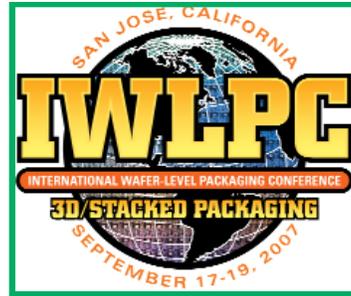


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STATS ChipPAC joins ASE in billion-dollar-buyout club

By Ron Iscoff, Editor

Singapore—
STATS ChipPAC
has joined
Taiwan's
Advanced
Semiconductor
Engineering
(ASE) as a
member of the
billion-dollar-
buyout club.

Late last
year, the U.S.-
based and very

powerful Carlyle Group, a private equity giant, offered \$5.4 billion for ASE's diversified IC packaging and test facilities. That offer is moving along, sluggishly, although Jason Chang, ASE's founder, chairman and president appears to be in favor of the buyout.



This is a flip-chip line at STATS ChipPAC's facility in Singapore.



Technicians at a STATS ChipPAC plant inspect a wafer prior to assembly.

The STATS ChipPAC buyout offer is from Singapore Technologies Semiconductors Pte. (STS), a wholly-owned subsidiary of Temasek Holdings Ltd., which already owns about 35.6 percent of STATS ChipPAC.

Goldman Sachs (Singapore) made the offer on behalf of STS.

The company will pay up to about \$1.57 billion for the available, outstanding common shares in STATS ChipPAC. The company is traded both on the Singapore Stock Exchange and in the U.S. as American Depository Receipts.

(Continued)

STATS ChipPAC joins billion-dollar-buyout club (continued)

Temasek says it will pay \$1.15/share or \$1.23/share if it can gain more than 90 percent of STATS ChipPAC. Because Temasek says it will also buy \$265 million of STATS ChipPAC's convertibles bonds, the total offer may represent as much as \$1.87 billion.

STATS, itself, acquired ChipPAC, which was formerly Hyundai's Assembly and Packaging Group, about two years ago. That acquisition brought STATS ChipPAC into the top five packaging and test foundries.



Late last year, the Carlyle Group offered 5.4 billion for Advanced Semiconductor Engineering. The company's Khaosung facility is shown.

Singapore government 'the best'

"Over the years, during my visits to Amkor-, ASE-, SPIL- and STATS ChipPAC factories in the Philippines, South Korea, Singapore and Taiwan, I quickly realized that the Singapore government was the best in terms of its efficiency, corruption-free environment and technology-driven infrastructure.

"It is also an active champion of semiconductor-related industries," Dr. Subash Khadpe, industry historian and editor/publisher of the *Semiconductor Packaging Update* reports.

"This offer by Temasek Holdings is an excellent strategic move by the government to maintain control of one of its crown jewels in the fast-growing semiconductor industry.

"I expect," Dr. Khadpe adds, "that STATS ChipPAC, which was the fourth largest OSAT company in the world in 2006—with the highest growth rate among the top five of 40 percent—will contribute a great deal to the success of Singapore's semiconductor industry in the future."

[statschippac.com]

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A new interconnection technology blooms at Rev. Jerry Falwell's university

Los Angeles—What do the Rev. Jerry Falwell and Liberty University, the fundamentalist Baptist institution he founded, have in common with the semiconductor industry?

Until recently, the answer would have been nothing.

However, last year inventor Charles S. Clark, the father of two LU alumni and a 30-year veteran of the electronics industry, donated his invention for “mirrored pinouts” to the university.

On the other hand, Martin “Marty” Hart is a veteran of the semiconductor industry and the “King of Dummy Components,” which he has purveyed for several decades through his Garden Grove, Calif., company, TopLine **[*topline.tv*]**

Liberty, with no experience in semiconductors or electronics, decided it needed a way to bring Clark’s invention to market. The university took a booth at last year’s PCB West, hoping to interest someone with experience and connections.

Hart was drawn to the Liberty booth at the show and discussed the invention with Clark, he told **Chip Scale Review** recently during APEX in Los Angeles. When Clark explained it, says Hart, “I realized that my life would not be the same again.”



Martin Hart
(Chip Scale Review)

Letter of Intent



*Sometimes technology
blooms where you least
expect it.*

As a result of that meeting, LU has signed a letter of intent with Hart to take the mirrored pinout from concept to production. The University has also filed a patent for the invention and believes it may be worth “many, many millions of dollars.” Hart agrees.

