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## TDA8204 / TDA8205 AN INNOVATIVE 2 CHIP NICAM SOLUTION

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The NICAM (Near Instantaneous Companded Audio Multiplex) digital sound carrier system operates with a digitally converted audio signal which is Quadrature Phase Shift Modulated on to a second SOUND CARRIER. While the normal sound carrier of the TV signal carries the traditional FM signal, the second carrier may carry either :

- A multiplex stereo signal.
- Two independant mono sound signals for dual sound.
- One mono signal and one 352K bits transparent data channel.
- One 704K bits transparent data channel.

In the I-system, the digital sound carrier uses an intercarrier frequency of 6.552MHz. In the B/G system 5.85MHz is used as IF for the digital sound carrier as a compromise between required bandwidth and achievable eye height of the received signal. The left and right audio signal are sampled with a 32kHz sampling frequency, allowing for a theoretical audio bandwidth of 16kHz.

The NICAM digital sound system is today broadcast in more than 10 countries all over the world. It's a feature that will become then 10 countries all over the world. It's a feature that will become soon a standard for TV sets and VCR's in these countries. If you want to participate in the fast growing NICAM market, we are ready to meet all your needs with our TDA8204/TDA8205 chip-set.

### THE NICAM DECODER

SGS-THOMSON's TDA8204 performs the complete NICAM decoding with data and sound recovery according to EBU SPB424 specifications. Thanks to a complex internal logic it is ensured that original data are recovered. It is also possible to

process the recovered data externally for de-encryption in **PAY-TV application**.

Integrated 4x oversampling digital filter plus noise shaper allow high performance and saving on external component count and cost. All functions in the device are accessed via on-chip I<sup>2</sup>C Bus Interface and a digital audio output conforming to the I<sup>2</sup>S Bus protocol is provided for connection of an external DAC or DAT interface.

### THE NICAM QSPK DEMODULATOR

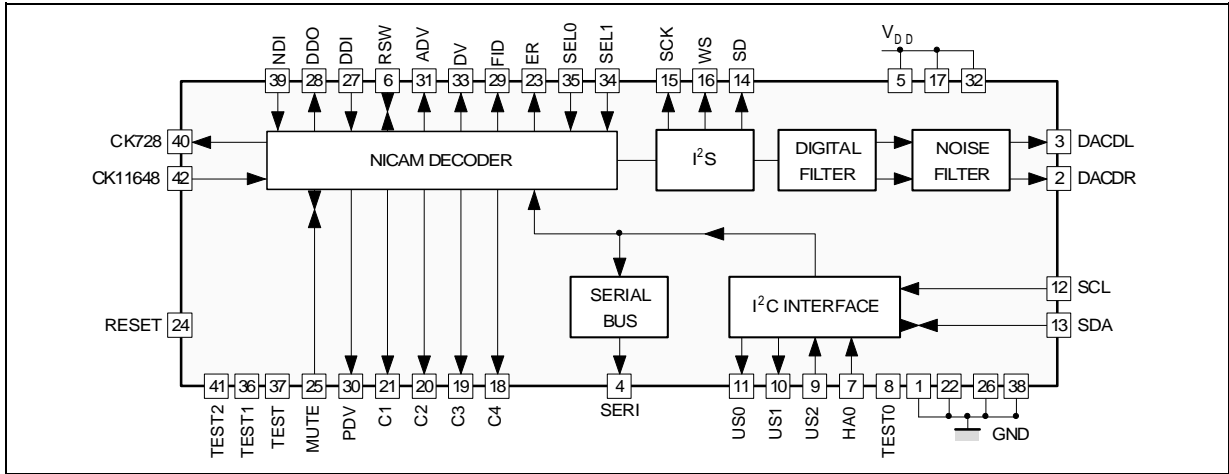
SGS-THOMSON's TDA8205 is essentially divided into two signal processing sections. The first section handles all the NICAM signal acquisition, the QSPK (Quadrature Phase Shift Key) demodulator plus clock and data recovery circuits. The key point to note about this section is the dual frequency synthesizer. By use of only one quartz crystal, the IC is able to demodulate QSPK signals from either system I or system B/G in an automatic way without any external source switching. The second section of the TDA8205 manages the analog parts of the twin digital-to-analog converters (DACs) and all filtering and audio switching downstream of the DACs. A simple serial bus from the TDA8204 allows control of the switch functions by the CTV system microcontroller.

