



## **TSMC and Broadcom Enhance the CoWoS<sup>®</sup> Platform with World's First 2X Reticle Size Interposer**

*Next Generation of CoWoS Technology Significantly Boosts Computing Power for  
Advanced HPC Systems*

**Hsinchu, Taiwan, R.O.C., Mar. 3, 2020** – TSMC (TWSE: 2330, NYSE: TSM) today announced it has collaborated with Broadcom (NASDAQ: AVGO) on enhancing the Chip-on-Wafer-on-Substrate (CoWoS<sup>®</sup>) platform to support the industry's first and largest 2X reticle size interposer. With an area of approximately 1,700mm<sup>2</sup>, this next generation CoWoS interposer technology significantly boosts computing power for advanced HPC systems by supporting more SoCs as well as being ready to support TSMC's next-generation five-nanometer (N5) process technology.

This new generation CoWoS technology can accommodate multiple logic system-on-chip (SoC) dies, and up to 6 cubes of high-bandwidth memory (HBM), offering as much as 96GB of memory. It also provides bandwidth of up to 2.7 terabytes per second, 2.7 times faster than TSMC's previously offered CoWoS solution in 2016. With higher memory capacity and bandwidth, this CoWoS solution is well-suited for memory-intensive workloads such as deep learning, as well as workloads for 5G networking, power-efficient datacenters, and more. In addition to offering additional area to increase compute, I/O, and HBM integration, this enhanced CoWoS technology provides greater design flexibility and yield for complex ASIC designs in advanced process nodes.

In this TSMC and Broadcom CoWoS platform collaboration, Broadcom defined the complex top-die, interposer and HBM configuration while TSMC developed the robust manufacturing process to maximize yield and performance and meet the unique challenges of the 2X reticle size interposer. Through the experience of multiple generations of development of the CoWoS platform, TSMC innovated and developed a unique mask-stitching process enabling expansion beyond full reticle size, to bring this enhancement to volume production.

"Broadcom is happy to have collaborated with TSMC on advancing the CoWoS platform to address a host of design challenges at 7nm and beyond," said Greg Dix, Vice President of Engineering for the ASIC Products Division at Broadcom. "Together, we are driving innovation with unprecedented compute, I/O and memory integration and paving the way for new and emerging applications including AI, Machine Learning, and 5G Networking."

"TSMC's ongoing R&D efforts have enabled us to double the size of the CoWoS interposer since this platform was first introduced in 2012, demonstrating our unwavering dedication to continuous innovation," said Dr. Douglas Yu, Vice President of Integrated Interconnect & Packaging in the R&D Organization of TSMC. "Our work with Broadcom on CoWoS is an excellent example of



how our close collaboration with customers delivers even greater system-level HPC performance.”

CoWoS is part of TSMC’s portfolio of Wafer-Level System Integration (WLSI) solutions enabling system-level scaling both complementary to and beyond shrinking transistors. In addition to CoWoS, TSMC’s innovative 3DIC technology platforms, such as Integrated Fan Out (InFO) and System on Integrated Chips (SoIC) enable innovation through chiplet partitioning and systems integration that achieves greater functionality and enhanced system performance.

### **About Broadcom**

Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions. Broadcom’s category-leading product portfolio serves critical markets including data center, networking, enterprise software, broadband, wireless, storage and industrial. Our solutions include data center networking and storage, enterprise, mainframe and cyber security software focused on automation, monitoring and security, smartphone components, telecoms and factory automation. For more information, go to [www.broadcom.com](http://www.broadcom.com).

### **About TSMC**

TSMC pioneered the pure-play foundry business model when it was founded in 1987, and has been the world’s largest dedicated semiconductor foundry ever since. The company supports a thriving ecosystem of global customers and partners with the industry’s leading process technology and portfolio of design enablement solutions to unleash innovation for the global semiconductor industry.

TSMC serves its customers with global capacity of about 13 million 12-inch equivalent wafers per year in 2020, and provides the broadest range of technologies from 2 micron all the way to foundry’s most advanced processes, which is 7-nanometer today. TSMC is the first foundry to provide 7-nanometer production capabilities and the first to commercialize Extreme Ultraviolet (EUV) lithography technology in delivering customer products to market in high volume. TSMC is headquartered in Hsinchu, Taiwan. For more information about TSMC please visit <http://www.tsmc.com>.

# # #



**Broadcom Media Contact**

Khanh Lam  
Broadcom Inc.  
press.relations@broadcom.com  
Tel: +1 408 433 8649

**TSMC Spokesperson:**

Wendell Huang  
Vice President and CFO  
Tel: +886-3-505-5901

**TSMC Media Contacts:**

Nina Kao  
Head of PR Department  
Tel: 886-3-5636688 ext.7125036  
Mobile: +886-988-239-163  
E-Mail: nina\_kao@tsmc.com

Michael Kramer  
PR Department  
Tel: 886-3-5636688 ext.7125031  
Mobile: +886-988-931-352  
E-Mail: pdkramer@tsmc.com