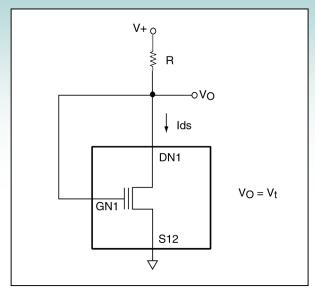


Category: MOSFET CIRCUIT IDEAS FOR DESIGNERS

Schematic no. fet_11101.0

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 Vo with the drain current Ids that flows through the MOSFET increasing exponentially with increases of Vo, with Ids versus Vo 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 Vo to increase without limit. It is also useful as a compression circuit where the voltage range of VIN (input information presented at V+) is compressed into a small voltage range at Vo. At low voltage levels, the Ids current reduces to a very low level so that a Vo is free to change in value within the circuit with little or no impedance loading. Using different low voltage EPAD MOSFET devices, different Vo 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 68µA Ids, the Vo 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

1/4 ALD1108xx, 1/2 ALD1109xx, or any of the EPAD MOSFETs

Other Related Circuit Ideas

Schematic no. fet_11100.0 Basic MOSFET/EPAD MOSFET Inverter Circuit

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