



APRIL 2001
V1.3

SC14405 Complete Baseband Processor for DECT Handsets with on-chip Flash and LCD controller

General Description

The SC14405 is a CMOS chip optimized to handle all the audio, signal and data processing needed within a DECT handset. An ADPCM transcoder, a very low power CO-DEC and Analog Frontend is integrated. Direct connections towards microphone and a (dynamical) loudspeaker are provided. Duplex quality handsfree operation is integrated.

The SC14405 is designed to fit to any radio design.

A dedicated TDMA controller handles all physical layer slot formats and radio control.

National Semiconductors standard CompactRISC™ CR16B 16 bit microcontroller takes care of all the higher protocol stack. 4 kByte Flash is integrated for parameter and number storage.

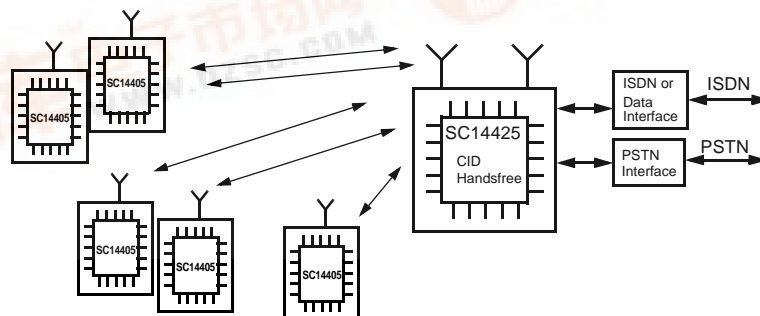
The SC14405 has an 125 segment LCD controller.

Features

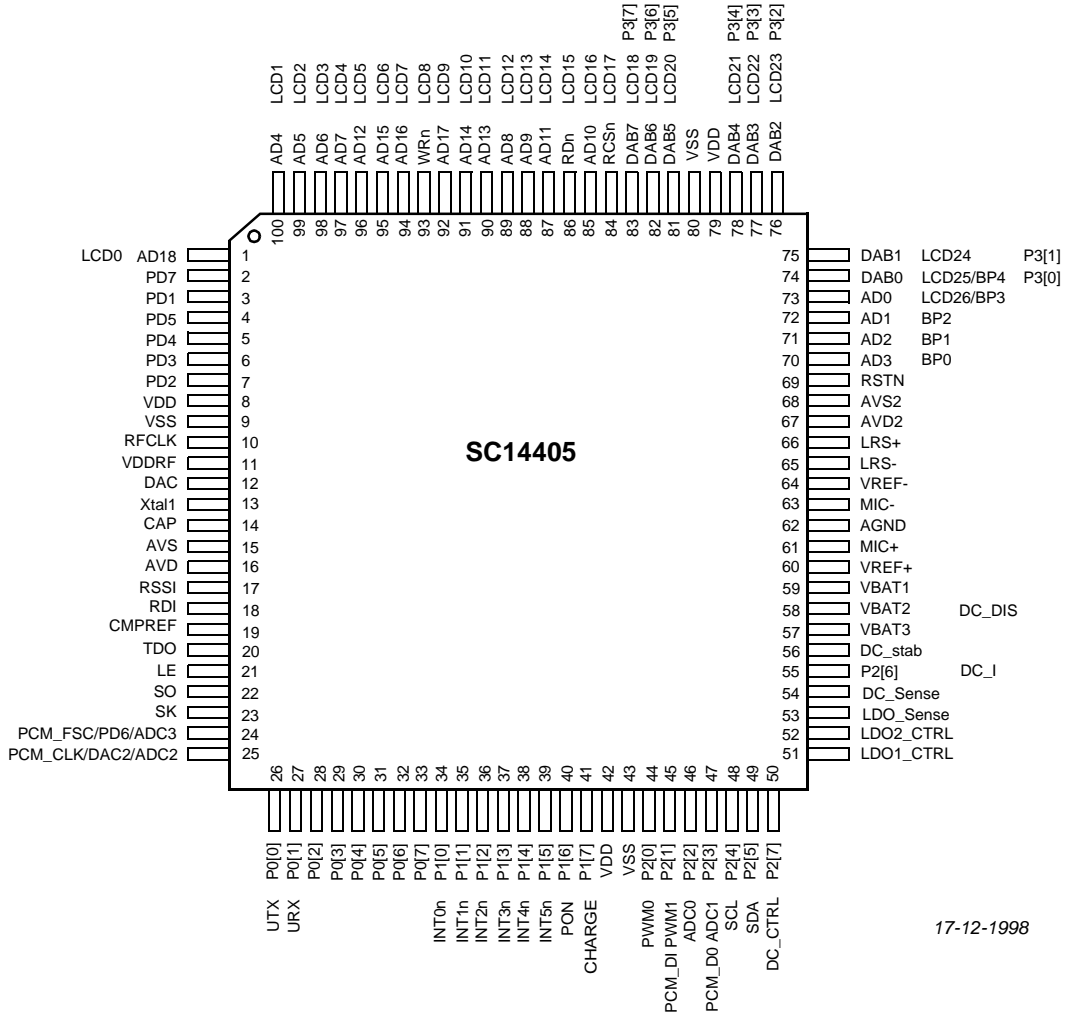
- Integrated DECT Baseband transceiver optimized for GAP handsets according to ETS 300 175-2, 175-3 & 175-8.
- Two on board low drop voltage regulators with 2.85V and 3.0- 3.8V (with external resistors the voltage can be determined) output.
- 2V upto 3.6V battery input with onboard step up converter.

