BY PAUL RAKO, TECHNICAL EDITOR

Can't see the forest ...

Analog design is all about trade-offs, so system-design expertise is vital to any company offering analog chips. For example, Dave Kress, director of technical marketing at Analog Devices, points out that his company is trying to get a better understanding of the entire system design so it can solve design problems that span multiple chips and subcircuits. Meanwhile, Doug Bailey, vice president of marketing at Power Integrations, says that his company's customers expect help with thermal design and EMI (electromagnetic-interference) characterization, functions that were previously the domain of system engineers.

Texas Instruments is also dedicated to understanding system design to better serve its customers. Matt McKinney, marketing-communications manager, mentions that TI offers reference designs that solve the system-power and analog-signal-path problems of customers using the company's DSPs or embedded microprocessors.

Bob Thomas, technical leader at Cisco Systems, confirms the importance of vendors' having system-level cognizance. "A vendor shouldn't just toss a part on our desk and walk away," says Thomas. "The vendor has to get to know our system and its unique characteristics so [the vendor] can add something special to our designs." Steve Abe, a senior software engineer at the company, mentions that chip manufacturers should help develop the firmware to initialize the chips in Cisco's designs. "The vendors have an intimate understanding of the chips, and we look to them to help us ... keep the chip working in our system environment," he says.

"It's an example of vendors' not looking at the whole receiver-signal chain."
—John Scampini

John Scampini, director of strategic marketing at Maxim Integrated Products, points out that some vendors recommend amplifiers that would limit the SNR (signal-to-noise ratio) of subsequent analog-to-digital stages, meaning that the output-referred noise of the variable-gain amplifiers would be larger than the noise floor of the ADC that it was feeding. "It's an example of vendors' not looking at the whole receiver-signal chain," he says (see "Diagnostic ultrasound gets smaller, faster, and more useful," *EDN*, this issue, pg 21).

Jim Williams, staff scientist at Linear Technology, also discusses the changing role of application engineers (see "Application engineers: serving the customer," *EDN*, this issue, pg 59). Williams observes that modern application engineers are fundamentally systems engineers. "In a well-run analog company, [components are] second- or third-tier parts of the job," he says. "The fundamental responsibility of an analog-application engineer is to understand his customer's problem and provide a solution."

Semiconductor companies are taking an interest in systems design that is essential to continued innovation and success. For example, Qspeed Semiconductor's products are faster than other silicon diodes and cheaper than silicon-carbide diodes. Yet the Qspeed parts are three times more expensive than legacy slow-recovery silicon diodes. If Qspeed thought of itself as just a diode company, this approach would make it tough to sell parts into cost-sensitive applications. The company looks past the two pins of its diodes, however, and sees the total impact of better performance.

Andrew Smith, power-marketing manager at Power Integrations, points out that the company looks at the whole power system, designing controller chips that operate the PFC (power-factor-correction) section of the power system, as well as the primary isolated LC (inductor-capacitor) power stage for generating low-voltage system power.

Ed Lam, vice president of marketing and engineering at Advanced Analogic Technologies, is also looking at the entire system—from the wall plug to the final analog output. The components in this path might be the power in an LCD television, ending in a Class D audio amplifier, or the charging system in a cell phone. "The system is the thing," he says.EDN

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