19-2515; Rev 0; 7/02

MAXIM

Electret Condenser Microphone Cartridge Preamplifier

General Description

The MAX9810 microphone preamplifier is intended for use inside electret condenser microphone (ECM) cartridges. Current solutions use a FET as an impedance converter. FETs have limited gain, are susceptible to noise and require additional components external to the ECM cartridge for biasing and amplification. The MAX9810 replaces the FET with a high-gain, high-noise rejection, low-output-impedance amplifier. Designed to be integrated inside the ECM cartridge, the MAX9810 offers a flat frequency response, tightly controlled gain, increased sensitivity, and high-noise rejection greatly simplifying system design. Target applications include ECM cartridges in cell phones, PDAs, notebooks, and other portable audio devices.

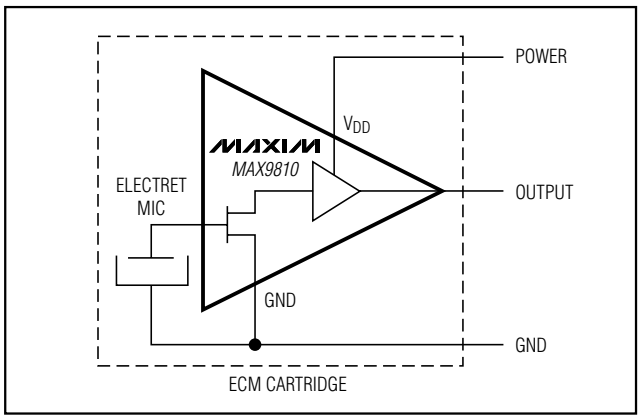
The MAX9810 operates from a single 2.3V to 5.5V supply and consumes only 670µA of quiescent current. The device features an internally generated 1.5V DC bias, and is available in three internally fixed gain options (24dB, 27dB, and 30dB). The MAX9810 is specified over the extended temperature range (-40°C to +85°C) and comes in a tiny 4-bump chip-scale package (UCSP™) that is designed to fit inside the ECM cartridge.

Applications

Electret Condenser Microphone Cartridges In:

- Cell Phones
- Notebooks
- PDAs
- Portable Audio

Functional Diagram/ Typical Application Circuit



Rail-to-Rail is a registered trademark of Nippon Motorola Ltd.

USCP is a trademark of Maxim Integrated Products, Inc.

Features

- ♦ **Replaces FET in Electret Condenser Microphone**
- ♦ **2.3V to 5.5V Single-Supply Operation**
- ♦ **Low-Impedance Output (<0.4Ω)**
- ♦ **High PSRR: 82dB**
- ♦ **Three High-Gain Options:**
  MAX9810A: 24dB
  MAX9810B: 27dB
  MAX9810C: 30dB
- ♦ **Internal Bias Voltage**
- ♦ **Low Supply Current (670µA)**
- ♦ **Rail-to-Rail® Output**
- ♦ **No Output Phase Reversal During Overload Conditions**
- ♦ **Available in a Tiny 4-Bump UCSP**

Ordering Information

PART	TEMP RANGE	BUMP-PACKAGE	TOP MARK
MAX9810AEBS-T	-40°C to +85°C	4 UCSP-4	AFS
MAX9810BEBS-T	-40°C to +85°C	4 UCSP-4	AFT
MAX9810CEBS-T	-40°C to +85°C	4 UCSP-4	AFU

Selector Guide

PART	BUMP-PACKAGE	GAIN (dB)
MAX9810AEBS-T	4 UCSP-4	24
MAX9810BEBS-T	4 UCSP-4	27
MAX9810CEBS-T	4 UCSP-4	30

Pin Configuration