Description

In cases where the basic current source needs to be more stable over a large output voltage range, a higher output impedance current source may be desired. This is accomplished by putting two current sources in “cascade” to each other as shown. N channel cascode current source uses 4 N channel MOSFETs. The set current is given by the equation: $I_{SET} = \frac{(V+ - V_{GD1} - V_{GD3})}{R_{SET}}$. $I_{SOURCE}$ is equal to $I_{SET}$ for output voltages exceeding $V_{GD1} + V_{GD3}$. $I_{SOURCE}$ is a “sink” current to Ground. In the example given in the schematic, if $V_T = 1.0\, \text{V}$, and $V+ = 5.0\, \text{V}$, then $I_{SOURCE}$ is equal to $3/R_{SET}$. A P-channel current source works in the same manner, except that $I_{SOURCE}$ is a “source” current from $V+$ instead.

Recommended Components

N channel: 2 x ALD1101, ALD1106, ALD1108xx, 2 x ALD1103, 2 x ALD1105
P channel: 2 x ALD1102, ALD1107, 2 x ALD1103, 2 x ALD1105

Other Related Circuit Ideas

Schematic no. cs_11007.0 High Output Impedance Current Source