

ARM® 65LPe Low Power Physical IP Platform

Targeting the ARM11™ Processor Family and optimized for the Chartered 65LPe Process

The ARM® Low Power Platform provides the fundamental building blocks to design high performance, energy-efficient SoCs for handheld consumer products.

The 65LPe Low Power Physical IP Platform, optimized for the Chartered Low Power enhanced process, delivers the ultimate in mobile performance. Comprised of a power-efficient processor with low power logic, memory and fast cache compilers, the 65LPe Low Power Platform provides a designer the necessary flexibility to partition and tune a design for performance and power. ARM leadership in microprocessor architectures, coupled with its Physical IP, deliver high speed and low power solutions for portable consumer and wireless devices.



ARM®

The Architecture for the Digital World®

ARM 11 Processor Highlights

- Low energy consumption with a range of power modes and DVFS support
- SIMD media processing extensions and optimized memories for high performance video processing
- ARM TrustZone technology for secure media download with ARM1176
- 64-bit AXI bus interface for high bandwidth system data access

ARM11 Processor Family

The ARM11 processor family enables enhanced security, performance and low energy consumption for converging consumer and wireless applications. The ARM11 processors feature a range of power modes, and support for dynamic voltage and frequency scaling (DVFS). This combination enables an extended battery life for both standby mode and active-use.

ARM11 processors bring enhanced performance to portable media applications with SIMD media processing extensions, delivering up to 2x performance for video processing. Additional speed for multi-media products is available through tightly coupled memories with integrated DMA support, enabling fast access to video data.

Logic Highlights

- 12-track High Performance Standard Cell Libraries offer 25% higher performance over standard high density cells
- 9-track High Density Standard Cell Libraries for speed, area and power balanced designs
- 8-track Ultra-High Density Standard Cell Libraries provide 15% lower area and power vs. standard high density cells
- Power Management Kits enabling active dynamic and leakage power management
- ECO Kits for cost effective and schedule critical design modifications

ARM Logic IP Family

The ARM 65LPe Physical IP Logic family consists of High Performance, High Density and Ultra-High Density Libraries. Complemented with Power Management Kits for advanced power optimization and ECO Kits for time and cost-effective functional changes, this comprehensive set of libraries enables optimal implementation across a wide variety of designs and applications.

High Performance Libraries provide maximized design performance for the most demanding mobile-media applications. The High Density Libraries, targeted at mainstream solutions, provide a balance between speed

Memory Highlights

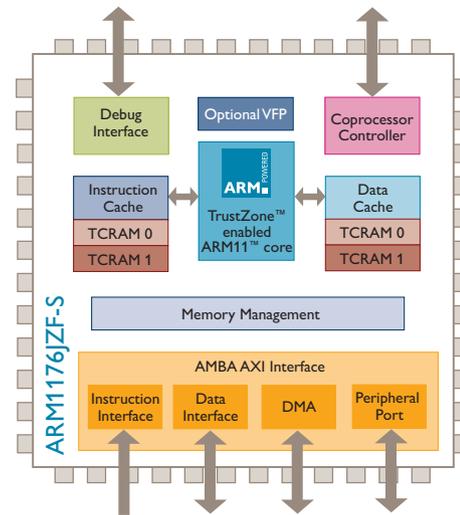
- ARM 65LPe memory compilers offer a low power profile, minimizing leakage power by 78% over standby mode
- ARM Fast Cache Instances
 - Specifically designed to enhance the performance of ARM 9 and ARM11 processors
 - Provide up to 12% more performance with up to 15% area reduction

ARM Memory IP Family

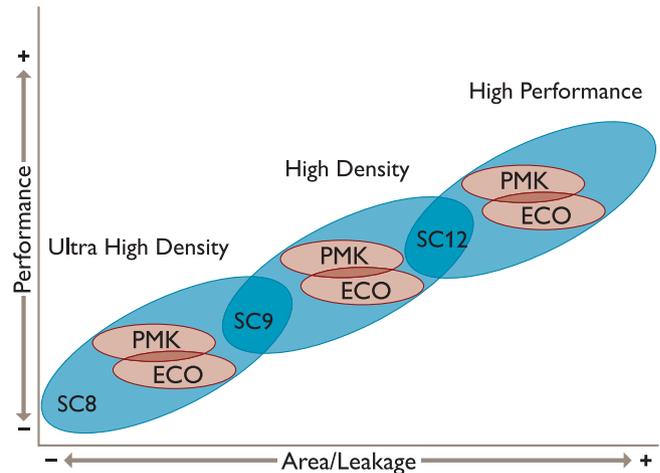
The ARM 65LPe Physical IP embedded memory portfolio is the industry's most comprehensive set of memory products, delivering the highest ARM processor performance, with the lowest possible power. Low leakage power is achieved through multiple power management modes. During standby mode, HVt devices shutdown power to the periphery, reducing leakage power by up to 78%. Optional back bias support further reduces leakage power, by increasing the threshold device voltage. Low power architectural techniques and banking also enable reduction of power during active mode operation.