- 3V upto 5.0V battery monitor input.
- Advanced battery management unit
- Very low power in active and paging mode.
- Embedded 16 bit CompactRISC™ Micro Controller. (CR16B) with programmable clock speeds.
- 4k byte memory mapped Flash
- 128 kbyte Flash or factory programmed ROM FLASH.
- 125 segment LCD controller using 5 backplanes
- ACCESSBUS™ or MICROWIRE™ interfaces
- 5,5 kByte on-chip Data Memory.
- One full duplex ADPCM transcoder.
- On-chip 14-bit linear CODEC.
- 14 upto 44 dB gain differential microphone input buffer.
- 100 Ω loudspeaker driver.
- Software controlled gain on audio input and output.
- Peak hold ADC for RSSI measurement.
- Five general purpose inputs can be multiplexed on an 8 bit ADC with selectable ranges.
- On-chip dedicated TDMA instruction co-processor which supports 1.152 MHz, 0.576 MHz and 0.288 MHz bit rates..
- 7programmable control signals for radio front end.
- Full and double slot, protected and unprotected B-fields. Duplex quality handsfree operation.
- Tone generator. 3 parallel tones can be programmed
- Linear PCM interface for external codec.
- Four general purpose ports. Three as input/output, one as output only.

System Diagram



1.0 CONNECTION DIAGRAMS



Order Number SC14405AFLAG (128kbyte Full FLASH , Boot mode A, 100 pins TQFP)
Order Number SC14405AFLBG (128kbyte Full FLASH , Boot mode B, 100 pins TQFP)
Order Number SC14405AxxAG (128kbyte ROM FLASH , Boot mode A, 100 pins TQFP)
Order Number SC14405AxxBG (128kbyte ROM FLASH , Boot mode B, 100 pins TQFP)

See NS Package Number VJG100A

Note 1: All digital outputs can sink/source 2 mA unless otherwise specified. All digital inputs are Schmitt trigger types. After reset all I/Os are set to input and all pull-up or pull-down resistors are enabled unless otherwise specified.

PU = Pull-up resistor enabled, PD = Pull-down resistor enabled, I = input
 A-I, B-I = In Boot mode A or B input and pull-up or pull-down resistor disabled,
 A-PD, B-PU = In Boot mode A, Pull-down resistor enabled. In Boot mode B, pull-up resistor enabled.

Note 2: Reset state of address and data bus and WRn, RDn pins:
if SC14405: All signals are '1' at startup.