### THE COMPLETE TV SOLUTION

SGS-THOMSON offers you a complete TV chassis for turn-key designs. This chassis is based on our latest family of CTV microcontrollers and signal processing devices. Comprehensive software packages including the management of TV tuning, remote control, OSD, NICAM and all levels of teletext will also be available.

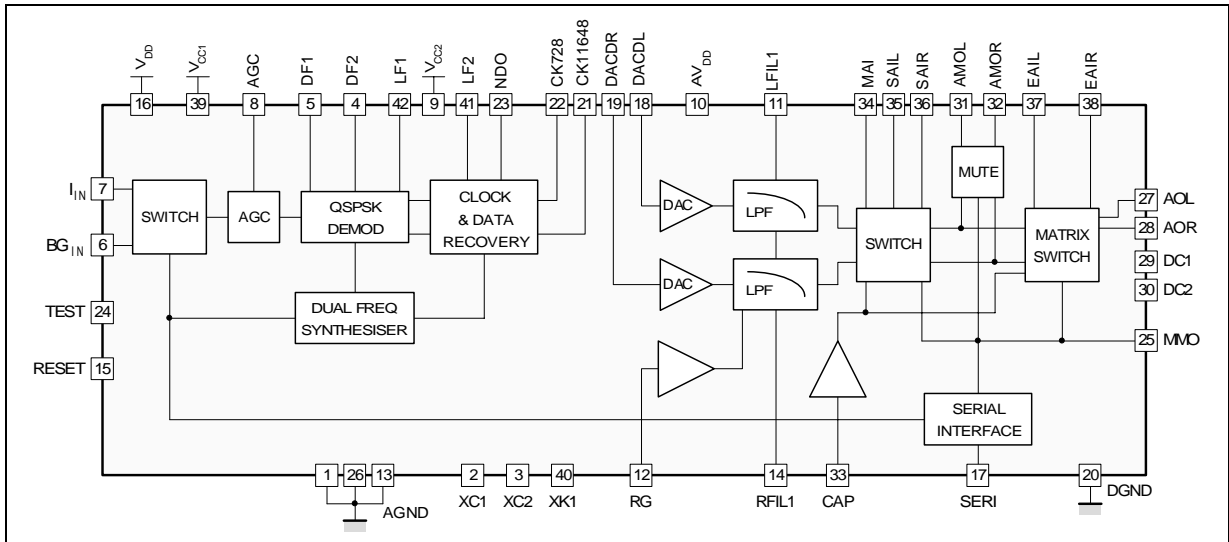
# TDA8204/TDA8205 - AN INNOVATIVE 2 CHIP NICAM SOLUTION

Figure 1 : Block Diagram of TDA8204



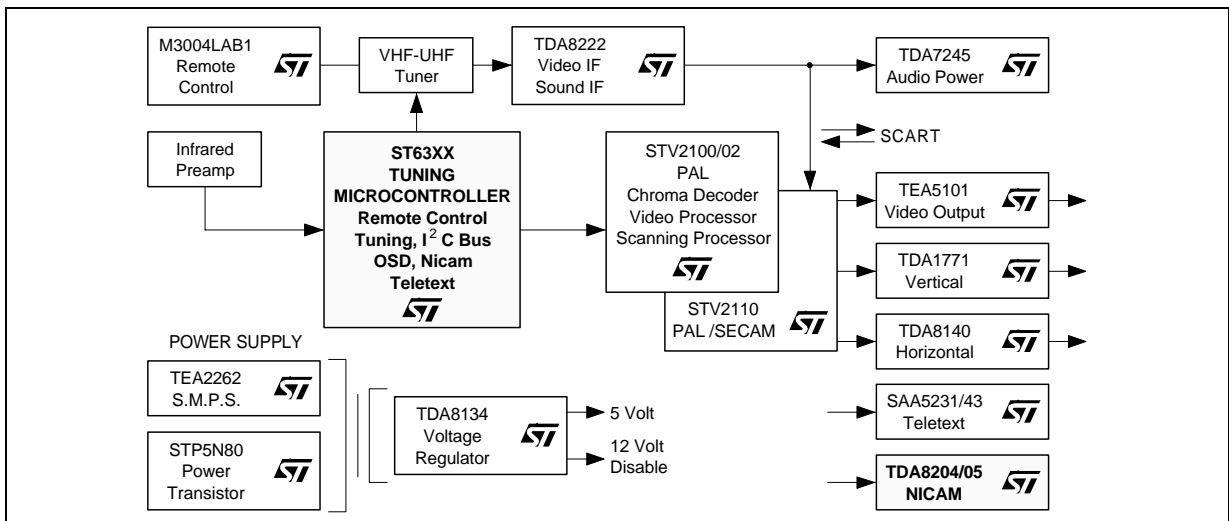
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Figure 2 : Block Diagram of TDA8205



