Compound Photonics Partners with GLOBALFOUNDRIES to Manufacture World's First Monolithic Microdisplay for Real-Time AR

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Compound Photonics Product Image

Compound Photonics partners with GLOBALFOUNDRIES to manufacture IntelliPix, the world's first monolithic microdisplay that provides backplane design options to enable microLED or Liquid Crystal on Silicon. (Image Source: CP Display)

Chandler, Ariz., and Santa Clara, Calif., March 10, 2021 – Compound Photonics US Corporation (CP, also known as CP Display), a leader in microdisplay solutions for Augmented/Mixed Reality (AR/MR), and GLOBALFOUNDRIES® (GF®), the world's leading specialty foundry, today announced a strategic partnership to manufacture IntelliPix™, CP's microdisplay technology platform. IntelliPix enables a truly real-time holographic consumer AR experience by enabling smaller and lighter AR glasses that last longer on a single charge. IntelliPix provides a real-time video pipeline, coupled with a fully integrated digital backplane and driver for pixels as small as 2.5µm, for the first time in a single-chip solution. CP's proprietary IntelliPix technology is realized on GF's best-in-class 22FDX™ specialty semiconductor platform.

Through the industry-leading partnership, CP and GF are kicking off development of a series of cutting-edge custom solutions on GF's 22FDX platform to enable IntelliPix's flexible architecture that provides a software-defined and scalable feature set. The overall advancement in IntelliPix supports up to 100 times faster modulation while consuming 4 to 12 times less system power across the video pipeline, compared to CP's previous platforms, while unlocking the real potential for amplitude liquid crystal on silicon (LCoS), emerging microLED and future phase-based holographic systems.

By intelligently focusing only on changing pixels, IntelliPix is directed to pixels that are active, while conserving power in inactive pixel regions, resulting in high image quality and brightness, while significantly lowering the overall display subsystem power (OnDemand Pixels™). By leveraging the high-performance, ultra-low power, and broad feature integration capability of GF's 22FDX platform, CP is able to deliver IntelliPix's smart pixel digital backplane integrated with its proprietary real-time video pipeline at high frame rates and low latency all in one single chip with no compromises in display area, cost or power consumption to meet the critical requirements for widespread consumer AR.

"GF is an ideal partner for IntelliPix, our next-generation monolithic display," said Ian Kyles, vice president of engineering at CP. "Their industry-leading 22FDX platform offers the low-power benefits, density, and interconnect features that enable our latest set of innovations, and their willingness to customize additional features for our display simplifies our manufacturing flow."

To date, GF's 22FDX solutions have realized $4.5 billion in design wins, with more than 350 million chips shipped to customers around the world.

"We are proud to partner with Compound Photonics, and leverage our world-class technology to help bring their game-changing IntelliPix platform to volume production," said Mike Hogan, senior vice president and general manager of Automotive, Industrial and Multi-market at GF. "The breakthrough design of IntelliPix, which only activates the pixels that need refreshing, is a natural match with our 22FDX platform, which is unrivaled in the industry as an ultralow-power solution with excellent memory density and integration capabilities to support a range of future-forward applications."

For emerging microLED pixel technology, IntelliPix-iDrive™ can be configured with a constant current pixel drive optimized to deliver pixel to pixel uniformity supported with a software-defined drive scheme and a MIPI interface. IntelliPix also provides an IntelliPix-vDrive™ configuration as a voltage/charge driven pixel optimized for driving LC based pixels for both amplitude and phase/holographic light modulation. The OneChip™ physical design of IntelliPix eliminates traditional distinctions between display pixel drive (backplane) and display driver IC (DDIC) functions to reduce the overall physical volume and power consumption while enabling cutting-edge features. The partnership between CP and GF enables a customized Intellipix architecture based on a vDrive or iDrive modulated backplane/display configured to customer specifications.

The IntelliPix microdisplay technology platform is customizable for resolutions up to 2048 x 2048 and beyond. Expect the first commercial products featuring CP's IntelliPix to be on the market in 2023.

During SPIE ARVRMR in March 28-31, 2021, CP will present IntelliPix™ at the Industry Talk session and discuss about how the technology platform presents the opportunities for the industry to accelerate the mainstream AR adoption.

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About Compound Photonics

Compound Photonics (CP), also known as CP Display, is a leading provider of compact high resolution microdisplay technologies. CP's microdisplay solutions are optimized to serve the augmented reality and mixed reality markets where high performance,

small form factor, and low power consumption are most critical. Compound Photonics' microdisplays enable engineers to innovate and create game-changing consumer and industrial products that can greatly enhance people's productivity and lifestyle.

Media Relations Contact:

Sherry Li | +1 (360) 993-6707| sherry.li@cpdisplay.com

About GLOBALFOUNDRIES

GLOBALFOUNDRIES (GF) is the world's leading specialty foundry. GF delivers differentiated feature-rich solutions that enable its customers to develop innovative products for high-growth market segments. GF provides a broad range of platforms and features with a unique mix of design, development and fabrication services. With an at-scale manufacturing footprint spanning the U.S., Europe and Asia, GF has the flexibility and agility to meet the dynamic needs of customers across the globe. GF is owned by Mubadala Investment Company. For more information, visit www.globalfoundries.com.

Media Relations Contact:

Michael Mullaney | +1-518-419-2199 | michael.mullaney@globalfoundries.com