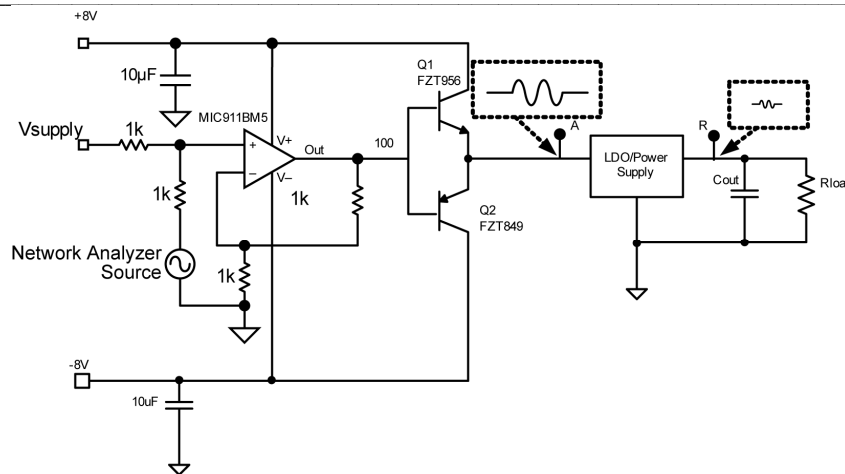
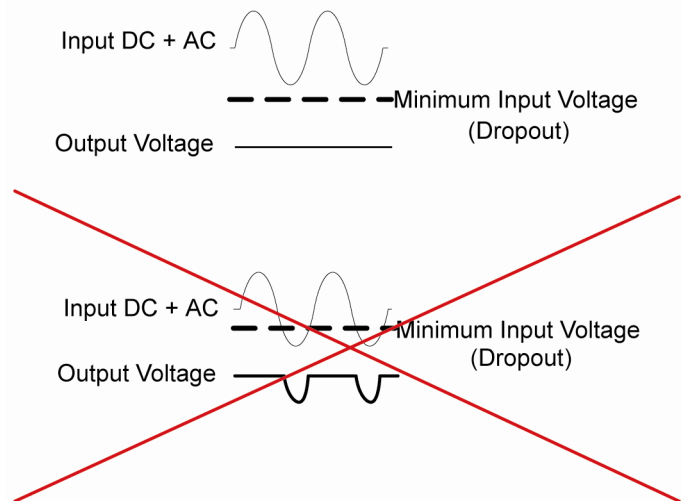


### General Description

The above circuit provides a simple and accurate method for measuring **PSRR (Power Supply Ripple Rejection)**. PSRR is the ability of a power supply/ regulator to be able to reject variations on the input line. The main measurement instrument is the network analyzer. The network analyzer can sweep frequencies and measure corresponding amplitudes. In this method, the network analyzer should be set for an A/R measurement. This will compare the input frequency and amplitude "A" to the output amplitude "R" at the corresponding frequency. The difficulty arises when trying to impose our network analyzers AC Frequency over the DC input voltage to our regulator. The above circuit accomplishes that by using the MIC911 as a summing amplifier. The summing amplifier "sums" the  $V_{supply}$  voltage and the network analyzers AC voltage. Since the network analyzer's source is a 50 Ohm impedance, the DC voltage seen at the non-inverting side is half of the  $V_{supply}$  voltage. Also, the AC signal is halved at the MIC911. The output is gained up by 2 with the 1Kohm resistor divider to the non inverting side. This effectively "sums" the AC and DC voltages at an effective gain of one ( $0.5 \text{ In} \times 2 \text{ Out} = 1$  total). Since the sense node is located on the base, the  $V_{supply}$  should account for the voltage drop of the NPN transistor from base to emitter. The input supply should be monitored with an oscilloscope to ensure the input supply does not drop below the minimum headroom of the regulator. Doing so will result in

very poor measurements. Using a relatively large AC signal without going into dropout will give the most accurate measurements. This is due to the relatively small signal on the output. For example, to measure 80dB with a 100mV input signal, the network analyzer will have to accurately measure a 10uV signal at the same frequency.

Ensure the AC component does not drop below the minimum supply voltage



Application Circuit

---

**MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA**TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB <http://www.micrel.com>

The information furnished by Micrel in this data sheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is a Purchaser's own risk and Purchaser agrees to fully indemnify Micrel for any damages resulting from such use or sale.

© 2006 Micrel, Incorporated.