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Figure 3 : SGS-THOMSON TV Solution



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## TDA8204/TDA8205 - AN INNOVATIVE 2 CHIP NICAM SOLUTION

### FULL SUPPORT

SGS-THOMSON has a completed NICAM demoboard available for you. This board has been designed to show the features of TDA8204/TDA8205 and to make a performance evaluation on the NICAM decoder/demodulator. The board includes QSPK bandpass filters with optional input buffer amplifiers and an ST6 microcontroller as a convenient user interface.

For more information on your choice of NICAM or complete TV systems, call your nearest SGS-THOMSON sales office or distributor now.

### MAIN FEATURES OF TDA8204

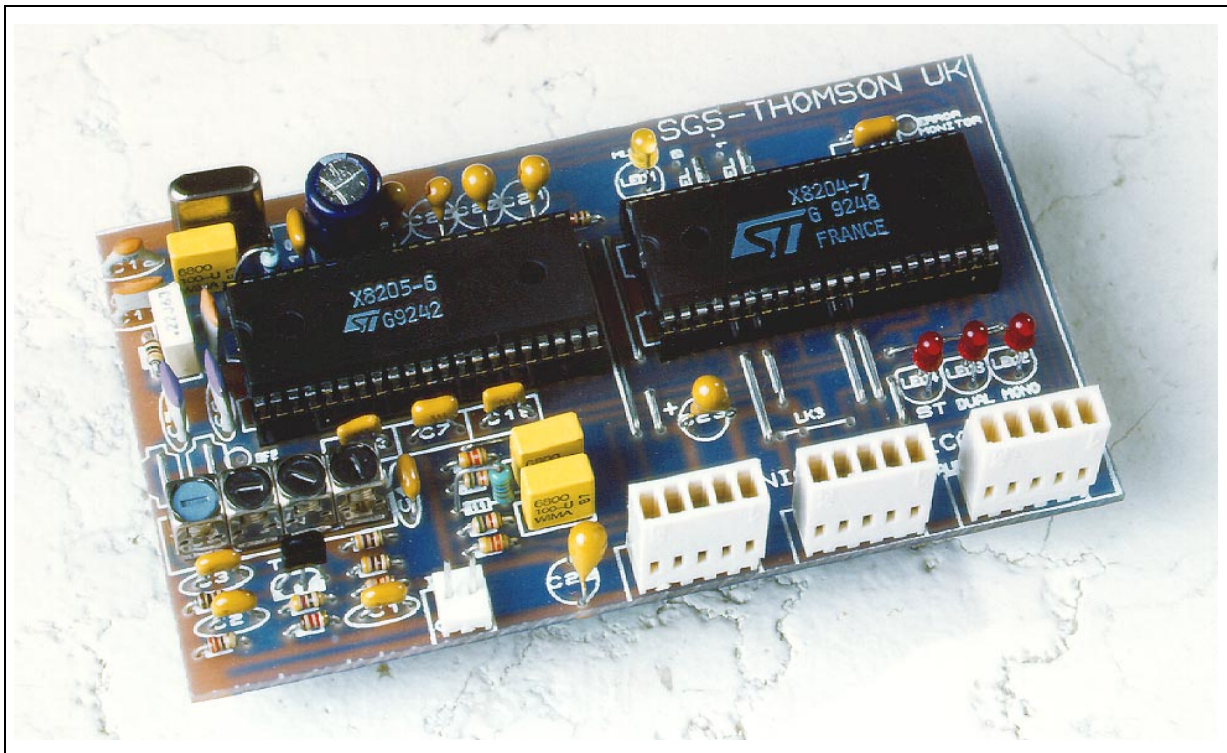
- COMPLETE NICAM DECODER ON-CHIP
- DESCRAMBLER DATA OUTPUT
- AUDIO MODE AND DATA FLAGS
- AUTOMATIC MUTING AND RESERVE SOUND SWITCHING
- LANGUAGE SELECTION SWITCHING

- 4X OVERSAMPLING DIGITAL FILTER AND NOISE SHAPER
- I<sup>2</sup>C BUS INTERFACE
- I<sup>2</sup>S INTERFACE
- TWO USER PROGRAMMABLE PINS
- TWO CHIP ADDRESS PINS
- SINGLE +5V SUPPLY
- SHRINKED DIL 42 PACKAGE

