

Category: FET

## **CIRCUIT IDEAS FOR DESIGNERS**

Schematic no. fet\_11136.0

## **Basic P-Channel Current Source**

## **Description**

The reference resistance RSET determines the ISET value, which is mirrored across the matched pair P-Channel MOSFET and produces an output ISOURCE that is equal to ISET. The p-channel MOSFETs have their respective gates and drains diode-connected. The gates of M1 and M2 are matched and connected to the same gate voltage, and with careful device matching on-chip, ISOURCE error variation from ISET is minimized. The total error for this circuit is typically >1%, when VSET and VOUT are at about the same voltage levels, with matching errors such as those from RSET and RLOAD. For better matching and less output voltage and loading errors, consider using cascode current sources instead. As the matched pair p-channel devices are physically situated adjacent to each other on the same silicon chip, their temperatures are closely matched so that any power dissipated differences between the devices would heat its neighbor equally and almost instantly so that the other device output would operate at the same temperature with temperature effects minimized.

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

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