Description

The source follower is a circuit with a voltage gain slightly less than 1.00 and with a high input impedance and a low output impedance. It is used when the output of a signal source has a high impedance and the signal needs to be sent to a load with low impedance. If this source and load were connected directly, there would be a large loss of signal level, much worse than the 0.95 gain when using a typical emitter follower.

A depletion mode FET can be used for a simple source follower as well as a low $V_{GS(th)}$ device such as ALD110900 or ALD212900 zero threshold devices. The input impedance is set by $R_A$, the output impedance is $1/g_m$ of the FET in parallel with $R_B$, and the gain is the ratio of $R_{LOAD}$ in parallel with $R_B$ to the sum of $1/g_m$ and the parallel combination of $R_B$ and $R_{LOAD}$.

The design is initiated by first selecting the FET and the operating current. The current is set by the $V_{GS(th)}$ threshold voltage and $R_B$.

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