TSMC Launches Ultra-Low Power Technology Platform for IoT and Wearable Device Applications

Hsinchu, Taiwan, R.O.C. – September 29, 2014 – TSMC (TWSE: 2330, NYSE: TSM) today announced the foundry segment’s first and most comprehensive ultra-low power technology platform aimed at a wide range of applications for the rapidly evolving Internet of Things (IoT) and wearable device markets that require a wide spectrum of technologies to best serve these diverse applications. In this platform, TSMC offers multiple processes to provide significant power reduction benefits for IoT and wearable products and a comprehensive design ecosystem to accelerate time-to-market for customers.

TSMC’s ultra-low power process lineup expands from the existing 0.18-micron extremely low leakage (0.18eLL) and 90-nanometer ultra low leakage (90uLL) nodes, and 16-nanometer FinFET technology, to new offerings of 55-nanometer ultra-low power (55ULP), 40ULP and 28ULP, which support processing speeds of up to 1.2GHz. The wide spectrum of ultra-low power processes from 0.18-micron to 16-nanometer FinFET is ideally suited for a variety of smart and power-efficient applications in the IoT and wearable device markets. Radio frequency and embedded Flash memory capabilities are also available in 0.18um to 40nm ultra-low power technologies, enabling system level integration for smaller form factors as well as facilitating wireless connections among IoT products.

Compared with their previous low power generations, TSMC’s ultra-low power processes can further reduce operating voltages by 20% to 30% to lower both active power and standby power consumption and enable significant increases in battery life -- by 2X to 10X -- when much smaller batteries are demanded in IoT/wearable applications.
“This is the first time in the industry that we offer a comprehensive platform to meet the demands and innovation for the versatile Internet of Things market where ultra-low power and ubiquitous connectivity are most critical,” said TSMC President and Co-CEO, Dr. Mark Liu. “Bringing such a wide spectrum of offerings to this emerging market demonstrates TSMC’s technology leadership and commitment to bring great value to our customers and enable design wins with competitive products.”

One valuable advantage offered by TSMC’s ultra-low power technology platform is that customers can leverage TSMC’s existing IP ecosystem through the Open Innovation Platform®. Designers can easily re-use IPs and libraries built on TSMC’s low-power processes for new ultra-low power designs to boost first-silicon success rates and to achieve fast time-to-market product introduction. Some early design engagements with customers using 55ULP, 40ULP and 28ULP nodes are scheduled in 2014 and risk productions are planned in 2015.

“TSMC’s new ultra-low power process technology not only reduces power for always-on devices, but enables the integration of radios and FLASH delivering a significant performance and efficiency gain for next-generation intelligent products,” said Dr. Dipesh Patel, executive vice president and general manager, physical design group, ARM. “Through a collaborative partnership that leverages the energy-efficient ARM® Cortex®-M and Cortex-A CPUs and TSMC’s new process technology platform, we can collectively deliver the ingredients for innovation that will drive the next wave of IoT, wearable, and other connected technologies.”

“Low power is the number one priority for Internet-of-Things and battery-operated mobile devices,” said Martin Lund, Senior Vice President and General Manager of the IP Group at Cadence. “TSMC’s new ULP technology platform coupled with Cadence’s low-power
mixed-signal design flow and extensive IP portfolio will better meet the unique always-on, low-power requirements of IoT and other power sensitive devices worldwide.”

“CSR has an unequalled reputation in Bluetooth technology and has been instrumental in its progression, including helping to write the Bluetooth Smart standard that is meeting the demands of today's rapidly evolving consumer electronics market,” said Joep van Beurden, CEO at CSR. “For many years, CSR has closely collaborated with TSMC, and we are pleased to demonstrate the results of that collaboration with the adoption of the 40ULP platform for our next generation of Bluetooth Smart devices including products for markets like smart home, lighting and wearables that are enabling the growth of the Internet of Things. Our solutions simplify complex customer challenges and help speed their time to market by allowing them to design and deliver breakthrough low power wireless connected products on these powerful new platforms.”

“The imaging SoC solutions of Fujitsu Semiconductor Limited bring the best balance between high imaging quality and low power consumption, to meet the significant demand from our customers and the electronics market,” said Tom Miyake, Corporate Vice President, at System LSI Company of Fujitsu Semiconductor Limited. “We welcome that TSMC is adding the 28ULP technology to its successful 28nm platform. We believe this technology will provide our SoCs with the key feature: low power consumption at low cost.”

“Nordic Semiconductor has been a pioneer and leader in ultra-low power wireless solutions since 2002, and with the launch of its nRF51 Series of Systems-on-Chip (SoCs) in 2012 the company established itself as a leading vendor of Bluetooth Smart wireless technology,” said Svenn-Tore Larsen, CEO of Nordic Semiconductor. “We have been collaborating closely with TSMC on the selection of process technology for our upcoming nRF52 Series of ultra-low power RF SoCs. I
am happy to announce that we have selected the TSMC 55ULP platform. This process is a key enabler for us to push the envelope on power consumption, performance and level of integration of the nRF52 Series to meet the future requirements of Wearable and Internet of Things applications.”

“Built on TSMC’s Ultra-Low Power technology platform and comprehensive design ecosystem, Realtek’s Bluetooth Energy Efficient smart SoC, BEE, supports the latest Bluetooth 4.1 specification featuring Bluetooth Low Energy (BLE) and GATT-based profiles,” said Realtek Vice President and Spokesman, Yee-Wei Huang. “BEE’s power efficient architecture, low power RF, and embedded Flash are ideal both for the IoT and for wearable devices such as smart watches, sport wristbands, smart home automation, remote controls, beacon devices, and wireless charging devices.”

“Silicon Labs welcomes TSMC’s ultra-low power initiative because it will enable a range of energy-friendly processing, sensing and connectivity technologies we are actively developing for the Internet of Things,” said Tyson Tuttle, Chief Executive Officer, Silicon Labs. “We look forward to continuing our successful collaboration with TSMC to bring our solutions to market.”

“Synopsys is fully aligned with TSMC on providing designers with a broad portfolio of high-quality IP for TSMC’s ultra-low power process technology and the Internet of Things applications,” said John Koeter, Vice President of Marketing for IP and Prototyping at Synopsys. “Our wide range of silicon-proven DesignWare® interface, embedded memory, logic library, processor, analog and subsystem IP solutions are already optimized to help designers meet the power, energy and area requirements of wearable device SoCs, enabling them to quickly deliver products to the market.”
About TSMC

TSMC is the world’s largest dedicated semiconductor foundry, providing the industry’s leading process technology and the foundry segment’s largest portfolio of process-proven libraries, IPs, design tools and reference flows. The Company’s owned capacity in 2014 is expected to be about 8 million (12-inch equivalent) wafers, including capacity from three advanced 12-inch GIGAFAB™ facilities, four eight-inch fabs, one six-inch fab, as well as TSMC’s wholly owned subsidiaries, WaferTech and TSMC China. TSMC is the first foundry to provide 28nm and 20nm production capabilities. TSMC’s corporate headquarters are in Hsinchu, Taiwan. For more information about TSMC please visit http://www.tsmc.com.

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