Application Note 186: Jul 04, 1996

Load Switcher Draws Only 6µA

Taking advantage of the IC's very low quiescent current, this circuit enables a small signal of ±1mV or more to switch relatively large load currents.

Figure 1's circuit draws only 6µA, but it enables a small signal of ±1mV or more to switch relatively large load currents. It takes advantage of the IC's very low quiescent current-1.2µA (max) per amplifier (less than a typical battery's self-discharge)-which is able to flow through R1 without turning on Q1. When operated with a sensing coil (as shown) and stimulated by a magnet, the circuit performs the function of a reed switch, but with greater sensitivity. Other applications include alarm systems, bipolar threshold sensing, and audio volume switching.

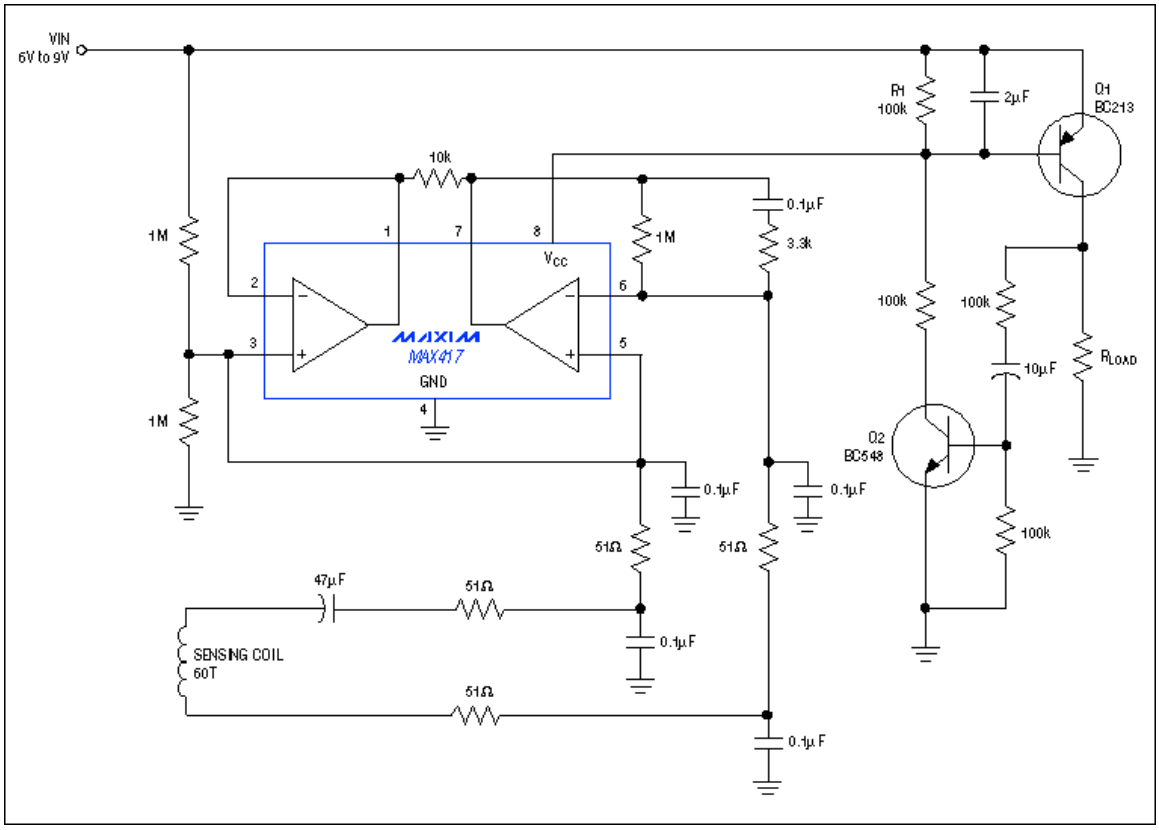

Figure 1. This load switcher enables a small signal to turn on a much larger load current.

Inducing a signal of either polarity in the coil (by passing a magnet near it, for example) causes the dual op amp to draw more current from its VCC terminal. The increase produces a voltage across R1 that exceeds Q1's VBE threshold, activating the complementary monostable multivibrator consisting of Q1, Q2, and associated components. As a result, Q1 connects battery voltage to the load. For many applications, you can replace the monostable with a simple pnp output stage.

A similar idea appeared in the 7/4/96 issue of EDN.

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