

# ADVANCE INFORMATION

All information in this data sheet is preliminary and subject to change.

8/97

# MAXIM IF Undersampler

MAX1005

## General Description

The MAX1005 is a combination, low-power digitizer and reconstruction IC designed to work in systems that modulate and demodulate communications signals. The analog-to-digital converter (ADC) directly samples or undersamples a downconverted RF signal. The digital-to-analog converter (DAC) recreates the IF subcarrier and transmission data. The MAX1005's ADC is ideal for undersampling applications due to the analog input amplifier's wide (15MHz) bandwidth. The DAC has very low glitch energy, which minimizes the transmission of unwanted spurious signals. An on-chip reference provides for low-noise ADC and DAC conversions.

The MAX1005 provides a high level of signal integrity on a small power budget. This device can be operated from a single +2.7V to +5.5V power supply or from separate analog and digital supplies with independent voltages ranging from +2.7V to +5.5V. The MAX1005 can operate with an unregulated +5.5V analog supply and a regulated digital supply down to +2.7V. This flexible power-supply operation can save additional power in complex digital systems.

The MAX1005 has three operating modes: transmit (ADC inactive), receive (DAC inactive), and shutdown (ADC and DAC inactive). In shutdown mode, the total supply current drops below 5 $\mu$ A. Only 2.4 $\mu$ s is required for the MAX1005 to wake up from shutdown mode. This device is ideal for hand-held as well as base-station applications. The MAX1005 is available in a tiny, 16-pin QSOP package and is specified for operation over the -40°C to +85°C extended temperature range.

## Applications

PWT1900

PHS/P

Wireless Loops

PCS/N

## Features

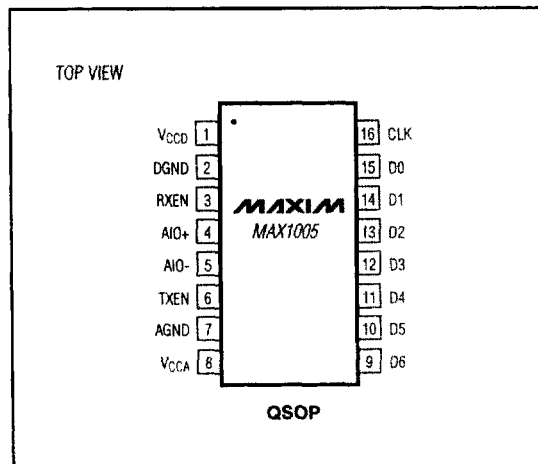
- ◆ Differential-Input, 5-Bit ADC
- ◆ Differential-Output, 7-Bit DAC
- ◆ 15MSPS Conversion Rate
- ◆ 25MHz -1dB Full-Power Bandwidth
- ◆ 44dB of SFDR for ADC
- ◆ 39dB of SFDR for DAC at 10.7MHz (imaged)
- ◆ Internal Voltage Reference
- ◆ Parallel Logic Interface
- ◆ Single-Supply Operation (+2.7V to +5.5V)
- ◆ 0.1 $\mu$ A Low-Power Shutdown Mode

## Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
MAX1005CEE	0°C to +70°C	16 QSOP
MAX1005EEE	-40°C to +85°C	16 QSOP

## Pin Configuration

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MAXIM

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**Functional Diagram**

