

R A Q ' s

Rarely Asked Questions

Strange but true stories from the call logs of Analog Devices

Resourcefulness, or Why Good Engineers (and Good Cooks) Use the Best Available Components

Q. Which (amplifier/switch/converter) is best in a (mobile phone/strain gauge/medical ultrasound system)?

A. Whichever is most efficient and cost-effective, no matter what it was originally designed for. When choosing an IC, ask what it does, and how well it will work, not whether it was designed for the type of system you are building.

While at the butcher's last week to buy ground beef for spaghetti bolognese, I noticed some cheap stewing venison. So I purchased some, minced it, and made a delicious "spaghetti alla salsa di cervo." Later that week "chile con venado" was equally successful.

As engineers we must use the best available resources to design our systems. The word engineer is derived from the Latin "ingenium," which means ingenious, i.e. resourceful. Bolognese and chili recipes specify beef, but venison has less fat and improves the flavor.

It is unwise to avoid an IC because its data sheet does not specify a particular application. Recently, we conducted research to find out why some companies that bought a lot of our analog switches for handsets did not buy one particular type which was more ideally suited in both performance and price. The switches that were selling listed "handsets" among possible applications, but the data sheet of the better suited switch did not, so it was not considered. This is not good engineering.

Asking fundamental questions helps us to choose components (ingredients) which, though not intended or specified for our application, are actually well-suited to it.

For example, a useful component that can be easily overlooked is the AD8210.



Described as a "current shunt monitor" its data sheet lists its applications as "current sensing" followed by six automotive current sensing tasks. Potential users can be forgiven for assuming that the AD8210 is simply an automotive current sensor. In fact, the AD8210 is an in-amp with a CMR from 0 to +65V when operated with a single +5V supply. Developed for automotive high-side current measurement, it is valuable wherever a small signal with a high positive common-mode voltage and reasonably low source impedance must be measured. It has been used successfully in industrial instrumentation, avionics, battery chargers and innumerable other applications, but only by engineers who see past the description on its data sheet.

**To learn more about in-amps
and reading data sheets,
Go to: <http://rbi.ims.ca/5696-113>**



Contributing Writer
James Bryant has been a European Applications Manager with Analog Devices since 1982. He holds a degree in Physics and Philosophy from the University of Leeds. He is also C.Eng., Eur.Eng., MIEE, and an FBIS. In addition to his passion for engineering, James is a radio ham and holds the call sign G4CLF.

**Have a question
involving a
perplexing or
unusual analog
problem? Submit
your question to:**

raq@reedbusiness.com

SPONSORED BY