### MAIN FEATURES OF TDA8205

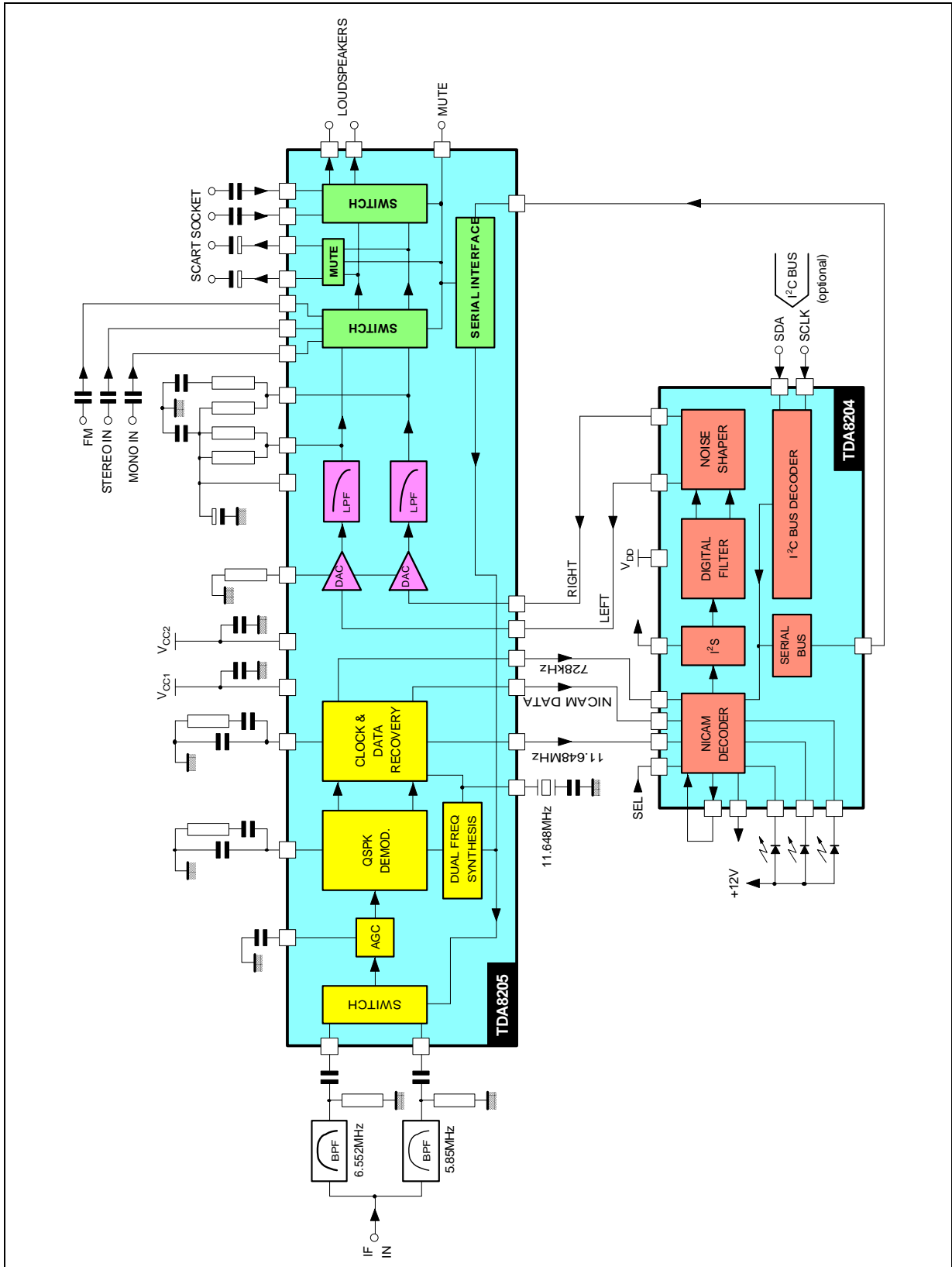
- MULTISTANDARD QSPK DEMODULATOR
- ONLY ONE CRYSTAL
- ON-CHIP DATA RECOVERY FILTERS
- DUAL DAC WITH FILTERS
- VERSATILE AUDIO SWITCH MATRIX
- HEADPHONE DRIVER
- SERIAL BUS CONTROL
- STAND ALONE BASIC OPERATION CAPABILITY (no microcontroller required)
- SHRINKED DIL 42 PACKAGE

Figure 4 : NICAM Demoboard



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Figure 5 : NICAM Application



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