



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 V_{IN} can be at any voltage between the $V+$ and $V-$ supply rails. V_{OUT} 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 ($R_{IN} > \sim 1000 \text{ Gohm}$). 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 V_{OUT} and V_{IN} values would track $V+$ values. Alternatively, +ve input can also be connected to a fixed voltage reference instead to set a temperature stable, fixed V_{OUT} .

For full schematic diagram and notes, please register and login at aldinc.com