STARTUP CIRCUIT

As an alternative, we propose the technique illustrated in Fig. 6. Therein, a mechanical switch in series with a resistor is placed in parallel with the lower MOSFET. The mechanical switch is not intended to be an extra component. Instead, it is the switch that we would normally use to turn on the power supply, or at least an extra pole coming off the main switch. The technique works as follows: the user presses the switch and the inductor charges. The inductor current is limited by the resistor to a value chosen by the designer. The switch should be closed for at least four to five time constants of the inductor and start resistor. Normally, this requires only a few milliseconds at most. The current is ultimately limited to a consistent value by the start resistor. Given that the turn-on time is short, even a very briefest effort at switching on will generate consistent results. When the switch is released, the current diverts through the diode and onto the capacitor. By judiciously selecting the resistor, the capacitor can be made to charge to enough voltage to get the regulator circuit running.