# GSM
# Baseband Processing Chipset

## AD20msp410

**FEATURES**

**Passed European GSM Phase I Type Approval**
**Complete Baseband Processing Chipset Performs:**
- **Speech Coding/Decoding, According to GSM 06.XX**
- **DTMF and Call Progress Tone Generation**
- **Equalization with 16-State Viterbi, Soft Decision**
- **Channel Coding/Decoding According to GSM 05.03**
- **All ADC and DAC Interface Functions**
- **Includes all Radio, Auxiliary and Voice Interfaces**
- **Support for GSM Data Services**

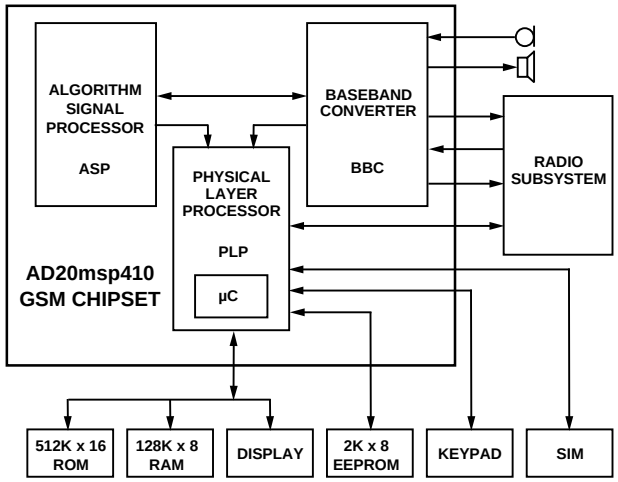
**Embedded 16-Bit Microcontroller**
**Layer 1 Software Provided with Chipset**
**Full Phase 2 Protocol Stack Software Available**
**Integrated SIM- and Keyboard Interface**
**Ultralow Power Design**
- **2.7 V Operating Voltage**
- **Intelligent Power Management Features**
- **Up to 70 Hours Standby Time Achievable**

**JTAG-Boundary Scan**
**Full Reference Design Available**
**Three TQFP Devices, Occupying Less than 12 cm$^2$**

**APPLICATIONS**

**GSM/DCS1800 Mobile Radios and PCMCIA Cards**

**SYSTEM ARCHITECTURE**




## GENERAL DESCRIPTION

The Analog Devices GSM baseband processing chipset provides a competitive solution for GSM based mobile radio systems. It is designed to be fully integrated, easy to use, and compatible with a wide range of product solutions. GSM phones using this chipset and its accompanying Layer 1, 2, 3 software have passed the European GSM full type approval process.

The chipset consists of three highly integrated, sub-micron, low power CMOS components that form the core baseband signal processing of the GSM handset. The system architecture is designed to be easily integrated into current designs and form the basis of next generation of designs.

The chipset uses an operating voltage of 2.7 V to 3.6 V, which coupled with the extensive power management features, significantly reduces the drain on battery power and extends the handset's talktime and standby time.

## CHIPSET COMPONENTS

### Algorithm Signal Processor (ASP)

The ASP is an application specific variant of the ADSP-2171 standard DSP from Analog Devices. It has been optimized to meet the cost, size and power consumption requirements of GSM mobile applications. All necessary memory to run the GSM specific programs is provided on-chip and with its preprogrammed ROM, no user programming is required. The ASP implements full rate speech transcoding according to GSM specifications, including Discontinuous Transmission (DTX) and Comfort Noise Insertion (CNI). A high performance soft-decision Viterbi equalizer is also implemented in software, embedded in the ROM.

### Physical Layer Processor (PLP)

The PLP combines application specific hardware and an embedded 16-bit microcontroller (Hitachi H8/300H) to perform channel coding and decoding and execute the protocol stack and user software. The embedded processor executes the Layer 1, 2, 3 and user MMI software. The PLP can control all powerdown functions of the other chips and memory support components to achieve maximum power savings.

### Baseband Converter (BBC)

The BBC performs the voiceband and baseband analog-to-digital and digital-to-analog conversions, interfacing the digital sections of the chipset to the microphone, loudspeaker and radio section. In addition, the BBC contains all the auxiliary converters for burst-ramping, AFC, AGC, battery and temperature monitoring. The chipset interfaces directly with a variety of industry standard radio architectures and supplies all the synthesizer and timing control signals.

REV. 0



**One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.**
**Tel: 617/329-4700** **Fax: 617/326-8703**