Synopsys, Realtek and UMC Collaborate on Industry's First Single-Chip Ultra High Definition Smart TV SoC

Realtek's Chip Achieves First-Pass Silicon Success Using Broad Portfolio of DesignWare Logic Libraries and Embedded Memories in UMC's 40-nm Process

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Highlights:

- Collaboration between Synopsys, Realtek and UMC results in first-pass silicon success of Realtek's 4K2K UHD Smart TV SoC, winner of the "Best Choice Golden Award" at COMPUTEX 2013
- Low-power features in Synopsys' DesignWare Logic Libraries and Embedded Memories, and in the Galaxy Implementation Platform enabled design team to optimize for high performance and low power consumption
- System-on-Chip (SoC) manufactured in UMC's cost- and power-optimized 40-nm process technology

Synopsys, Inc. (Nasdaq:SNPS), a global leader providing software, IP and services used to accelerate innovation in chips and electronic systems, Realtek Semiconductor Corp. (TWSE: 2379.TW), one of the world's leading network and multimedia IC providers, and United Microelectronics Corporation (NYSE:UMC;TWSE: 2303) ("UMC"), a leading global semiconductor foundry, today announced that their collaboration has resulted in first-pass silicon success of Realtek's RTD2995 UHD Smart TV Controller SoC implemented in UMC's 40LP, the foundry's volume production, low-power 40-nanometer (nm) process technology. The new Smart TV SoC is the industry's first single-chip implementation with support for the "4K2K" Ultra High Definition video format. Realtek used Synopsys' DesignWare® Embedded Memories and Logic Libraries, Galaxy™ Implementation Platform and Professional Services to help them meet their aggressive performance, power and schedule goals.

"Our RTD2995 smart TV controller was the industry's first comprehensive single-chip solution in mass production. It combines 4K2K video decoding and 1080p encoding with a powerful multi-core ARM® microprocessor and a high-performance multi-core 3D GPU to deliver extremely high-resolution images for life-like image clarity," said Jessy Chen, vice president and spokesman for Realtek. "By collaborating with Synopsys and UMC we were able to take advantage of a total solution including silicon, logic library and embedded memory IP, EDA tools and experienced design consultants, which helped us bring our chip to market in record time."

UMC is a leading foundry provider of 40-nm technology, delivering customer products on this advanced process since 2008. UMC realizes approximately 20% of its revenue from 40-nm products, and is among the top foundries worldwide for total 40-nm production capacity. UMC's 40-nm process provides seamless design migration continuity between 55-nm and 28-nm technologies, and features robust versatility to target a wide range of applications including DTV controller and demodulator, feature phone SoC, smartphone connectivity and RF transceiver, FPGA, etc. Furthermore, the Synopsys 40-nm standard cell libraries and memory compilers used for Realtek's chip are available free-of-charge from Synopsys for qualified customers designing into this process node.

"The success of this cooperation with valued partners Realtek and Synopsys embodies UMC's 'United for Excellence' philosophy. Through this approach, UMC remains committed to uniting with our ecosystem partners for close, integrated working relationships to attain heightened competitiveness and realize shared goals, further substantiated with the collaborative success of this 40-nm UHD smart TV SoC," said Steve Wang, vice president of IP development and design support for UMC. "We believe that our experience and execution at 40-nm has resulted in the industry's most competitive 40-nm process in terms of cost vs. performance, and look forward to continuing our partnerships with Realtek and Synopsys to

achieve new milestones in the near and distant future. The combination of our high-yielding 40-nanometer low-power process and Synopsys' comprehensive portfolio of logic libraries and memory compilers, along with their complete EDA platform and services offering, enables us to continue to deliver innovative semiconductor solutions to market-leading customers such as Realtek."

