Audi A5's In-Vehicle Audio Subsystems Being Driven by Blackfin® and SHARC® Processors

The Audi A5 is classic sport-styled Coupé featuring sculptured bodywork and aerodynamic lines. The harmonious lines c fully integrated into the dashboard, play well with the vehicle's athletic exterior. Thanks to Blackfin® processors and othe radio subsystem, with its graphical human-machine interface (HMI) "dashboard" display, makes certain the car's inner ha

A Blackfin ADSP-BF539 processor powers the Audi A5's r the extensive assortment of CD-quality music it generates features are powered by an ADSP-BF532 processor. A dif way CD changer. And one more Blackfin ADSP-BF532 pr portable media players, such as the Apple iPod, for conve optional Bang & Olufsen (B&O) surround sound amplifier, SHARC® processor, the de facto standard for high- fidelity

Other processor architectures were considered, but Black connectivity to handle audio decoding, DAB processing, a also offered the supporting infrastructure to enable fast, lo audio systems also helped to influence the decision as dic party Intellectual Property (IP).

Why Blackfin Processor?

Blackfin processors provide automotive developers with th performance and connectivity they need to design electro applications, particularly applications that require field upg Software flexibility such as this is critical for automotive ap because media formats and communications standards ar constant state of change. In addition, Blackfin is unmatche industry for enabling automotive applications because of its combination of signal-and control-processing and multimedia

The Blackfin family integrates a rich set of industry-leading system peripherals, making the processors the platform of ch Audi's. Developers for the Audi project took advantage of all of the peripherals the Blackfin architecture had to offer.

Under the Dashboard

A 533 MHz Blackfin ADSP-BF539 processor was chosen to control the Audi Symphony Radio's HMI via the processor's software tool from Elektrobit Automotive GmbH, a company that specializes in embedded software and hardware for wir development. This enabled a prototype of the HMI user interface to be created and simulated quickly and easily for furth

A separate Blackfin ADSP-BF532 processor was selected to handle DAB processing. DAB IP for the Audi Symphony Ra licenses digital radio IP for the automotive industry. Because the Audi Symphony Radio is based on software-defined rac new software. Future upgrades would require only a software flash of new IP to Blackfin's programmable hardware.

Another Blackfin ADSP-BF532 processor was used to handle MP3 decode/playback and audio processing for the CD pl processor is connected to Media-Oriented System Transport (MOST), a bus widely acknowledged as the network of cho port. The Blackfin ADSP-BF532 runs MOST network stacks with MOST-based IP from MOCEAN Laboratories AB of Sw equalization software from Jasmin Infotech of India, running on Blackfin, to give drivers the ability to fine tune the acoust

Blackfin ADSP-BF532 processors were also chosen for the design of the Audi Music Interface. At 400 MHz, the process the fact that the processor can perform both control and signal processing meant it could handle both audio processing a enables users to control stereo audio sources, including USB sticks and iPod devices (generation 4 onwards) through th

also replicates the iPod display on the audio screen, including track titles.

A SHARC ADSP-21362 processor was selected for its high-performance, rich audio feature set, and well-earned reputat sound B&O amplifier. The SHARC processor executes filter algorithms that optimize the audio, adapting it to the acousti for the Audi A5 Coupé.

Additionally, various analog signal processing components round out the portfolio of Analog Devices' products in the nev AD7478 8-bit, low-power, (SAR) successive approximation analog-to-digital converter (ADC); the AD9280 single-supply, monitor sensor, a complete system solution for battery monitoring in 12V automotive applications.

Exceptional Support
Developers on all of the design teams for the Audi A5 project used ADI's VisualDSP++ integrated development and debu management of projects from start to finish from within a single interface. Key features of VisualDSP++ include native C/ profiling, and the VisualDSP++ Kernel (VDK), which allows code to be implemented in a structured easy-to-scale manne leveraging the experience and background of ADI engineers to solve complex hardware and layout issues.

Audi markets its A5 Coupé as one of the most impressive pioneering designs to date, inside and out, and Blackfin can ta enabling hands-free operation of high-fidelity audio and the ability to upgrade them in the future. That's a good investme

For more information, visit Audi's website.

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