# Ambarella Expands Autonomous Driving AI Domain Controller Family With Two New Members; Provides Broadest Software-Compatible AI Performance Range

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With Addition of CV3-AD635 and CV3-AD655, SoC Family Addresses Full Range of Autonomous and ADAS Vehicle Systems

SANTA CLARA, Calif., Jan. 09, 2024 (GLOBE NEWSWIRE) -- Ambarella, Inc. (NASDAQ: AMBA), an edge AI semiconductor company, today announced during CES the latest additions to its CV3-AD family of automotive AI domain controllers—the CV3-AD635 and CV3-AD655 systems-on-chip (SoCs). The new CV3-AD635 supports a sensing suite that includes multiple cameras and radars to enable mainstream L2+ feature sets, such as highway autopilot and automated parking, in addition to meeting the GSR2 and NCAP standards. Additionally, the CV3-AD655 enables advanced L2+ (also called L2++) with urban autopilot, as well as support for additional cameras, radars and other sensors. With the previously announced flagship CV3-AD685 SoC, which targets L3/L4 systems—along with the China-focused CV72AQ SoC—the CV3-AD family now covers the full range of AD and ADAS solutions, from mainstream to premium passenger vehicles. Additionally, this is the automotive industry's broadest performance range for any software-compatible AI domain control family, spanning an 18x AI performance increase from the CV72AQ to the CV3-AD685.
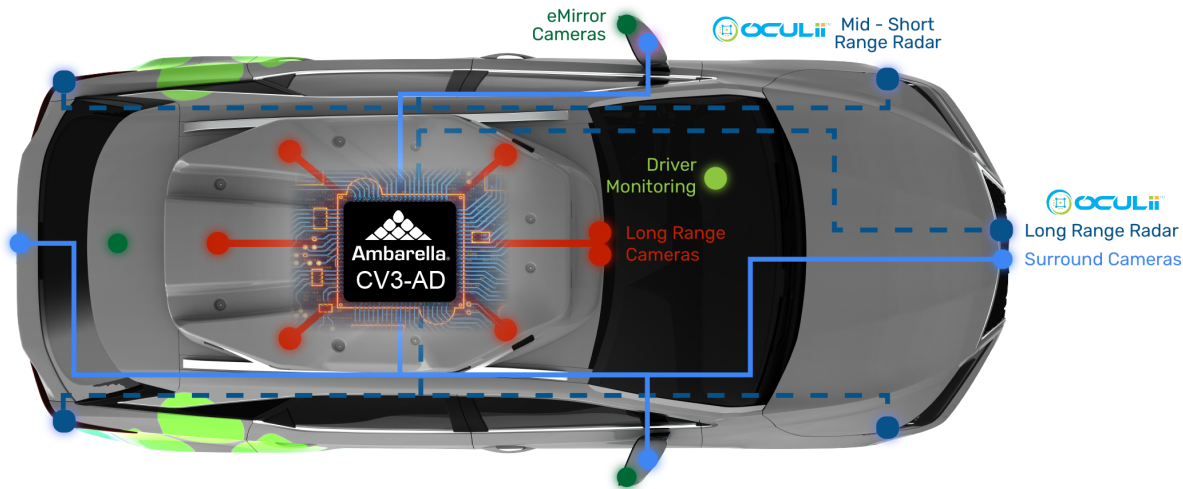
All SoCs in the CV3-AD family feature Ambarella's CVflow® 3.0 AI accelerator. This highly efficient, proprietary AI engine combines neural network acceleration—including support for the latest NN architectures such as transformers and bird's-eye-view (BEV) networks—along with general vector processing capabilities for traditional computer vision and efficient radar processing. The CVFlow's high AI processing performance and industry-leading power efficiency enable CV3-AD customers to design vehicles with rich feature sets based on safe and reliable AD and ADAS capabilities, while reducing thermal-management cost and complexity. That significantly lower power consumption also allows customers to deploy electric vehicles with smaller batteries, reducing cost and weight; or to alternatively increase the EV range using the same battery. As with the rest of this family, the CV3-AD635 and CV3-AD655 are fabricated in Samsung's advanced 5nm automotive process technology.

"With the accelerating adoption of AI-based ADAS and AD solutions, automotive OEMs and tier-1s require more AI performance, lower power consumption, and support for advanced algorithms, in all segments of the market," said Fermi Wang, President and CEO of Ambarella. "The new CV3-AD635 and CV3-AD655 enable proven CV3-AD powerful performance in mass market L2+ and L2++ systems, while helping OEMs to reduce

complexity and save costs on thermal management solutions and electric vehicle batteries."