The benefits of the mirrored pinouts are a smaller circuit board, a faster circuit speed, reduction of inner layers (for reduced EMI), and lower cost. With a standard pinout, the circuit routing is relatively long.

A new interconnection technology blooms (continued)

By combining standard pinout ICs together with mirrored pinout devices, however, the routing distance is very short, as shown in the illustration.

The project has been taken over by Hart's new startup Mirror Semiconductor [mirrorsemi.com].

He's in the very early stages of proof of concept, talking to prototype shops like Corwil. Hart says as many as 20 percent of the boards currently built may ultimately have a small percentage of devices with mirrored pinouts on them.

Most of the same IC assembly equipment used traditionally will be employed for the mirrored pinouts (MPs), except MP packages are wirebonded in a clockwise direction, while standard pinouts are wirebonded in a counter-clockwise direction. Hart says he's also considering deploying Microbond's "Xwire" for bonding.

The greatest change in the IC device assembly process, he adds, will involve designing new wire-bonding software. Special fixtures will also be needed.

"If the market will embrace MPs," he adds, "we're looking at capturing six billion devices that are now being packaged per year, which is only 5 percent of the total number of packages."

Part of the anticipated business, says Hart, will be as a fabless IC maker, delivering IC devices using the MPs. The other part of Mirror Semi's revenue, he adds, will come from customers who want to license the technology, such as packaging foundries, OEMs, ODMs and other fabless IC makers.

Mix and Match

Essentially, any semiconductor can be made into a package with a mirrored pinout, and the MPs, known as **MirrorChips**, can be mixed on the same board with standard pinouts.

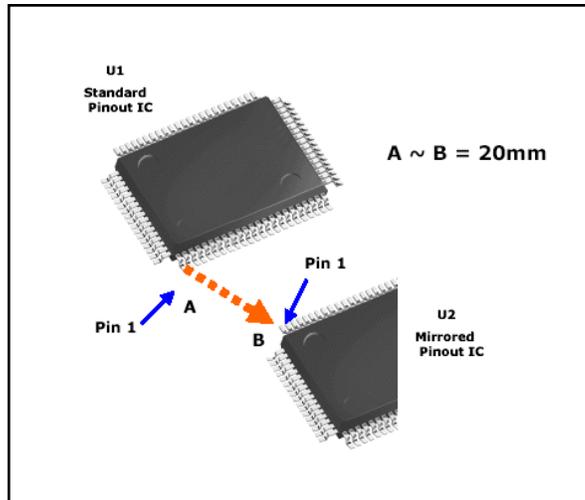


Illustration shows a standard and mirrored pinout mounted on the same side of the board. Note the very short routing.

A new interconnection technology blooms (continued)

The startup will be based in Irvine, Calif., near but separate from TopLine's Southern California home. Hart says he has already lined-up representative offices in France, Germany, Japan, Korea, Sweden and the U.S.

"We are now looking for both strategic partners and venture capitalists," Hart says. If the MP is the success he thinks it will be, Hart plans to "pick a successor" for TopLine.

While he believes the first key application may be for parallel data bus circuits, the invention may have extensive applications for many devices, including microcontrollers, memory and digital signal processors, he says.

—**Ron Iscoff, Editor**

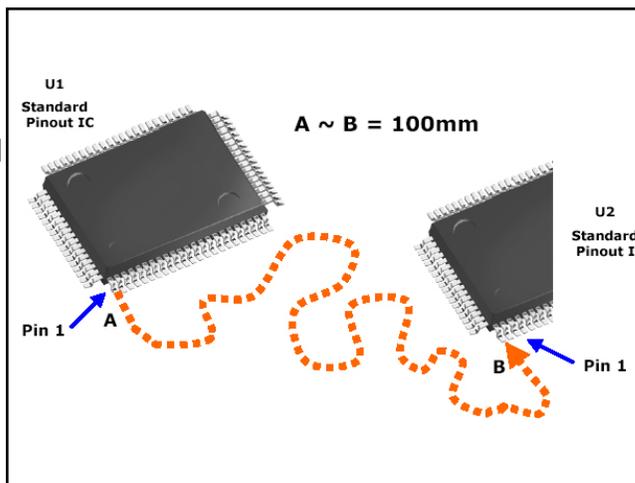


Illustration shows the circuitous route, 100mm in this case, between two traditional circuit interconnections on a board.

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