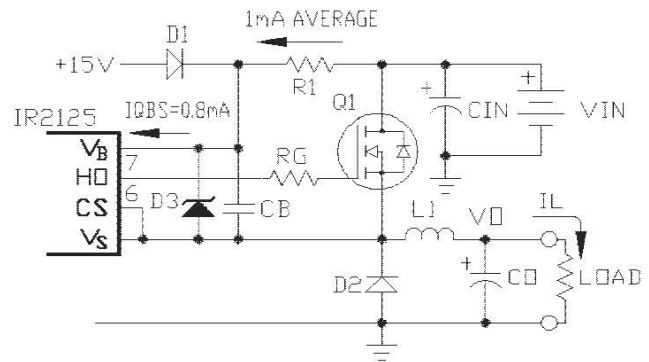


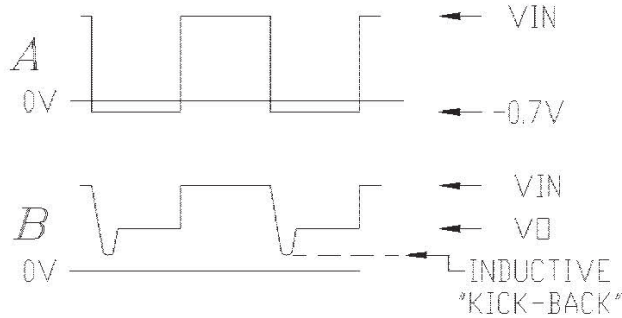
**Figure 2**

In battery charger applications, the +12V from the output appears at the  $V_S$  lead and reduces the voltage across  $CB$  at start-up and the undervoltage protection in the IR21XX inhibits the operation.

from  $V_{IN}$ . Because  $V_{IN}$  is higher than  $V_O$ , some charging current always flows through  $R_1$  even if the  $V_S$  lead is sitting at  $V_O$  potential. To keep  $CB$  charged, the average current through  $R_1$  should be higher than the worst case loss current.  $D_3$  should be a low level zener diode with sharp knee at low currents. The recommended part numbers for 12V and 15V are respectively: 1N4110 and 1N4107.



**Figure 3b**



**Figure 3a**