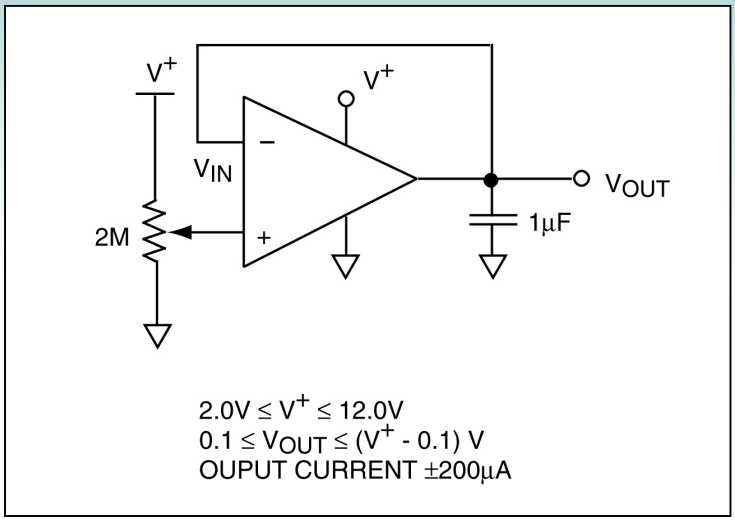
Category: Voltage Follower **CIRCUIT IDEAS FOR DESIGNERS** Schematic no. vf_27003.0

Micropower Buffered Variable Voltage Source



Description

This circuit is a micropower buffered variable rail-to-rail voltage source using a variation to the basic connection of a unity gain buffer amplifier. The unity gain amplifier is used primarily to isolate the input from the output. By using a micropower rail-to-rail operational amplifier (see list below), the input voltage VIN can be at any voltage between the V+ and V- supply rails. VOUT can be from within a few millivolts to a few tenths of millivolts from the supply rails. The actual output voltage achievable depends on the output impedance of the operational amplifier selected and the value of the load resistance. Input to the +ve input terminal is set by the potentiometer, which can be of almost any value due to the high input impedance of the amplifier (RIN >~ 1000 Gohm). In this example, a potentiometer 2 Mohm or higher is selected to limit the power consumption. This potentiometer selection can also be determined by other factors such as noise, physical size, cost and availability. Note that in this voltage source circuit the voltage source output is ratiometric to the supply voltage, which may be desirable in some applications as VOUT and VIN values would track V+ values. Alternatively, +ve input can also be connected to a fixed voltage reference instead to set a temperature stable, fixed VOUT.

Recommended Components

ALD1701, ALD1702, ALD1704, ALD1706, ALD1721, ALD1726
½ ALD2701, ½ ALD2702, ½ ALD2704, ½ ALD2706

Other Related Circuit Ideas

Schematic no. vf_27001.0 Rail-to-Rail Voltage Follower/Buffer
Schematic no. vf_27002.0 Micropower Buffered Rail-to-Rail Adjustable Voltage Source