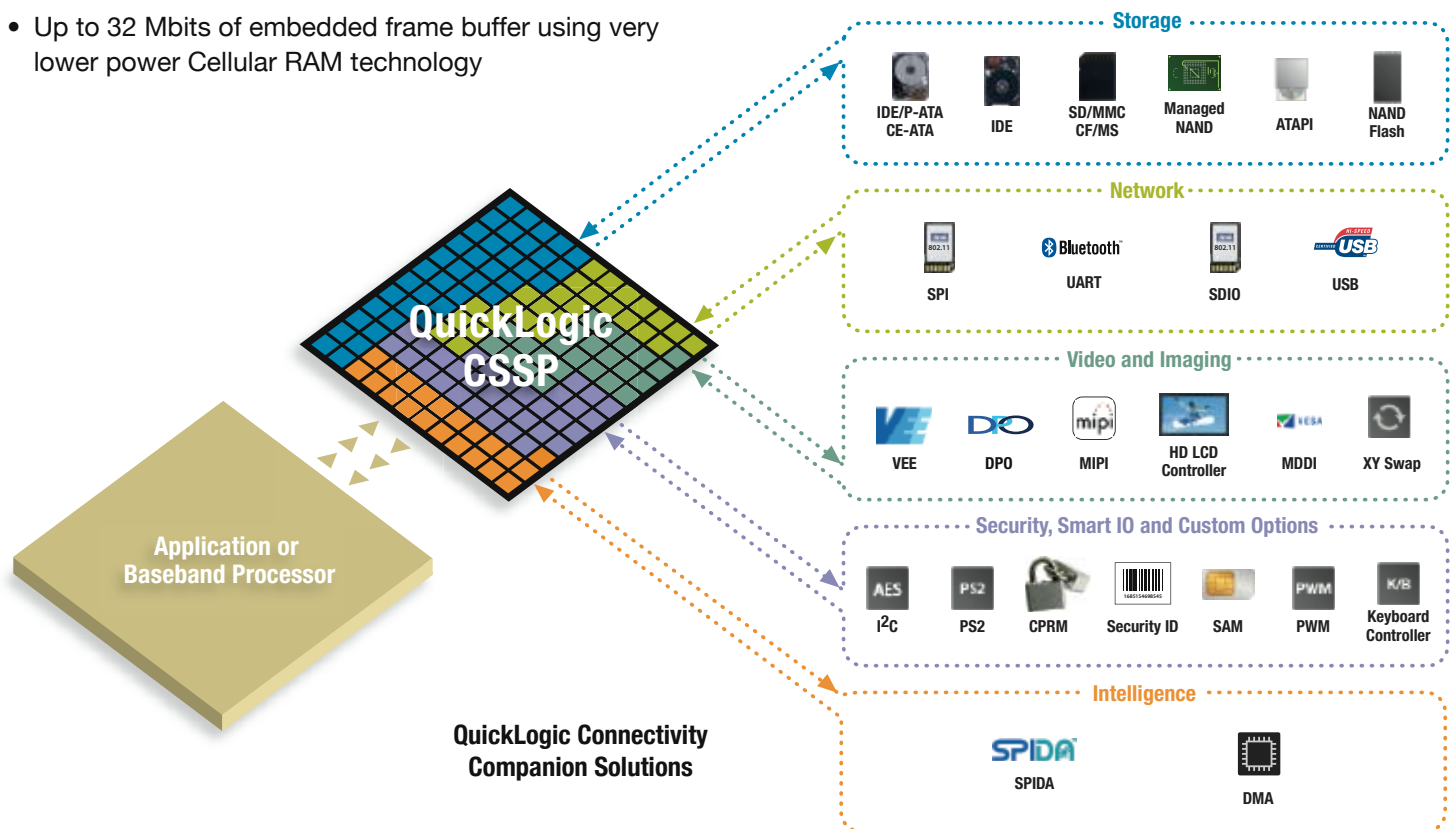
PolarPro and PolarPro II Solution Platforms

POLARPRO®

The PolarPro Solution Platform families combine ultra-low power programmable fabric,

performance, density, and embedded SRAM to meet the interconnect and system logic requirements of power sensitive and portable applications.

- Very Low Power mode puts the entire device in sleep mode, drawing as low as 2.2uA, while maintaining I/O status and internal register values
- Very small, Wafer Level Chip Scale Packaging (WLCSP), as small as 3.25mm x 3.5mm, for handheld and portable electronics.



QuickLogic Proven System Block Options

Storage

Secure Digital (SD) Card Host Controller supports

- Secure Digital 2.0 standard with Secure Digital High Capacity (SDHC)
- 1-bit and 4-bit operation at speeds of up to 50 MHz

Multimedia Card (MMC) Controller supports

- MMC 4.4 standard for MMC and high capacity SIM card
- 1-bit, 4-bit, 8-bit operation with speeds up to 52 MHz

Managed NAND Controller with Boot Capability supports

- Elimination of the need for NOR Flash in the system
- Booting from any SD/MMC-based Managed NAND device with SDHC devices of 4 GBytes and above
- Secure Digital 2.0 standard with Secure Digital High Capacity (SDHC)
- Latest eMMC standard
- Multiple SD/SDIO/MMC devices or cards on the same bus

IDE/P-ATA Host Controller supports

- All 1" and 1.8" IDE/P-ATA HDDs
- Data throughput of up to 33 MByte/sec with UDMA
- Lower processor overhead for ATA timing and polling operation

