

National Semiconductor is now part of  
Texas Instruments.

Search <http://www.ti.com/> for the latest technical  
information and details on our current products and services.

## LMC7111

# Tiny CMOS Operational Amplifier with Rail-to-Rail Input and Output

### General Description

The LMC7111 is a micropower CMOS operational amplifier available in the space saving SOT 23-5 package. This makes the LMC7111 ideal for space and weight critical designs. The wide common-mode input range makes it easy to design battery monitoring circuits which sense signals above the  $V^+$  supply. For easy prototyping, the LMC7111 is available in a conventional 8-pin DIP package. The LMC7111 is available in two offset voltage grades, 3 mV and 7 mV. The main benefits of the Tiny package are most apparent in small portable electronic devices, such as mobile phones, pagers, and portable computers. The tiny amplifiers can be placed on a board where they are needed, simplifying board layout.

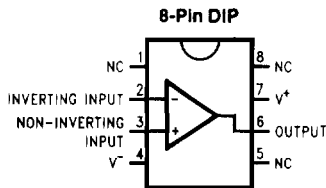
### Features

- Tiny SOT23-5 package saves space
- Very wide common mode input range
- Specified at 2.2V, 2.7V, 3V, 3.3V, 5V, and 10V
- Typical supply current 25  $\mu$ A at 5V
- 50 kHz gain-bandwidth at 5V
- Similar to popular LMC6462
- Output to within 20 mV of supply rail at 100K load
- Low input current 100 fA

### Applications

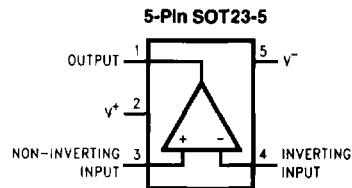
- Mobile communications
- Notebooks and PDAs
- Current sensing for battery chargers
- Portable electronics
- Sensor interface
- Battery monitoring

### Connection Diagrams



Top View

TL/H/12352-1



Top View

TL/H/12352-2

### Ordering Information

Package	Ordering Information	NSC Drawing Number	Package Marking	Transport Media
8-Pin DIP	LMC7111AIN	N08E	LMC7111AIN	Rails
8-Pin DIP	LMC7111BIN	N08E	LMC7111BIN	Rails
5-Pin SOT23-5	LMC7111AIM5	MA05A	A01A	250 Units on Tape and Reel
5-Pin SOT23-5	LMC7111BIM5	MA05A	A01B	250 Units on Tape and Reel
5-Pin SOT23-5	LMC7111AIM5X	MA05A	A01A	3K Units on Tape and Reel
5-Pin SOT23-5	LMC7111BIM5X	MA05A	A01B	3K Units on Tape and Reel