Powerful acceleration of embedded 3D-graphics is further provided by the ARM1176JZF-S, a version of the processor which incorporates an integrated vector floating point coprocessor.

Along with low power consumption and high performance, portable media products require security. ARM TrustZone® technology in ARM1176 provides support within the CPU and platform architecture for building the trusted computing environments needed to protect critical system functions from downloaded applications, including safe over-the-air system upgrades and copyright protection of downloaded media.

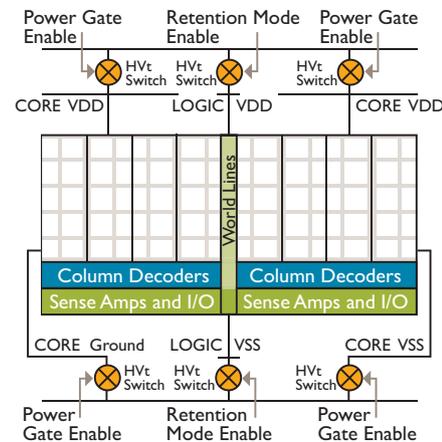


and area, while maintaining low power. Designs that are extremely cost and power sensitive are best implemented with Ultra-High Density Libraries, offering reduced area and extremely power efficient operation. All libraries provide very fine granularity drive strengths and are implemented in a tapless cell design, enabling optimal transistor density. The Power Management Kit goes further to provide active management of dynamic and leakage power by supporting the latest low power flows with voltage islands and on-chip power gating.



For applications that require high performance, ARM offers Fast Cache Instances for ARM9 and ARM11 processors. The Fast Cache Instances offer up to 12% increased performance and a reduced die area of 8 – 15% over standard compiled memories. Fast Cache Instances use only standard Vt, thus lowering package and mask costs, and offering faster time-to-market. The ARM 65LPe Memory IP family provides multiple speed, power and area solutions, offering the widest memory choices for portable consumer implementations.

Power gating in 65LPe memories, reducing leakage power by up to 78% over regular standby mode.



Support of Leading EDA Design Flows

Each ARM product is delivered with an extensive and accurate set of models, supporting industry-leading formats, and validated with tools provided by ARM EDA partners including Cadence, Magma, Mentor Graphics and Synopsys. The products are designed to support leading EDA solutions, such as those featured in Chartered Reference Flows.



EDA Deliverables Highlights

- Simulation models (Verilog)
- Timing and power models (non-linear and current source)
- Advanced power management modeling
- Signal integrity and IR drop analysis models
- Place-and-route abstracts
- LVS netlists and GDSII files

ARM Physical IP Platform Overview



ARM is the industry's leading provider of 32-bit embedded RISC microprocessors, offering a wide range of processors based on a common architecture that deliver high performance, industry leading power efficiency and reduced system cost.

To enable our partners to choose a processor which is ideal for their specific needs and application, ARM has developed a processor portfolio of over 20 processors, ranging from the foundation of the ARM7 family, through the versatile ARM11 family, to the latest Cortex family processors. This exceptional range ensures that whether it is outright performance, minimal power consumption, device cost, or all three that is required, one of our processors will fit the application.

The Cortex family of processors stretches from the ultra-small low power ARM Cortex-M0 processor through to the multi-core capable ARM Cortex-A9 processor to deliver scalability from inexpensive solutions under \$1 to GHz level performance. The family delivers unrivalled compatibility while enabling developers to target vastly differing requirements across the embedded spectrum.



ARM Memories are optimized to deliver fast processor performance while minimizing power consumption and die size. The High Speed

Memories include advanced power management features, providing dynamic and leakage power savings, resulting in reduced packaging costs, while maintaining performance. High Density Memories maximize the performance/area tradeoff for dense SRAM arrays with reduced die size requirements. These innovative architectures combined with processor-specific power management modes, enable superior ARM processor implementations, not available in generic solutions.



ARM Logic Libraries deliver next-generation standard cells for high performance, mainstream and power-optimized configurations. High Performance Libraries unleash the frequency of high speed ARM processors, while High Density Libraries offer a balance between speed and area targets. Used in the combination, these libraries allow for independent performance, area and power optimization across all regions of the SoC. The PMK and ECO kit reduce power consumption and lower overall design risk.

ARM also offers Support that includes additional documentation, training and onsite assistance for faster and more effective design projects. These services ease integration and minimize costly rework, reducing design effort and enabling faster time-to-market.



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