Realtek took advantage of a combination of Synopsys DesignWare IP, Galaxy Implementation Platform and Professional Services to realize their RTD2995 SoC project goals. The high-speed, high-density and low-power standard cell libraries and memory compilers enabled the Realtek design team to optimize their SoC for the optimal balance of power, performance and area. Design consultants from Synopsys Professional Services assisted Realtek's engineers with the physical implementation of an ARM microprocessor and helped Realtek achieve their performance target, while reducing core area and leakage power. The integrated project team took advantage of the complete Synopsys Galaxy Implementation Platform for synthesis through physical design, including the Lynx Design System and use of DC Explorer to accelerate design exploration runtime.

"The close collaboration between Synopsys, Realtek and UMC on this chip demonstrates our commitment to providing mutual customers superior performance and power results," said John Koeter, vice president of marketing for IP and systems at Synopsys. "The combination of Synopsys' DesignWare Logic Library and Embedded Memory IP, Galaxy Platform and Synopsys Professional Services, and UMC's advanced 40-nanometer process enabled Realtek to achieve first-pass silicon success for their award-winning UHD Smart TV controller SoC and meet their time-to-market schedule."

Availability
The DesignWare Embedded SRAM Compilers and Logic Libraries on UMC's 40LP process are available now at no cost to qualified licensees as part of Synopsys' Foundry-Sponsored IP program.

About Realtek
Realtek Semiconductor Corp. is one of the world's leading IC providers. Realtek designs and develops a wide range of IC products for communications network, computer peripheral, and multimedia applications. Products include 10/100/1000M Ethernet Controllers/PHYs, 10/100/1000M Ethernet Switch Controllers/Media Converter Controllers/Gateway Controllers, Wireless LAN Controllers & AP/Router SoCs, DSL Chips, VoIP Solutions, High Fidelity Audio Solutions for Mobile and PC Applications, Clock Generators, Card Reader Controllers, Web Camera Controllers, LCD Monitor/ATV/DTV Controllers, and Digital Home Center Controllers. With advanced design expertise in RF, analog, and mixed signal circuits, and with strong manufacturing and system knowledge, Realtek offers full-featured, high-performance, and competitive total solutions. More information on Realtek can be found on our website: www.realtek.com.

About UMC
UMC (NYSE: UMC, TWSE: 2303) is a leading global semiconductor foundry that provides advanced technology and manufacturing for applications spanning every major sector of the IC industry. UMC's robust foundry solutions allow chip designers to leverage the company's leading-edge processes, which include 28nm poly-SiON and gate-last High-K/Metal Gate technology, mixed signal/RFCMOS, and a wide range of specialty technologies. Production is supported through 10 wafer manufacturing facilities that include two advanced 300mm fabs; Fab 12A in Taiwan and Singapore-based Fab 12i. Fab 12A consists of Phases 1-4 which are in production for customer products down to 28nm. Construction is underway for Phases 5&6, with future plans for Phases 7&8. The company employs over 15,000 people worldwide and has offices in Taiwan, mainland China, Europe, Japan, Korea, Singapore, and the United States. UMC can be found on the web at http://www.umc.com.

About Synopsys
Synopsys, Inc. (Nasdaq:SNPS) accelerates innovation in the global electronics market. As a leader in electronic design automation (EDA) and semiconductor IP, its software, IP and services help engineers address their design, verification, system and manufacturing challenges. Since 1986, engineers around the world have been using Synopsys technology to design and create billions of chips and systems. Learn more at https://www.synopsys.com.

Note from UMC Concerning Forward-Looking Statements
Some of the statements in the foregoing announcement are forward looking within the meaning of the U.S. Federal Securities laws, including statements about future outsourcing, wafer capacity, technologies, business relationships and market conditions. Investors are cautioned that actual events and results could differ materially from these statements as a result of a variety of factors, including conditions in the overall semiconductor market and economy; acceptance and demand for products from UMC; and technological and development risks. Further information concerning these risks is included in UMC's filings with the U.S. SEC, including on Form F-1, F-3, F-6 and 20-F, each as amended.

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