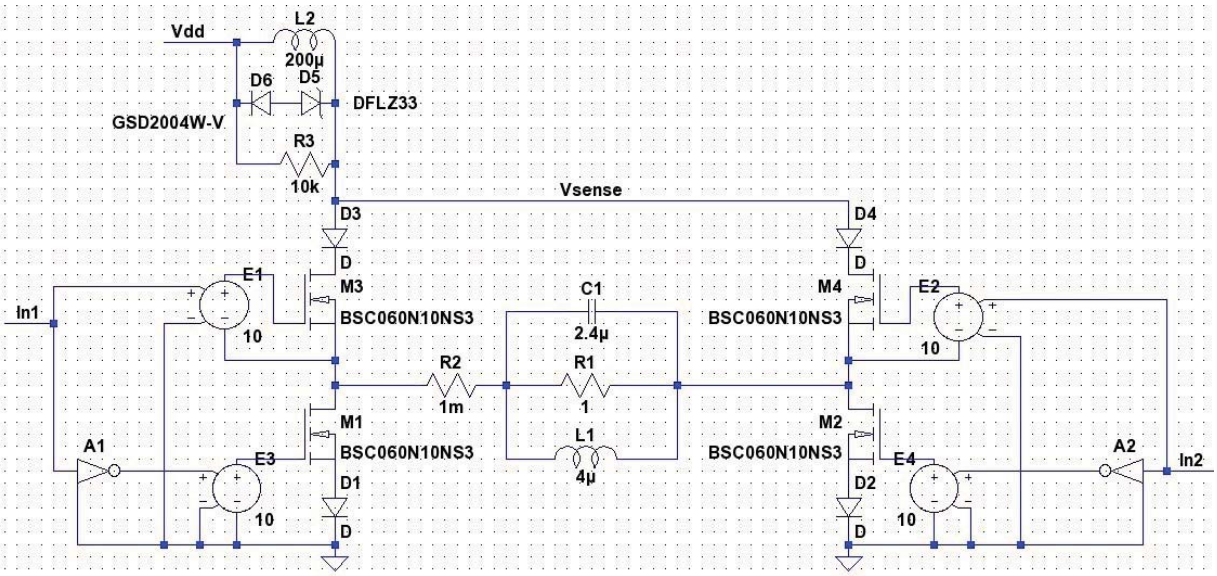
large inductor in series with our battery (denoted Vdd) which is a near ideal voltage source. A practical implementation of Figure 3-6 is presented in Figure 3-6. Figure 3-6 contains additional circuitry and calculated values from further sections; this schematic was used for simulation results presented, unless otherwise stated.



3-6 Practical Implementation of a Parallel Resonant Converter

This method in practice presents two problems. First, when the devices are turned off, the inductor will continue to conduct into a high impedance node, which results in a voltage spike. D5, D6, and R3 were added to limit and damp the voltage spike.

Second, we cannot directly control the current produced by our approximate current source. Instead, the current produced is a function of the input voltage and the system dynamics. So what constraints does the inductor impose? Steady state conditions mandate that the volt-seconds across the inductor in one cycle must be equal. Therefore, the average voltage on right side must equal the input voltage. *This is an extremely important result for the design of this converter.* A ringing resonator switched perfectly at the zero voltage crossing (i.e. a 50% duty