JOINT NEWS RELEASE

IME and UTAC to jointly develop Through Silicon Via packaging solution

Singapore, 29 October 2007 – The Institute of Microelectronics (IME), a member of the Agency for Science, Technology and Research (A*STAR), has inked a research collaboration agreement with United Test and Assembly Center Ltd (UTAC), a leading provider of test and assembly services, to jointly develop Through Silicon Via (TSV) packaging solution which aims to achieve miniaturisation, improve integration/performance and decrease cost of semiconductor chips.

Electronic products demand integration of different functional chips like digital, RF, analog, MEMS and optical in a single module. Next-generation processors and memory devices require even higher density of integration and functionality leading to increase in I/O count. TSV integration architecture is the key enabling technology to do so.

TSV enables the jump from 2D chip layouts to 3D chip stacks, hence offering greater density in the same footprint, as well as improved functionality, higher performance and lower cost. Leading this trend, IME initiated its TSV technology efforts in 2002 with research activities including wafer level packaging, through-hole processes, and wafer-to-wafer bonding for CMOS MEMS devices.

In this two-year long research project, the team will develop 3D packaging based on TSV technology which can be used for flash and DRAM memory, 3D-SoC/SiP for memory and logic and other 3D packaging for mobile applications. The chips to be developed are 10x10mm and 15x15mm in size, and allow 3D stacking of silicon modules. This novel stacked module offers reduced wire length, higher silicon efficiency, smaller size and highly miniaturised package.

Said Professor Kwong Dim-Lee, Executive Director of IME, “We are actively pursuing TSV as it is an emerging interconnect technology. Since 2002, IME has worked with more than 20 industry partners on various projects related to TSV technology. This year, we will further develop TSV technology for large die copper/low-k chip with very fine pitch interconnection. We are pleased to partner UTAC to enable commercial applications of this technology.”

Dr Anthony Sun, UTAC Group VP for Packaging and Assembly Technology, said that “One key focus of this project is to develop an innovative and effective solution using Through Silicon Interconnects Assembly technology. The individual critical process from

TSV formation, wafer thinning/ handling, RDL, micro-bumping to interconnects bonding and wafer level assembly becomes integrated to maximise cost effectiveness and reduce production times to meet the current high volume manufacturing market requirements. The success of this project will help in the adoption of TSV technology as the mainstream IC packaging solution in the semiconductor industry."

Notes to the Editor:

About Agency for Science, Technology and Research (A*STAR) www.a-star.edu.sg

The Agency for Science, Technology and Research, or A*STAR, is Singapore's lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based Singapore.

A*STAR actively nurtures public sector research and development in Biomedical Sciences, Physical Sciences and Engineering, with a particular focus on fields essential to Singapore's manufacturing industry and new growth industries. It oversees 14 research institutes and supports extramural research with the universities, hospital research centres and other local and international partners.

At the heart of this knowledge intensive work is human capital. Top local and international scientific talent drive knowledge creation at A*STAR research institutes. The Agency also sends scholars for undergraduate, graduate and post-doctoral training in the best universities, a reflection of the high priority A*STAR places on nurturing the next generation of scientific talent.

About Institute of Microelectronics (IME) www.ime.a-star.edu.sg

The Institute of Microelectronics (IME) is a research institute of A*STAR. Positioned to bridge the R&D between academia and industry, IME's mission is to add value to Singapore's semiconductor industry by developing strategic competencies, innovative technologies and intellectual property; enabling enterprises to be technologically competitive; and cultivating a technology talent pool to inject new knowledge to the industry. Its key research areas are in integrated circuits design, advanced packaging, bioelectronics, MEMS, nanoelectronics and photonics.

About United Test and Assembly Center Ltd ("UTAC") www.utacgroup.com

United Test and Assembly Center Ltd ("UTAC") is a leading independent provider of semiconductor assembly and testing services for a broad range of integrated circuits including memory, mixed-signal, logic and radio-frequency ICs. The Group offers a full range of package and test development, engineering and manufacturing services and solutions to a worldwide customer base, comprising leading integrated device manufacturers ("IDMs"), fabless companies and wafer foundries. UTAC operates manufacturing facilities in Singapore, Thailand, Taiwan and China, in addition to its global network of sales offices in the United States, Europe, Japan, Korea, China and Singapore.

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