



Ambarella Introduces CV2 4K Computer Vision SoC with CVflow™ Architecture and Stereovision

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CV2 delivers up to 20 times the deep neural network processing performance of first-generation CV1 processor

SANTA CLARA, Calif.--(BUSINESS WIRE)--Mar. 28, 2018-- Ambarella, Inc. (NASDAQ: AMBA) a leading developer of low-power, HD and Ultra HD video processing semiconductors, today introduced the CV2 camera SoC combining advanced computer vision, image processing, 4Kp60 video encoding, and stereovision in a single chip. CV2 targets advanced automotive, IP security, drone, and robotic applications, delivering up to 20 times the deep neural network performance of Ambarella's first generation CV1 chip. In automotive applications, such as ADAS and self-driving systems, its ability to run multiple algorithms simultaneously delivers higher perception accuracy and reduces the total number of chips required. In IP security cameras it enables advanced computer vision in the camera rather than in the cloud, enabling faster response time, lower network utilization and more accurate classification of objects, people and vehicles. Fabricated in advanced 10nm process technology, CV2 offers extremely low power consumption.

"With CV2 we have dramatically increased our computer vision performance and combined it with full SoC functionality," said Fermi Wang, CEO of Ambarella. "As the highest performance member of our new CVflow family, CV2 delivers both the deep neural network and stereovision processing required for the most advanced automotive and security cameras."

The CV2's CVflow architecture provides computer vision processing up to 4K or 8-Megapixel resolution, to enable object recognition and perception over long distances and with high accuracy. Its stereovision processing provides the ability to detect generic objects without training in ADAS and autonomous vehicle applications. Advanced image processing with HDR (High Dynamic Range) processing delivers outstanding imaging even in low light and from high contrast scenes. Its highly efficient 4Kp60 AVC and HEVC video encoding supports the addition of video recording to automotive ADAS and self-driving systems and enables the design of both multi-stream and multi-imager IP security cameras. CV2 includes a full suite of advanced security features to prevent hacking, including secure boot, TrustZone™ and I/O virtualization.

A complete set of tools is provided to help customers easily port their own neural networks onto the CV2 SoC. This includes compiler, debugger and support for industry standard training tools including Caffe™ and TensorFlow™, with extensive guidelines for CNN (Convolutional Neural Network) performance optimizations.

CV2 Computer Vision SoC Key Features:

- CVflow processor with CNN/deep learning support
- 4Kp60/8-Megapixel AVC and HEVC encoding with multi-stream support
- Multi-sensor support for 3-channel electronic mirror and 4-channel AVM systems, multi-channel stereo sensing systems (up to 4 stereo pairs), and multi-imager IP cameras
- Quad-core 1.2-GHz ARM™ Cortex A53 with NEON DSP extensions and FPU
- Advanced security features, including OTP for secure boot, TrustZone and IO virtualization
- Real-time hardware-accelerated 360-degree de-warping and Lens Distortion Correction (LDC) engine
- Multi-channel ISP with up to 800-Megapixel/s input pixel rate
- Multi-exposure HDR and WDR processing
- LED flicker mitigation
- SmartAVC™ and SmartHEVC™ intelligent rate control for lowest bitrate in security applications
- High-speed SLVS/MIPI/LVCMOS interfaces
- Rich set of interfaces includes GigE Ethernet, CAN bus, USB 2.0 host and device, dual SD card controllers with SDXC support, HDMI v2.0, HDMI-DSI/CSI 4-lane output
- 10nm process technology
- Package: 716-pin 0.65-pitch FCCSP
- AEC-Q100 qualified version available

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About Ambarella

Ambarella, Inc. (NASDAQ: AMBA), is a leading developer of low-power, high-definition (HD) and Ultra HD video compression, image processing and computer vision solutions. The company's products are used in a variety of IP security, sports, wearable, drone and automotive video cameras. Ambarella's solutions leverage over 20 years of pioneering research in computer vision to enable future generations of intelligent cameras, Advanced Driver Assistance Systems and autonomous vehicles. For more information about Ambarella, please visit www.ambarella.com.

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