BLOCK DIAGRAM

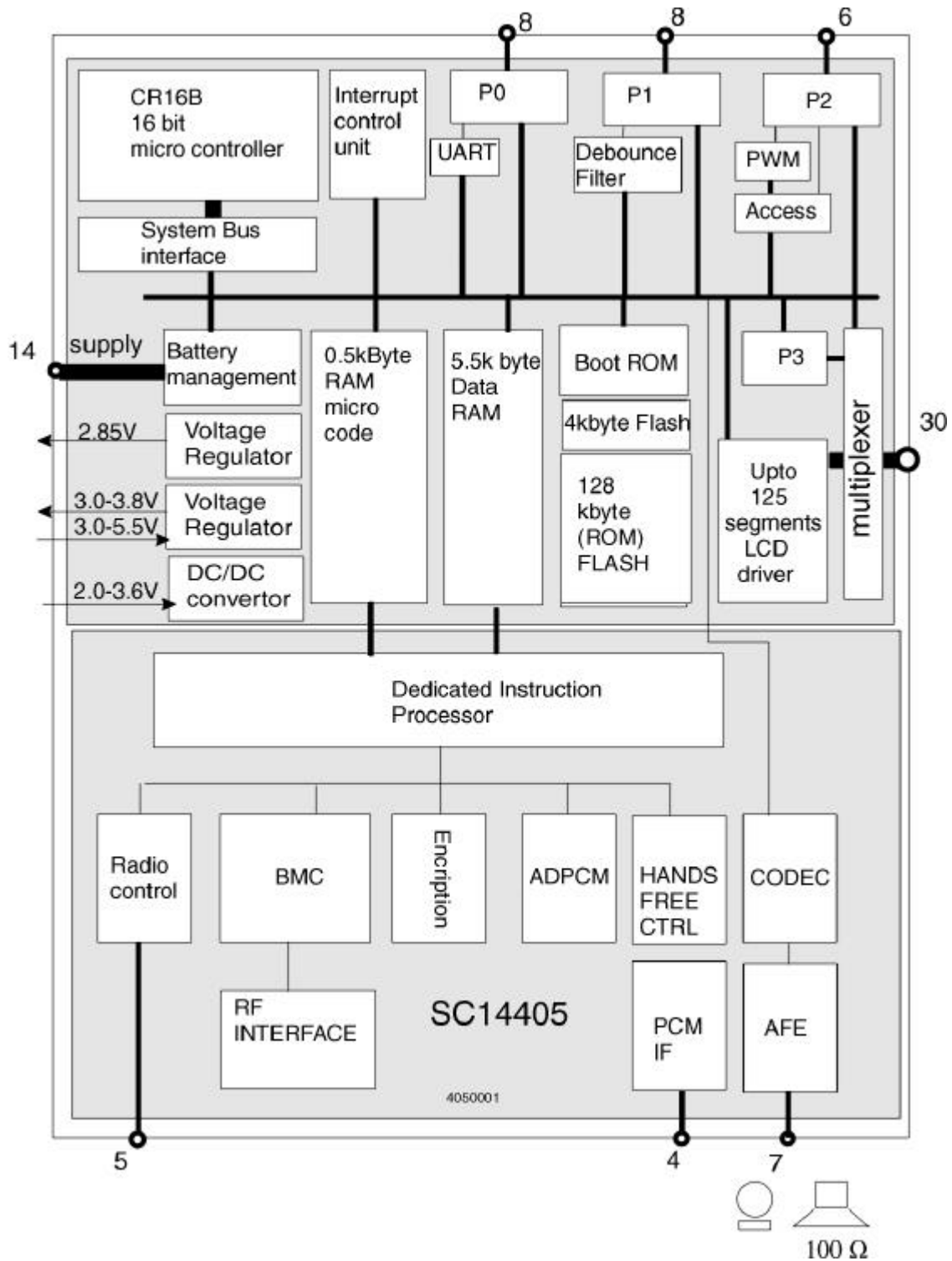


FIGURE 1. SC14405 Block diagram

1.0 Package information

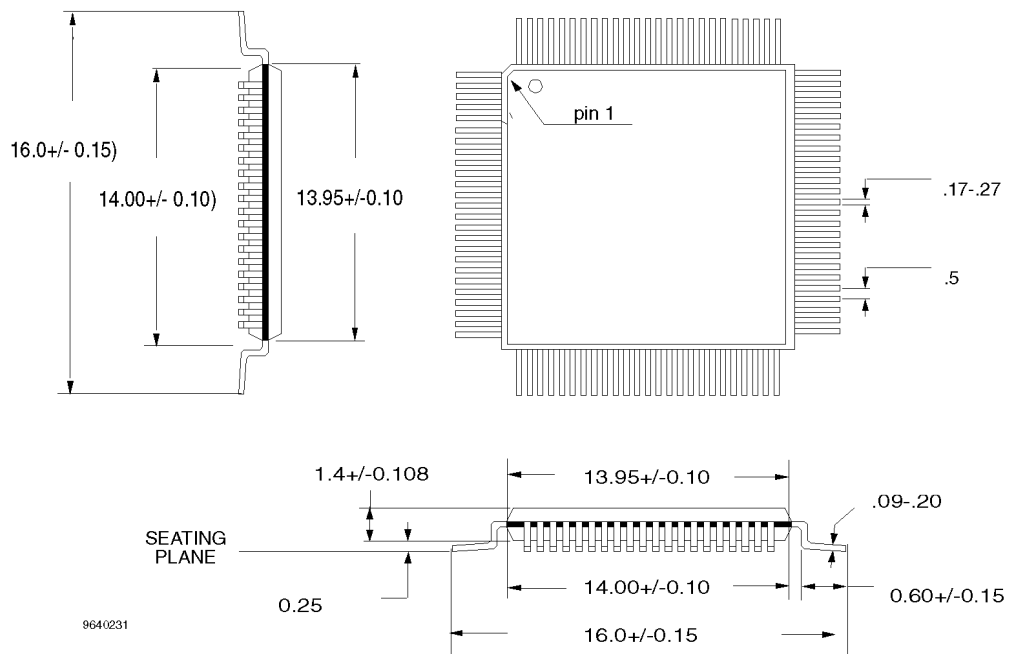


FIGURE 1. 100 pins TP Quad Flat Pack. NS Package Number VJG100A

2.0 Product status definitions

Definition of Terms

Data Sheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This data sheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This data sheet contains preliminary data. Supplementary data will be published at a later date. National Semiconductor Corporation reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
No Identification Noted	Full Production	This data sheet contains final specifications. National Semiconductor Corporation reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Obsolete	Not In Production	This data sheet contains specifications on a product that has been discontinued by National Semiconductor Corporation. The datasheet is printed for reference information only.

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