

# LM134/LM234/LM334

## 3-Terminal Adjustable Current Sources

### General Description

The LM134/LM234/LM334 are 3-terminal adjustable current sources featuring 10,000:1 range in operating current, excellent current regulation and a wide dynamic voltage range of 1V to 40V. Current is established with one external resistor and no other parts are required. Initial current accuracy is  $\pm 3\%$ . The LM134/LM234/LM334 are true floating current sources with no separate power supply connections. In addition, reverse applied voltages of up to 20V will draw only a few dozen microamperes of current, allowing the devices to act as both a rectifier and current source in AC applications.

The sense voltage used to establish operating current in the LM134 is 64 mV at 25°C and is directly proportional to absolute temperature (°K). The simplest one external resistor connection, then, generates a current with  $\approx +0.33\%/^{\circ}\text{C}$  temperature dependence. Zero drift operation can be obtained by adding one extra resistor and a diode.

Applications for the current sources include bias networks, surge protection, low power reference, ramp generation, LED driver, and temperature sensing. The LM134-3/

LM234-3 and LM134-6/LM234-6 are specified as true temperature sensors with guaranteed initial accuracy of  $\pm 3^{\circ}\text{C}$  and  $\pm 6^{\circ}\text{C}$ , respectively. These devices are ideal in remote sense applications because series resistance in long wire runs does not affect accuracy. In addition, only 2 wires are required.

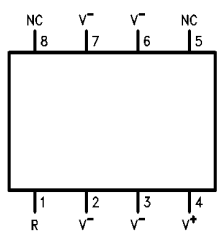
The LM134 is guaranteed over a temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ , the LM234 from  $-25^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  and the LM334 from  $0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ . These devices are available in TO-46 hermetic, TO-92 and SO-8 plastic packages.

### Features

- Operates from 1V to 40V
- 0.02%/V current regulation
- Programmable from 1  $\mu\text{A}$  to 10 mA
- True 2-terminal operation
- Available as fully specified temperature sensor
- $\pm 3\%$  initial accuracy

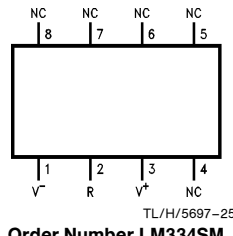
### Connection Diagrams

**SO-8**  
Surface Mount Package



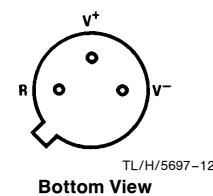
Order Number LM334M  
See NS Package  
Number M08A

**SO-8 Alternative Pinout**  
Surface Mount Package



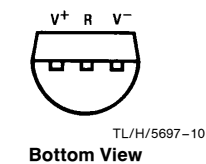
Order Number LM334SM  
See NS Package  
Number M08A

**TO-46**  
Metal Can Package



Order Number LM134H,  
LM134H-3, LM134H-6,  
LM234H or LM334H  
See NS Package  
Number H03H

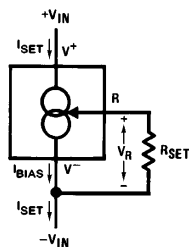
**TO-92**  
Plastic Package



Order Number LM334Z,  
LM234Z-3 or LM234Z-6  
See NS Package  
Number Z03A

### Typical Application

**Basic 2-Terminal Current Source**



TL/H/5697-1