"The strategic partnership between Continental and Ambarella is bringing full-stack vehicle system solutions to the road—beginning with 2027 SOPs—that combine maximum performance and industry-leading energy efficiency," saidIsmail Dagli, Head of the Autonomous Mobility Business Area at Continental. "Based on Ambarella's CV3-AD family, our joint solutions enable safer mobility thanks to holistic environmental perception; making them particularly well suited for the growing amount of sensor data in software-defined vehicles. Together, we are shaping the path toward Vision Zero and autonomous mobility."

Ambarella's CV3-AD SoC portfolio meets the processing requirements for automotive OEMs' entire catalogs, from mainstream to premium models, by scaling the performance of each members' compute engines. For example, the CV3-AD655 offers double, and CV3-AD685 six times, the NN processing performance of the CV3-AD635. Likewise, the CV3-AD635 integrates four Arm Cortex A78AE CPU cores, and the CV3-AD655 eight cores. A dual-core, lockstep pair of Cortex-R52 CPUs is also included in both the CV3-AD635 and CV3-AD655. Additionally, these SoCs target ASIL-B at the chip level, via an ASIL-D safety island. Also integrated on-chip is a GPU to render 3D surround views.

Easy portability across the entire CV3-AD family is achieved by sharing the same architectural approach, SDK and tools. Additionally, Ambarella's full software stack for autonomous and semi-autonomous driving is optimized for all CV3-AD family members, as the stack and SoCs were designed in conjunction. This allows automotive OEMs and tier-1s to leverage engineering investments across their full vehicle line-ups, while achieving high AI performance that supports the latest NNs architectures along with best-in-class power efficiency.

The CV3-AD family's on-chip image signal processor provides outstanding imaging in low-light conditions, including high-dynamic-range processing to extract maximum image detail in high-contrast scenes. These features enhance the SoCs' AI and computer vision capabilities, while delivering clear video for human viewing. All CV3-AD family members also provide high-resolution video recording and streaming at very low bit rates with efficient H.264 video encoding.

The integrated hardware security module provides isolation of different domains and secure software provisioning, as well as a suite of advanced cybersecurity features, including: asymmetric/symmetric crypto acceleration, secure storage and key provisioning, encrypted CVflow AI acceleration tasks, true random number generator, one-time programmable memory, DRAM scrambling and DRAM virtualization.

CV3-AD635 and CV3-AD655 engineering samples are expected to be available in Q1 2024. Additionally, at Ambarella's invitation-only exhibition during CES in Las Vegas this week, the company will provide fully autonomous test drives in its R&D vehicles to demonstrate the CV3-AD family's capabilities. For more information or to schedule a ride, please contact your Ambarella representative or visit www.ambarella.com.

Continental-Ambarella Partnership
This strategic partnership combines Continental's software and hardware expertise, as well as its broad portfolio of automotive system solutions, with Ambarella's computer vision and AI know-how, software modules and powerful SoCs—including the full CV3-AD family that was expanded today. Continental and Ambarella are focused on optimized full-stack software, which can be scaled across the CV3-AD SoC family, within the companies' joint hardware systems based on AI for Level 2+ to Level 4 automated vehicles. These full-stack solutions take a multi-sensor approach, including Continental's high-resolution cameras, radars and lidars, as well as the associated control units and the required software. Continental and Ambarella have received their first order as a complete Level 4 fallback system, covering the full chain of effects. First joint series production is planned for calendar-year 2027. Thus, as a result of this strategic partnership, vehicle manufacturers will be able to flexibly integrate the powerful and energy-efficient, yet scalable, mobility system solutions from Continental and Ambarella into their latest vehicle generations.

About Ambarella
Ambarella's products are used in a wide variety of human vision and edge AI applications, including video security, advanced driver assistance systems (ADAS), electronic mirror, drive recorder, driver/cabin monitoring, autonomous driving and robotics applications. Ambarella's low-power systems-on-chip (SoCs) offer high-resolution video compression, advanced image and radar processing, and powerful deep neural network processing to enable intelligent perception, fusion and planning. For more information, please visit www.ambarella.com.

Ambarella Contacts

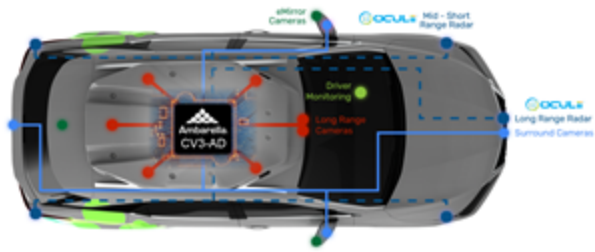- Media contact: Eric Lawson, elawson@ambarella.com, +1 480-276-9572
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A photo accompanying this announcement is available at https://www.globenewswire.com/NewsRoom/AttachmentNg/ee4fafc0-a07b-4447-86b1-36a565b67bf5

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