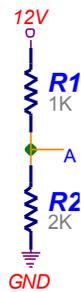


Review the Basics

V = IR:

What is the current in R1 & R2 and the voltage at point A?

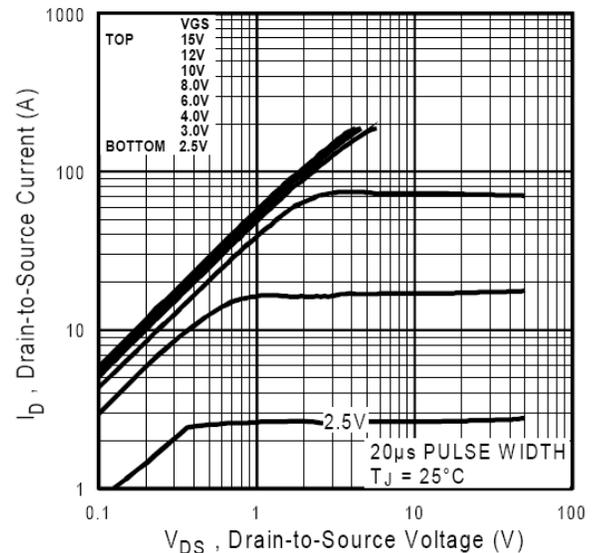
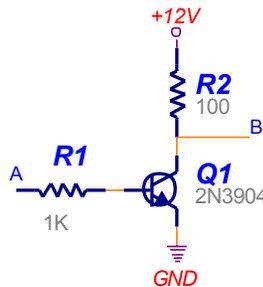


Transistors/FETs:

If A = 5V what's the current in R1?

If $h_{fe} = 50$ what's the current in R2 and the voltage at B?

If $h_{fe} = 10$ what's the current in R2 and the voltage at B?



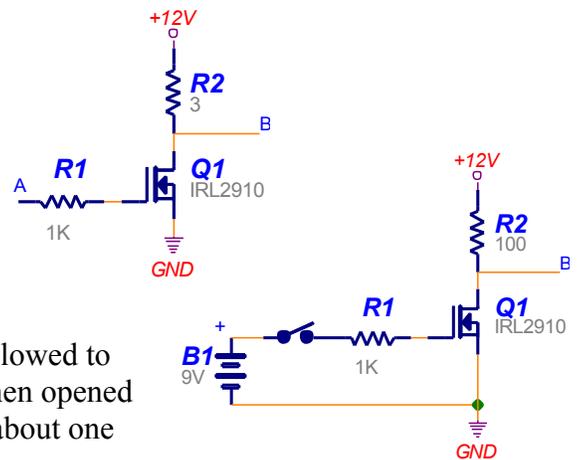
(Use the I_D VS V_{DS} graph for the FET questions)

If A = 2.5V what's the current in R2 and the voltage at B?

If A = 15V what's the current in R2 and the voltage at B

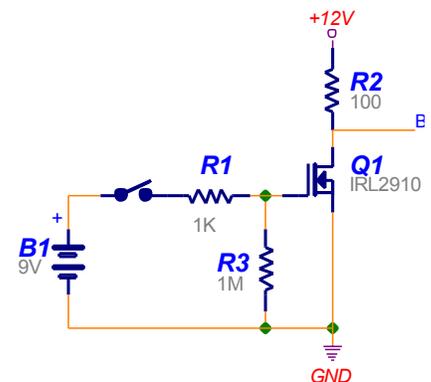
(Note: $R_{DS(ON)} = 0.026\Omega$)

Would the current in R2 or the voltage at B change if R1 was 100K (explain)?



The switch is initially closed (short circuit) and the circuit is allowed to come to steady state (i.e. wait a few seconds). The switch is then opened (open circuit). What is the current in R2 and the voltage at B about one second after the switch is opened?

(Same circuit but with R3 added). The switch is initially closed and the circuit is allowed to come to steady state. The switch is then opened. What is the current in R2 and the voltage at B about one second after the switch is opened?



Comparators:

(switch open)

What's the voltage at B when $V_+ > V_-$?

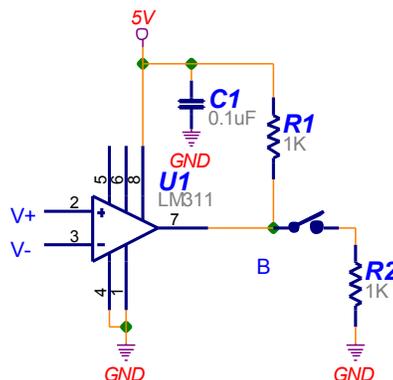
What's the voltage at B when $V_- > V_+$?

(Recall that the LM311 has an open collector output).

(switch closed)

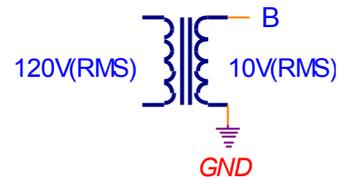
What's the voltage at B when $V_+ > V_-$?

What's the voltage at B when $V_- > V_+$?

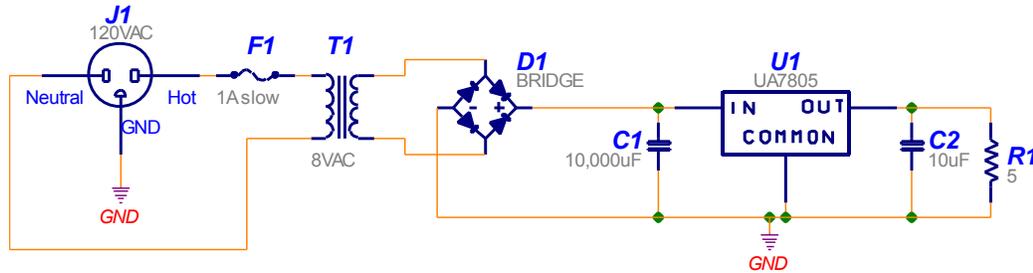


Voltage Regulators & Power Supplies:

This transformer has an input of 120Vrms @ 60Hz and an output of 10Vrms. Sketch the output waveform and label the peak voltage levels.



What is the approximate ripple voltage on C1 (and the max & min voltage on C1)?



Relays:

Why can't you use a SSR designed for an AC load with a DC load?

What's a flyback diode and where do you put it?