NAND Flash Controller supports

- Single Level Cell (SLC) NAND flash with 2-bit hardware ECC/EDC
- Hardware support for wear leveling and bad block management

Compact Flash (CF) Host Controller supports

- 8-bit and 16-bit Compact Flash interface
- Memory and I/O modes for CF card and peripherals
- True IDE mode for CF micro hard drives

Memory Stick (MS) Controller supports

- Memory Stick and Memory Stick Pro standards
- Theoretical maximum data transfer rate of 480 Mbps
- 4-bit, 8-bit and serial interface widths

Optical Drive Controller (ATAPI) supports

- CD and DVD ROM connectivity (ATAPI)
- Enhanced support for simultaneous DVD ROM and hard disk drives
- Throughput of greater than 13 MByte/sec
- Off-loading the application processor from managing the overhead of ATA timing and polling operations

Network

Hi-Speed USB Controller supports

- Hi-speed USB 2.0 OTG with integrated high-speed PHY
- 12-signal ULPI interface available through programmable fabric
- 8 KByte SRAM on-chip buffer to improve data transfer performance
- Dedicated DMA controller to off-load CPU from heavy data transfer and manipulation

High-Speed SDIO Controller supports

- High-speed SDIO host controller with clock frequency up to 50 MHz
- Compliance with the latest Secure Digital 2.0 standard
- SPI, 1-bit and 4-bit modes
- Rx/Tx FIFOs for higher performance and throughput
- DMA for reducing processor bus utilization

MiniPCI for Ethernet, Wi-Fi/WiMAX Controller supports

- Leveraging of low-cost PCI-based Wi-Fi modules
- Up to 264 MByte/sec PCI bus performance, zero wait states
- Master and target functions for 32-bit data at speeds of 33 and 66 MHz
- Full compliance to PCI specification 2.3, and Cardbus and Compact PCI compatible

SPI Controller supports

- High-speed SPI master controller with clock frequency up to 52 MHz
- Low cost, low pin count wireless connectivity solution
- Simple driver architecture customizable to enhance Wi-Fi performance

Bluetooth 2.x + EDR High-Speed UART supports

- High-speed UART for supporting Bluetooth 2.x with up to 4 Mbit/sec data rate
- Configurable baud rate customized for different application requirements
- Configurable flow control and FIFO access

SDIO Client supports

- SD v2.0 and SDIO v1.2 compliance with multifunction SDIO support
- SD 1 bit, SD 4 bit and SPI mode up to 50 MHz
- Hot insertion/removal, interrupt, Read Wait, Suspend, and Resume
- CRC7/CRC16

USB Hub supports

- Hi-Speed USB upstream port with built-in Hi-Speed USB PHY
- Each downstream port supporting Full-Speed at 12 MByte/sec and Low-Speed at 1.5 Mbit/sec operation
- Customizable number of downstream ports
- Transaction Translator (TT) optimized for maximum bandwidth utilization

Video and Imaging

MDDI Client with Built-in PHY

- Display standard developed by Qualcomm and VESA; up to WSVGA resolution
- Serial interface to reduce pin count, power and cost
- Supports both Type 1 and Type 2

Visual Enhancement Engine (VEE) supports

- TV-quality visual experience in mobile devices through pixel-by-pixel, frame-by-frame processing
- Greatly enhanced image and video quality even under bright sunlight with dynamic range control

Display Power Optimizer (DPO) supports

- Dramatically improved battery life through real-time adaptive display backlight and/or brightness optimization
- Tightly coupling with VEE technology for enhanced visual quality—even with the lower backlight/brightness

MIPI DSI with Built-in D-PHY supports

- Display standards developed by the MIPI alliance
- Serial interface to reduce pin count, power and cost
- Lower noise and much improved reliability through hinge of clamshell, swivel and slider phones

X/Y Swap supports

- X/Y Swap Operation
- Frame rate conversion for VGA, NTSC and PAL
- Power management for stopping all subsystem clocks and shutting down the SDRAM frame buffer
- Configuration from the host application processor via I²C-compatible bus

High-definition LCD Controller supports

- Configurable resolution up to 1366 x 768
- Programmable display aspect ratio
- Configurable vertical and horizontal scan frequencies
- Maximum color depth of 24 bits per pixel
- Embedded SRAM/(Mobile) SDRAM/DDR-SDRAM controller for frame buffer



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Intelligence

Smart Programmable Integrated Data Aggregator (SPIDA) supports

- Onboard intelligence that enables direct port-to-port data transfers, without taxing host CPU
- Significantly improved speed for large file transfers, enhancing sideloading performance
- Aggregation of multiple, independent peripherals to one data pipe to host CPU for system efficiency

Direct Memory Access (DMA) supports

- Fully customizable DMA controller
- Lower CPU utilization

Security and Custom Options

Content Protection for Recordable Media (CPRM) supports

- C2 cipher algorithm implemented in hardware
- Working in conjunction with QuickLogic SD/SDIO or P-ATA host controllers
- Key stored securely in hardware
- Optimization for SD-Video performance

Serial ID supports

- Secure numeric ID, as long as 256 bits can be implemented in the programmable fabric of any PolarPro or ArcticLink Solution Platform
- Unique number in each CSSP device controlled by a list of desired values provided by OEM/ODM

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