

Press Release

## **X-FAB Becomes First Foundry to Offer High-Volume Micro-Transfer Printing Capabilities Following Licensing Agreement with X-Celeprint**

*Long-term collaboration, plus major engineering investment, leads to highly cost-effective, scalable, and convenient methodology for heterogeneous integration of different semiconductor process technologies.*

Tessenderlo, Belgium; Cork, Ireland, and Research Triangle Park, NC – September 7, 2021

X-FAB Silicon Foundries, the leading foundry for analog/mixed-signal and specialty semiconductor solutions, is now able to support volume heterogeneous integration via [Micro-Transfer Printing \(MTP\)](#), thanks to a licensing agreement that has just been secured with [X-Celeprint](#). This will mean that a diverse range of semiconductor technologies may be combined together, each being optimized for particular functional requirements. These will include SOI, GaN, GaAs and InP, as well as MEMS.

In order to become the first foundry to provide customers with MTP-based heterogeneous integration, X-FAB has made substantial investments over the last two years. It has also established new optimized workflows and cleanroom protocols. This will allow customers to work with the foundry on heterogeneous design projects - benefitting from a low-risk and fully scalable business model that offers a clear migration to volume production.

X-Celeprint's proprietary massively-parallel pick-and-place MTP technology stacks and fans-out ultra-thin dies based on different process nodes, technologies, and wafer sizes. It results in the formation of virtually monolithic 3D stacked ICs, which have enhanced performance, greater power efficiency, and take up less space. Furthermore, all this can be achieved at an accelerated rate, thereby significantly shortening time-to-market.

“By licensing X-Celeprint’s disruptive MTP technology, we are uniquely positioned in our ability to facilitate the incorporation of numerous different semiconductor technologies. X-FAB customers will be able to utilize a technology that no other foundry is offering, and existing X-Celeprint customers may now tap into capacity levels that will easily meet their future demands,” Volker Herbig, VP of X-FAB’s MEMS business unit, explains. “As a result, we can assist customers looking to implement complete multifunctional subsystems at the wafer level, even when there are high degrees of complexity involved. Signal conditioning, power, RF, MEMS, and CMOS sensors, optoelectronic devices, optical filters, and countless other possibilities will all be covered.”

“Our agreement with X-FAB represents a major milestone in the commercialization of MTP technology, broadening the number of customers and applications,” states Kyle Benkendorfer, X-Celeprint’s CEO. “High-volume heterogeneous integration of elements derived from various different source wafers will provide the semiconductor industry with significant new capabilities, including access to higher density devices with more functionality, fabricated at high yields and lower cost, within shorter timeframes.”

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## About X-FAB

X-FAB is the leading analog/mixed-signal and MEMS foundry group manufacturing silicon wafers for automotive, industrial, consumer, medical and other applications. Its customers worldwide benefit from the highest quality standards, manufacturing excellence, and innovative solutions by using X-FAB’s modular CMOS and SOI processes in geometries ranging from 1.0  $\mu\text{m}$  to 130 nm, and its special silicon carbide and MEMS long-lifetime processes. X-FAB’s analog-digital integrated circuits (mixed-signal ICs), sensors, and micro-electro-mechanical systems (MEMS) are manufactured at six production facilities in Germany, France, Malaysia and the U.S. X-FAB employs approx. 4,000 people worldwide. [www.xfab.com](http://www.xfab.com)

## About X-Celeprint, Ltd.

X-Celeprint licenses MTP technology, which consists of more than 300 worldwide patents and 189 pending applications, to support semiconductor manufacturers in adopting MTP. X-Celeprint is co-located with [Micross](#), which has a Trusted/ITAR-compliant 200mm wafer fab with extensive heterogeneous capabilities, in Research Triangle Park, North Carolina, and [Tyndall National Institute](#) in Cork, Ireland. Both facilities have MTP technology in their R&D advanced packaging lines for supporting customers with rapid prototyping. X-Celeprint has research partnerships with academic centers, including the University of Illinois Urbana Champaign and the University of Ghent/imec. [www.x-celeprint.com](http://www.x-celeprint.com)

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**For more information, contact:**

**X-FAB Press Contact**

Thomas Hartung  
VP Sales & Corporate Marketing  
X-FAB Silicon Foundries  
+49-361-427-6160  
[thomas.hartung@xfab.com](mailto:thomas.hartung@xfab.com)

**X-Celeprint Contact**

Bob Conner  
Vice President, New Application Business Development  
X-Celeprint, Ltd.  
+1 (919) 757-6825  
[bconner@x-celeprint.com](mailto:bconner@x-celeprint.com)

**Acronyms**

GaN	Gallium Nitride
GaAs	Gallium Arsenide
InP	Indium Phosphide
MEMS	Micro-Electro-Mechanical System
MTP	Micro-Transfer Printing
SOI	Silicon-on-Insulator