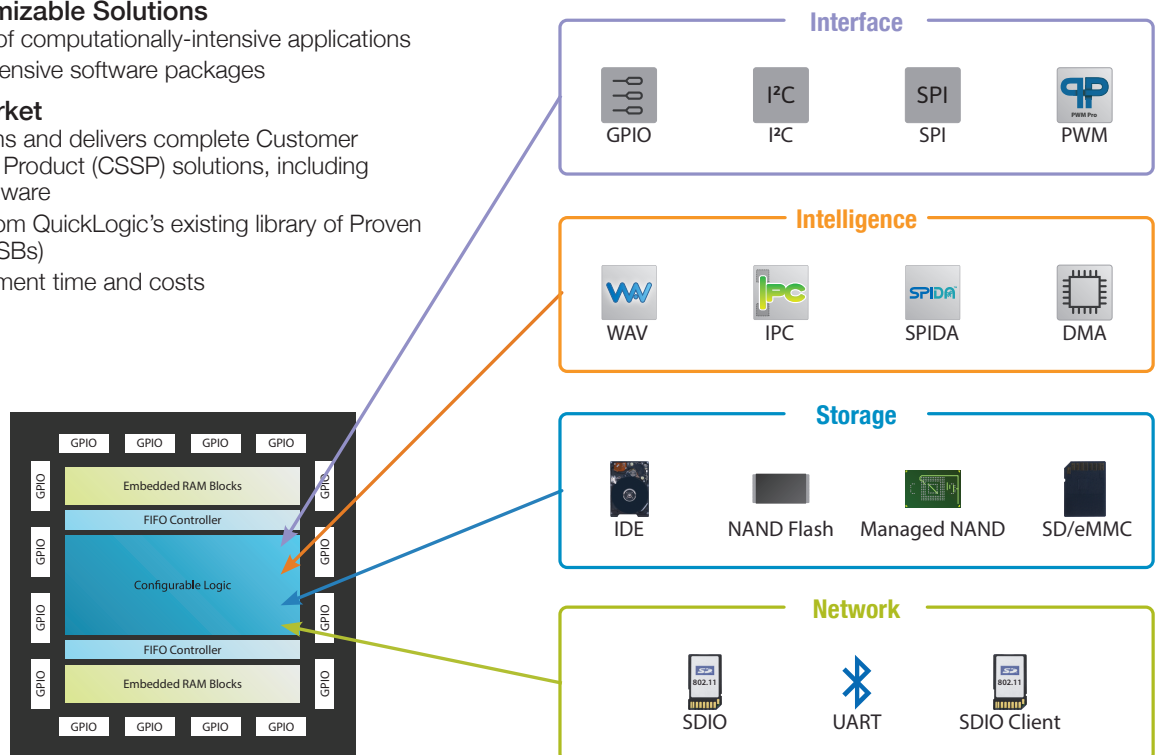# PolarPro™ 3 Programmable Logic Solution Platform

The QuickLogic PolarPro 3 solution platform provides a fully programmable and flexible solution for the mobile handheld market with:

- **Ultra Low Power**
  - 50µA static power consumption, suitable for even the most power sensitive applications
  - Prolongs device battery life

- **Small Package**
  - As small as 2.09mm x 2.54mm
  - WLCSP, VFBGA, or die options available
  - Designed for the most space-sensitive applications

- **More Efficient Logic Utilization**
  - Flexible logic cells, capable of two independent 3-input LUTs or a single 4-input LUT
  - Generally twice as efficient as standard 4-input logic cell architectures (implementation-dependant)
  - Allows greater functionality in less PCB space

- **Embedded Standard Blocks**
  - Built-in SRAM and FIFO
  - Enables data buffering and autonomous data transfers
  - Reduces application processor overhead

- **Complete Customizable Solutions**
  - Allows offloading of computationally-intensive applications
  - Includes comprehensive software packages

- **Fast Time-to-Market**
  - QuickLogic designs and delivers complete Customer Specific Standard Product (CSSP) solutions, including hardware and software
  - Implementation from QuickLogic's existing library of Proven System Blocks (PSBs)
  - Reduces development time and costs

The PolarPro 3 family was specifically architected to meet the increasingly complex needs of mobile device OEMs. With special attention paid to efficient logic cell utilization, achiving the smallest size, and lowest power consumption during the design process, QuickLogic has ensured that the PolarPro 3 device is the ideal solution for OEMs who require a configurable logic solution for their application. The PolarPro 3 CSSP (Customer Specific Standard Product) is designed to operate seamlessly with any processor available on the market today to address emerging connectivity, sensor control, and custom applications. QuickLogic combines PSBs and software drivers, along with customer-specific logic, to deliver CSSPs which meet customer needs.



