CAN Newsletter Online

SoC dedicated for infotainment applications

Renesas (Japan) has announced the R-Car H2 systems-on-chip (SoC) providing 3D graphics capabilities. The chip is powered by the ARM Cortex A-15 quad-core configuration running an additional ARM Cortex A-7 quad-core. It provides CAN connectivity.

THE INTRODUCED SOC IS SUITABLE for automotive infotainment ECUs (electronic control unit). This includes high-end multimedia and navigation units. The chip features hardware accelerators for video en/decoding including Blu-Ray support, image/voice recognition, and high-resolution 3D graphics with almost no CPU load. To link such infotainment ECU with CAN-based in-vehicle networks, the SoC provides CAN connectivity by means of an on-chip module. Other on-chip interfaces include Ethernet AVB, Most-150, and mass-storage interfaces like SATA, USB, SDcard, and PCI Express for system expansion. As an option, the on-chip GPS baseband engine handles the navigation standards. The integrated 24-bit DSP (digital signal processor) performs codec, audio processing, and audio mixing. The SoC also includes a graphics-processing unit (GPU). According to the Japanese chipmaker, this is the first implementation of a GPU into an automotive SoC. This GPU supports the OpenGL ES and the OpenCL open specifications.

The IMP-X4 core, implemented in SoC as an optional feature, provides real-time image processing that enables developers to support the emerging trend of augmented reality. In order to benefit from the IMP-X4 core, the SoC also supports up to four independent input camera channels, allowing implementations of 360° camera views and image recognition, just an example of the possible driver assistance functions. OpenCV support for IMP-X4 will also be offered.

“The first generation R-Car series products are well accepted in the car infotainment market” said Ryuji Omura from Renesas. “To cover various customer demands, the second generation of R-Car aimed at the further expansion of Eco-system with a number of our partners including embedded OS, middleware and Tool vendors.” The multi-core architecture allows customers to implement real-time features, such as quick-boot, backup camera support, and media processing, parallel to the execution of operating systems such as the QNX Neutrino real-time OS, Windows Embedded Automotive or Linux. “Renesas and QNX Software Systems have had a long and successful relationship in helping automotive customers deliver state-of-the-art infotainment systems,” said John Wall from QNX (USA). “The R-CAR H2 brings together a powerful multi-domain architecture to meet the demands of high-end next generation automotive infotainment systems,” said Glenn Perry from Mentor Graphics (USA). “We look forward to working with Renesas, automotive tier-one suppliers and OEMs to deliver optimized Linux-based infotainment platforms based on the Nucleus RTOS.” The list of software partners also includes Elektrobit (Germany). “The collaboration with Renesas offers Elektrobit customers a ready-to-use solution for future automotive HMI development. The integrated GPU is suitable for demanding 3D graphics applications; it offers one of the best graphical performances in the embedded market”, said Martin Schleicher from Elektrobit. Samples of the SoC coming in an 831-pin package (flip chip ball grid array) are available. Mass production is scheduled for mid of 2014.