Chipset Enables Highest Image Quality at Lowest Power

National Semiconductor Corporation today unveiled the industry's first eight-channel ultrasound transmit/receive chipset specifically designed for portable ultrasound systems used in hospitals, clinics, ambulances and remote point-of-care facilities. The PowerWise® chipset's innovative circuit architecture enables the design of both hand-carried and handheld units that deliver longer battery life and imaging performance comparable to larger console systems.

National provides a complete eight-channel transmit/receive chipset, including receive analog front end (AFE), transmit/receive switch, transmit pulser and configurable transmit beamformer. This high-level of integration allows system designers to build lightweight 128-channel portable ultrasound systems with enhanced image quality and diagnostics in a small footprint. National supports the chipset with comprehensive evaluation kits, reference schematics and tools that help customers make detailed chip performance evaluations and accelerate time-to-market.

The eight-channel chipset includes four integrated circuits (ICs) that work together to deliver unmatched performance and power efficiency. For example, the transmit beamformer can be configured to calibrate the board trace delay mismatch and pulser delay mismatch. This significantly improves the distortion performance and enables second harmonic imaging. The transmit/receive switch gives system designers the flexibility to trade-off power versus performance by selecting different bias current settings.

The company's unique AFE architecture provides superior imaging quality and B-mode power consumption that is 10 percent lower than the closest comparable AFE. It includes the industry's highest resolution digital variable gain amplifier (DVGA) and a low-power continuous-time sigma-delta (CTSD) analog-to-digital converter (ADC). The DVGA offers several advantages over traditional analog VGAs such as better channel-to-channel matching and higher spectral performance. The CTSD ADC provides inherent brickwall anti-aliasing filtering in comparison to higher power consuming, low-order anti-aliasing filters found in other AFEs that use conventional pipeline ADCs.

National offers a full signal path solution for portable ultrasound systems, including clocking devices and power management ICs. For more information on National's ultrasound transmit/receive chipset and evaluation system, visit www.national.com/ultrasound [1].

To see a video demonstration of the LM96511 AFE operating in B-mode and CW Doppler-mode, with input signals that emulate a real ultrasound environment, visit http://bit.ly/LM965xxDemoVideo [2].

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[1] http://www.national.com/ultrasound
[2] http://bit.ly/LM965xxDemoVideo