Product Bulletin

TMS320DRI300/350 HD Radio™ Digital Basebands

Key Benefits

- **Reduces Cost for HD Radio Designs** – TI offers the most cost-effective solutions available for either a bolt-on or integrated approach
- **Lowers Risk for Future Features in HD Radio Designs** – Software radio concept allows for addition of future features even after development begins
- **Improves System Cost and Differentiation** – Integration of other features in an HD Radio receiver, including MP3 / WMA CD

Building on the success of the award-winning digital signal processor (DSP)-based DRI250, Texas Instruments and iBiquity Digital Corporation, the sole developer and licenser of HD Radio technology, introduce the industry's lowest cost single-chip AM/FM and HD Radio basebands. Depending on their design approach, designers can choose either of the new digital basebands from TI to provide them with the industry's lowest cost solution for building an HD Radio receiver. The new digital basebands combine TI's expertise in DSP technology and software by iBiquity Digital Corporation, with all of the digital functions required to build an AM/FM and HD Radio receiver, in addition to audio post processing and MP3 and Windows Media® Audio (WMA) CD support. Available now, the HD Radio solutions include:

- TI TMS320DRI350 HD Radio baseband
- TI AFEDRI8201 companion analog front end
- TI TMS320DRI300 HD Radio baseband

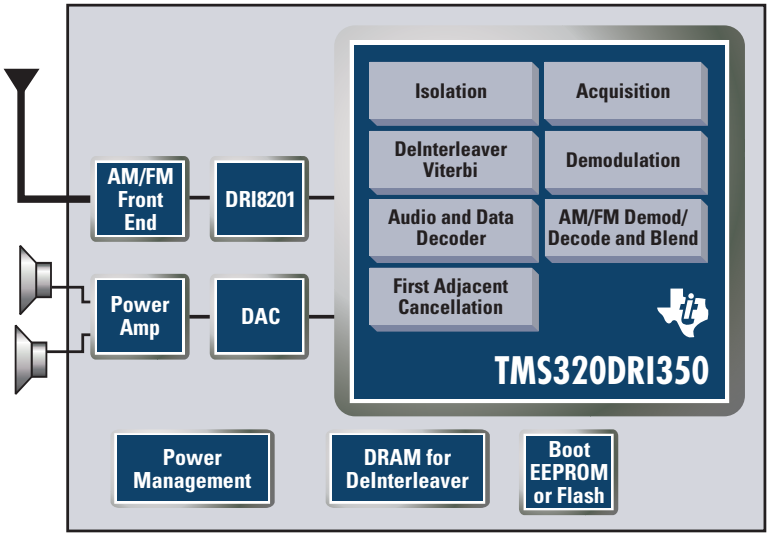
Versatile Design Approaches

TI's new TMS320DRI350 baseband brings unparalleled integration of HD Radio technology by combining IF-sampled AM/FM and HD Radio processing on the same chip. This integrated design approach is the lowest cost implementation of HD Radio technology. In addition, TI is responding to manufacturers' demand for an HD Radio-only solution with its new TMS320DRI300 baseband, which provides HD Radio functionality, while allowing OEMs to continue using their own proprietary designs for AM/FM support. The DRI300 baseband allows manufacturers to build on existing solutions and easily add digital radio capabilities. While not as low cost as the integrated design of the DRI350 baseband, the DRI300 baseband provides the industry's lowest cost for this particular design approach.

AM/FM and HD Radio Receiver System

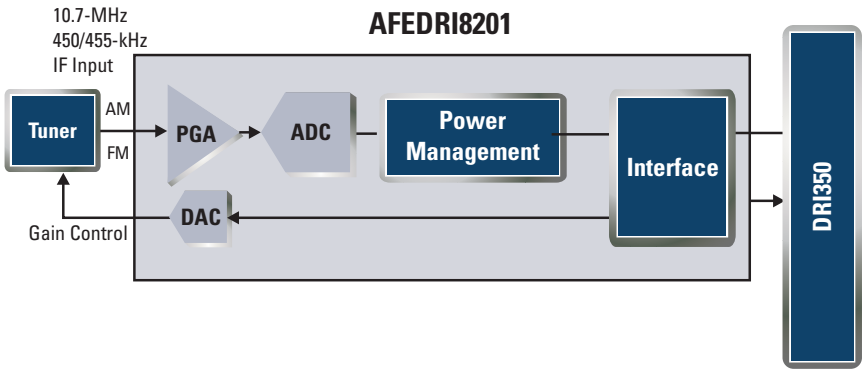
The DRI350 and the DRI300 basebands incorporate digital channel

Figure 1. Digital Baseband System



The TMS320DRI350 baseband integrates the baseband processing for both HD Radio and AM/FM on a single device. The DRI8201 samples and downconverts the intermediate frequency (IF) from the AM/FM front end.

Figure 2. Companion Analog Front End



ADC and DDC integrated to provide precision AM/FM and HD Radio digitization.

source, data decoding and demodulation functions for HD Radio™. In addition, the DRI350 baseband does AM/FM demodulation and decoding and HD Radio/AM/FM blend (see Figure 1). Features also include:

- Compatible with iBiquity's In-Band On-Channel (IBOC) digital AM/FM system
- On-chip data decoding
- Compatible with standard audio DAC interface
- Can interface to external microcontroller and SDRAM
- JTAG emulation

Most Integrated Baseband

The DRI350 and DRI300 basebands are a software radio concept, which lowers risk by allowing for the addition of future features even after the development begins. A clear example of this is Tomorrow Radio, a dual-channel radio capability for HD Radio receivers, which has become an integral feature of TI's HD Radio™ baseband platform. In addition, the software allows for the integration of other features in an HD Radio receiver including MP3 and WMA CD decode.

Integrated AFE for Data Conversion

The DRI350 baseband is complemented by TI's mixed-signal AFEDRI8201 chip (see Figure 2), which provides the precision intermediate frequency (IF) analog-to-digital converter (ADC), digital down converter (DDC) and control digital-to-analog converter (DAC) needed in a complete digital radio design. The DRI8201 uses an 80-megahertz (MHz), 12-bit ADC to digitize the AM/FM IF signal from the radio tuner with the high precision needed for optimum AM/FM and HD Radio performance.

Power of Performance

While offering the same HD Radio benefits as before, the DRI350 baseband uses the award-winning DRI250 technology by providing exceptional AM/FM radio performance for automotive and home receivers. Part of this performance improvement comes through the oversampling done by the 12-bit ADC on the DRI8201. In addition, through software radio algorithms such as adaptive stereo separation and adaptive audio bandwidth control, the DRI350 addresses, among other things, the critical specifications of audio signal-to-noise ratio (SNR), total harmonic distortion + noise, stereo separation and sensitivity, all of which are critical in delivering quality audio sound to the listener.

Availability

Samples of TI's new DRI350 and DRI300 basebands are available now, with volume production expected in late 2004. The AFEDRI8201 is available now.

For more information, please contact the nearest TI sales office or visit our website at:
www.ti.com/dri350