

DRX 396xA

June/2005



DRX 396xA

Analog TV IF Demodulator

The DSP-based analog TV IF demodulator DRX 396xA performs the entire multistandard TV IF processing, AGC, video demodulation, and generation of the sound IF (SIF), requiring only one SAW filter. The IC is designed for applications, such as TV sets, DVD recorders, PC cards, and TV tuners.

The alignment-free DRX 396xA does not need special external components. All control functions and status registers are accessible via I²C bus interface. Therefore, it simplifies the design of high-quality, highly standardized IF stages.

Due to its mixed-signal structure and the digital demodulation, the IC offers unique features and can easily be combined with digital TV applications. Thus, the DRX 396xA enables an economic hybrid solution for the reception of either analog or digital TV channels which requires only one tuner and one single SAW filter.

Features

- ◆ Multistandard QSS IF processing with a single SAW filter
- ◆ Programmable IF frequency between 30 and 60 MHz
- ◆ DSP-based IF processing for the following standards: B/G, D/K, I, L/L', and M/N
- ◆ Standard specific digital signal processing for:
 - Channel filtering
 - Audio/video splitting
 - Group delay equalization (programmable)
 - Video AGC and delayed tuner AGC
- ◆ Digital picture carrier recovery:
 - Field proven
 - Alignment-free
 - Stable frequency lock at overmodulation up to 150%
 - Quartz-accurate AFC information
 - Selectable bandwidth for different field conditions
- ◆ Automatically frequency-adjusted Nyquist slope, providing optimum picture and sound performance over complete lock-in frequency range, which eliminates the need of fine tuning
- ◆ Fast AGC algorithms for tuner, video, and SIF outputs
 - Field proven
 - Adaptive back porch control for positive modulation (L/L')
 - Programmable tuner take-over point (TOP)
- ◆ No sound traps required for video output
- ◆ FM radio capability without external components and with standard TV tuner
- ◆ Allows economic, single-tuner / single-SAW hybrid TV solution (DVB-C, DVB-T, ATSC)
- ◆ I²C bus interface
- ◆ PMQFP44-1 or PQFN64-1 package

System Architecture

The first block of the DRX 396xA is a low-noise preamplifier. It has an adjustable gain for setting the Tuner Take-over Point voltage (TOP). This adjustment enables optimal tuner operation.

The down-converted and filtered analog IF signal is digitized for further digital signal processing. A digital PLL performs the tracking of the picture carrier and therefore synchronous demodulation.

Channel filtering is performed internally by digital filters. They also separate the video and sound components of the desired channel. The processing is competitive to conventional QSS systems.

The video AGC controls the CVBS amplitude. In positive modulation mode, an adaptive back porch control (BPC) is activated. The SIF AGC controls the level of the sound carrier output.

A Micronas video/audio processor (e.g. VCT 6wxyP, VPX 322xF, AVF 49xyA, and MSP 44xyG) can be connected to the CVBS and/or SIF output. Due to the internal filtering, no video or sound traps are needed.

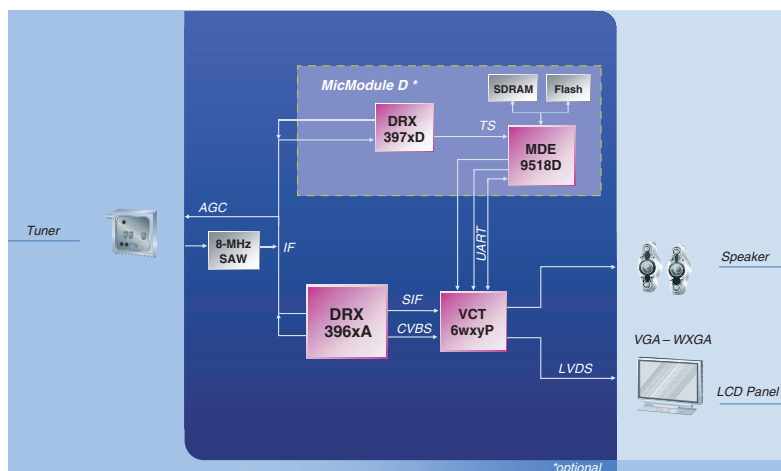


Fig. 1: Application example: analog/hybrid flat-panel TV with the DRX 396xA

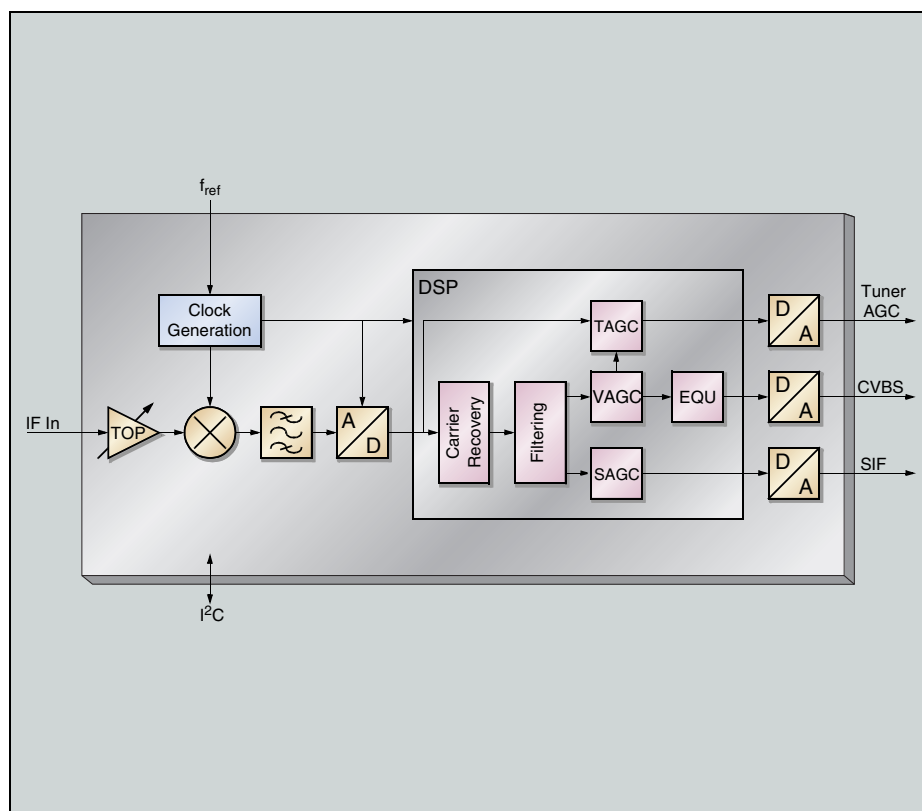


Fig. 2: Block diagram of the DRX 396xA

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Edition June 2, 2005: Order No. 6251-510-1PI