**QuickLogic PSB Library**

## Efficient Logic Cell Utilization

In choosing which programmable logic device to use, an engineer might judge the capabilities of a device based simply on the number of logic cells it contains. However, in this judgment, the engineer assumes that all logic cells are designed the same. For most programmable devices, this is true. However, with the unique flexible logic cell design in the PolarPro 3 platform, logic cells can no longer be looked at as equal to one another.

The PolarPro 3 family features the unique ability to implement two independent 3-input look-up tables (LUT) or a single 4-input LUT from a single logic cell. Typical programmable fabric logic cells only contain a single 4-input LUT, which is why most engineers often view all logic cells as equal in capabilities. As shown in Figure 1, a single logic cell in the PolarPro 3 device can actually perform multiple functions and in multiple configurations, whereas a standard logic cell from other vendors performs a single function.

Since every logic cell in the PolarPro 3 device can function either as a two independent 3-input or 4-input LUT, it allows QuickLogic's designers the ability to more aggressively implement PSBs on the device, as shown in Figure 2. This means that QuickLogic can perform more functions than typical programmable fabric devices if measured on a per-unit PCB area, or can perform the same functions in a much smaller device.

In typical implementations, the PolarPro 3 family has been benchmarked to use available resources twice as efficiently as competing logic cell architectures.
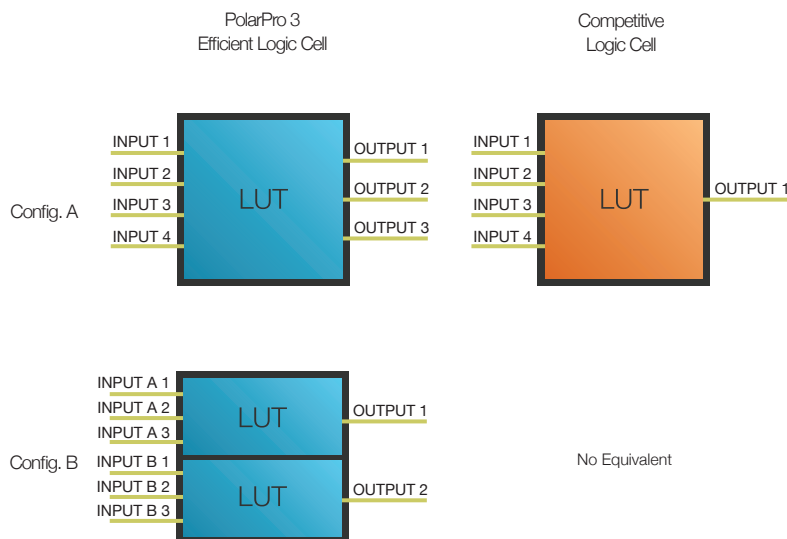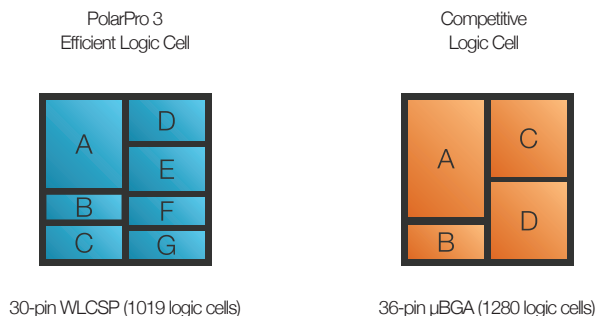
**Figure 1**

**Figure 2**

30-pin WLCSP (1019 logic cells)

36-pin µBGA (1280 logic cells)

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## About QuickLogic

QuickLogic Corporation 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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Printed in USA.
QL PP3 SPB  08/2013

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