

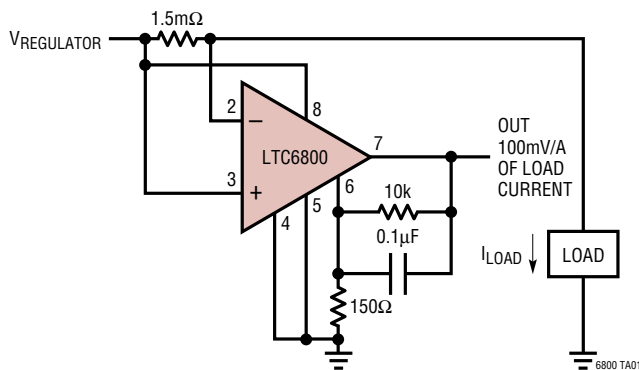
# APPLICATION NOTE 105: Current Sense Circuit Collection

## Precision

Offset voltage and bias current are the primary sources of error in current sensing applications. To maintain precision operation the use of zero-drift amplifier virtually eliminates the offset error terms.

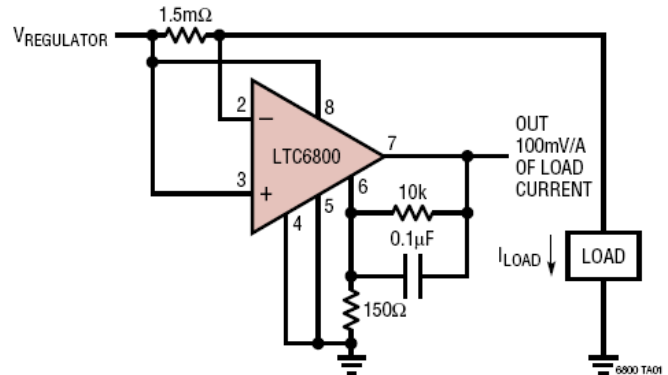
To see other chapters in this Application Note, return to the [Introduction](#).

## Precision High Side Power Supply Current Sense



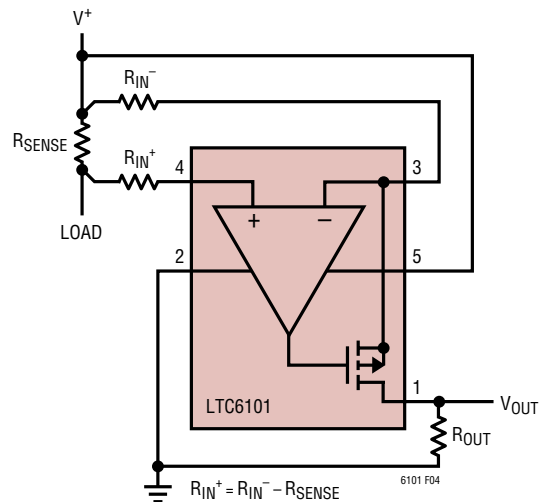
This is a low-voltage, ultra-high-precision monitor featuring a Zero-Drift Instrumentation Amplifier (IA) that provides Rail-to-Rail inputs and outputs. Voltage gain is set by the feedback resistors. Accuracy of this circuit is set by the quality of resistors selected by the user, small-signal range is limited by  $V_{OL}$  in single-supply operation. The voltage rating of this part restricts this solution to applications of  $<5.5V$ . This IA is sampled, so the output is discontinuous with input changes, thus only suited to very low frequency measurements.

## High Side Power Supply Current Sense



The low offset error of the LTC6800 allows for unusually low sense resistance while retaining accuracy.

## Second Input R Minimizes Error Due to Input Bias Current



The second input resistor decreases input error due caused by the input bias current. For smaller values of  $R_{IN}$  this may not be a significant consideration.