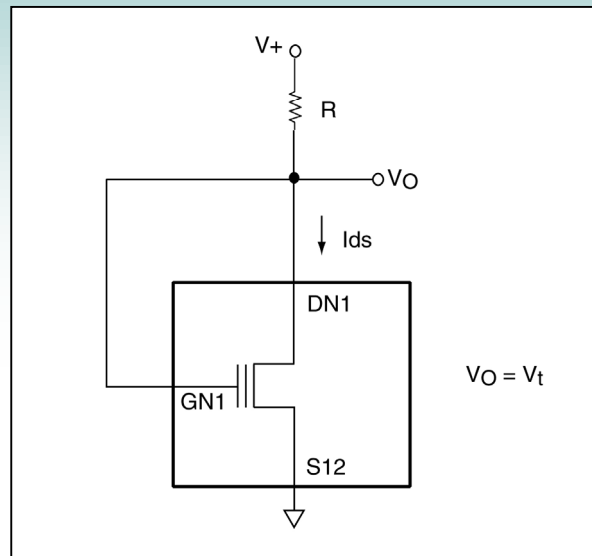




Basic MOSFET / EPAD® MOSFET Diode-Connected Circuit



Description

This circuit shows a basic diode-connected MOSFET connection. The drain terminal is shorted to the gate terminal. This circuit produces an output voltage V_O with the drain current I_{ds} that flows through the MOSFET increasing exponentially with increases of V_O , with I_{ds} versus V_O characteristics similar to that of a forward biased diode. Hence the term "diode-connected" configuration. This type of circuit is very useful to clamp or control the output to a certain voltage level and not allowing V_O to increase without limit. It is also useful as a compression circuit where the voltage range of V_{IN} (input information presented at V_+) is compressed into a small voltage range at V_O . At low voltage levels, the I_{ds} current reduces to a very low level so that a V_O is free to change in value within the circuit with little or no impedance loading. Using different low voltage EPAD MOSFET devices, different V_O ranges can be set to different operating or input voltage ranges. At a voltage about 55mV above threshold voltage of the EPAD MOSFET, or at $68\mu A$ I_{ds} , the V_O tends to be temperature stable. At other voltage or current levels, the tempco changes from positive to negative with temperature. A small signal voltage centered at that voltage would have minimal temperature variations.

Recommended Components

$\frac{1}{4}$ ALD1108xx, $\frac{1}{2}$ ALD1109xx, or any of the EPAD MOSFETs

Other Related Circuit Ideas

[Schematic no. fet_11100.0 Basic MOSFET/EPAD MOSFET Inverter Circuit](#)