

Samplify Systems Announces Availability of First Ultrasound Beamforming ASIC For Merchant Market(2)

Radiological Society of North America ([RSNA](#) [1]), Chicago - Samplify Systems, Inc., a technology company focused on delivering innovative semiconductors, modules, and subsystem solutions to the ultrasound industry, today announces availability of the industrys first merchant beamforming ASIC-the SAM2032. The highly integrated SAM2032 leverages all the benefits of Samplifys award-winning [Autofocus](#) [2][™] technology in a receive beamforming ASIC offering the industrys lowest power consumption and highest performance compared to current FPGA-based beamformer implementations. The highly configurable ASIC provides the flexibility for ultrasound OEMs to simplifying software and system design thus speeding time to market for a wide range of machines from ultra-low power hand-helds, through mid-range and high-end carts.

The receive beamformer is at the heart of any ultrasound front-end electronics subsystem. The SAM2032 ASIC addresses a critical gap in the current FPGA implementation of these devices. While higher-end FPGAs can be used to develop a high-performance receive beamformer, their higher cost, higher power consumption, and larger size limits their use to premium console ultrasound machines. Conversely, lower-end FPGAs can be used as a cost-effective alternative, but their limited resources present system performance constraints.

"The availability of the SAM2032 is an exciting development in the ultrasound industry," says Danny Kreindler, Director for Ultrasound Products at Samplify Systems. "By capturing all of the receive beamformers complexity in an ASIC device, the SAM2032 delivers the only high-performance, low-power and low-cost solution in the commercial market. The availability of this ASIC enables existing and new entrants, in both the traditional OEM space and in emerging non-traditional ultrasound applications, to gain quick and easy access to premier beamforming technology that will significantly accelerate product development."

SAM2032 Highlights

The SAM2032 is a configurable 32-channel digital receive beamformer. The device interfaces to 12-bit ADCs with 32 serialized LVDS inputs. The high-performance data-path consists of delay memory, cubic interpolation, and apodization weighting prior to summation of the 32 channels. The device supports dynamic focusing and apodization where coefficients are updated continuously on every sample. RF beam data is converted to baseband using a true I/Q down converter for optimal noise performance. With a tunable center frequency and programmable decimation filter bandwidth, an optimal tracking filter throughout the entire scan depth can be implemented. The device supports sampling rates of up to 50MHz and parallel beam processing using Samplifys QuadBeam[™] technology that generates up to 4 receive beams simultaneously for higher frame-rates for color overlays.

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Samplifys on-board AutoFocus engine is an application specific DSP that calculates the coefficients and weights for the beamformer data-path in real-time. This calculator reduces system complexity and cost because no external memory or real-time link to the back-end CPU is required.

The SAM2032 comes in a 672-ball 27x27mm PBGA lead-free package. Based on imaging modes employed, the device consumes a fraction of the power of comparable FPGA implementations.

Development Platform

To simplify system design and further reduce time-to-market, Samplify provides a complete HW/SW development platform for the SAM2032. The companys [SMK9130](#) [3] is a 64-channel complete Tx/Rx ultrasound beamforming front-end platform. It includes all front-end electronics and high-voltage power supplies in a single small chassis with a multiplexed probe interface on one end, and a USB2.0/x4 PCIe1.1 interface to a back-end CPU on the other.

A high-level application programming interface (API) is provided to customers of the SAM2032 beamformer IC and its development platform. The Samplify Ultrasound API (SUAPI) abstracts the underlying hardware in the system allowing OEMs to develop software quickly through a high level of scans, frames, sub-frames, firing plans, etc. definitions instead of low-level register settings. Preset and arbitrary transducer definitions are provided and passed to the SAM2032 via the API. The API is provided as a shared library and header files give full access to the richness of the SAM2032s programmable features so OEMs can define how they perform beamforming in the system and differentiate their products. Furthermore, the API layer "future-proofs" the OEMs imaging software to next generation hardware components, preserving their development investment. The API is available for Windows, Linux, and MacOS.

For more information about Samplifys ultrasound offerings visit: www.samplify.com/ultrasound [4].

See Us at RSNA 2011

Samplify will conduct imaging demonstrations using the latest version of it SMK9130 complete ultrasound front-end subsystem that uses its new SAM2032 beamformer ASIC imaging. The demonstrations will be held at the Radiological Society of North America ([RSNA](#) [1]) show at Chicagos McCormick Place from November 27 to December 2--at Samplifys booth (#9524 in Hall B, North).

Pricing and Availability:

The SAM2032 is currently available from Samplify Systems and its worldwide sales partners. List price for the 32-channel SAM2032 is \$199 (US), volume quantity, with other pricing available based on various system configurations.

About Samplify Systems:

Samplify is a solution provider of technology, semiconductor, and system products for the ultrasound market. Headquartered in Santa Clara, California, Samplify's technology and semiconductor products, including its AutoFocus™ beamforming

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technology and its [SAM1600 family of ADCs](#) [5], have won multiple industry awards for innovation. Additional information about Samplify ultrasound products can be found at www.samplify.com/ultrasound [4].

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[1] <http://rsna2011.rsna.org/index.cfm>

[2] <http://www.samplify.com/products/intellectual-property/autofocus-ultrasound-beamforming/>

[3] <http://www.samplify.com/products/system-board-products/ultrasound-beamforming-development-kit/>

[4] <http://www.samplify.com/ultrasound>

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