

National Semiconductor's Advanced Power Controller Is Now Available For Licensing From ARM

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SANTA CLARA, CA AND CAMBRIDGE, UK - June 15, 2004 - National Semiconductor Corporation, and ARM, today announced that National Semiconductor's industry-leading Advanced Power Controller (APC) is available for licensing from ARM. The PowerWise™ technology-based APC product, used in conjunction with National's high-efficiency power management circuits and the ARM® Intelligent Energy Manager (IEM) technology, can reduce processor core power consumption by up to 75 percent.

Today, mobile phones are rapidly evolving beyond voice-only devices. Manufacturers are including features such as cameras, color displays, MP3 music, games, FM stereo and PDA capabilities. As a result, designers have the daunting challenge to ensure these power-hungry features can be added to devices without reducing battery life.

National's PowerWise technology is an ideal solution for system-on-chip (SoC) devices in mobile phones and other portable electronic devices. The APC product is a synthesizable AMBA™ methodology-compliant macrocell which includes a Hardware Performance Monitor (HPM). The APC product automatically calibrates for process and temperature variations to reduce the system power supply to the absolute minimum necessary to meet the required level of performance at all operating frequencies.

IEM technology implements advanced algorithms to optimally balance processor workload and energy consumption while maximizing system responsiveness. The IEM software component works with the mobile device's operating system and applications to dynamically predict the lowest CPU performance level while still maintaining full user quality. The ARM Intelligent Energy Controller (IEC) macrocell then determines the best operating frequency to support CPU performance level for a specific SoC implementation.

"National's PowerWise technology and the ARM Intelligent Energy Manager technology can reduce power consumption of systems-on-chip by dynamically matching minimal voltage and frequency to the chip's workload," said Max Baron, principal analyst at InStat-MDR. "These technologies for National and ARM are independent of semiconductor process and temperature making them important to designers focused on extending the battery life of multi-featured cell phones and other handheld devices."

The IEC works cooperatively with the on-chip clock management unit to control clock frequency changes and the APC macrocell to adaptively set the minimum required power supply voltage delivered by the external compliant power management chip. The APC product communicates with external PowerWise compliant power management chips using the PowerWise interface (PWI), an open-standard interface dedicated to power management.

"National's Advanced Power Controller is a key technology that will enable cell phone makers to produce value-added multifunction devices without compromising the battery life consumers have come to expect," said Peter Henry, vice president of Portable Power Systems at National Semiconductor. "Through ARM, manufacturers can now license this innovative technology for incorporation in next-generation products."

"ARM is committed to providing its Partners with the technology that will help them improve SoC performance and recognizes that power is one of the major issues they have to tackle today. National's APC and ARM's IEM technologies are major breakthroughs which together minimize energy consumption depending on processor workload, silicon process, and temperature," said Oliver Gunasekara, director, Wireless, ARM. "Now our Partners have access to the best suite of energy management technologies available on the market."

The APC product is embedded in SoC devices used in portable applications such as digital baseband and application processors. The APC product is provided as soft IP (10,000 gates) with RTL, synthesis scripts, test benches, implementation and programming documentation. The APC product is also configurable to support up to eight performance levels and includes a PWI compliant master. The APC product supports deployment of both table-based Dynamic Voltage Scaling and PowerWise Adaptive Voltage Scaling. Using the APC product in a system enables significant power savings that result in extended battery life.

APC technology is available from ARM. For further information, please visit www.powerwise.national.com, www.arm.com or www.pwistandard.org

The original press release can be found [here](#).

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