

Figure 14-36

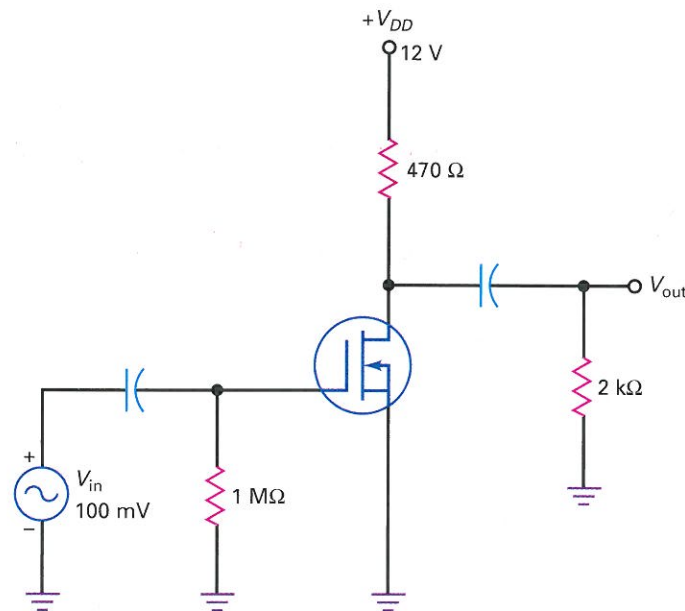
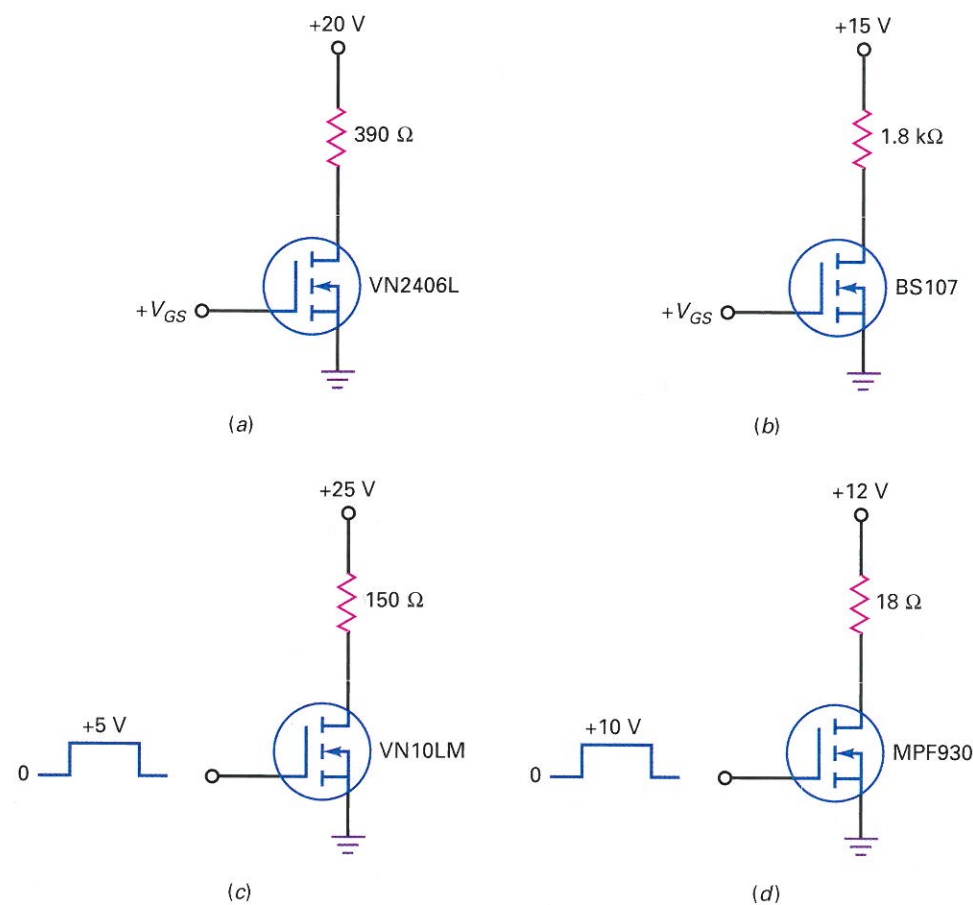


Figure 14-37



14-9 An E-MOSFET has $R_{DS(on)} = 2 \Omega$ when $V_{GS(on)} = 3 \text{ V}$ and $I_{D(on)} = 500 \text{ mA}$. If it is biased in the ohmic region, what is the voltage across it for each of these drain currents:

- a. $I_{D(sat)} = 25 \text{ mA}$ c. $I_{D(sat)} = 100 \text{ mA}$
b. $I_{D(sat)} = 50 \text{ mA}$ d. $I_{D(sat)} = 200 \text{ mA}$

14-10 **MultiSim** What is the voltage across the E-MOSFET in Fig. 14-37a if $V_{GS} = 2.5 \text{ V}$? (Use Table 14-1.)

14-11 **MultiSim** Calculate the drain voltage in Fig. 14-37b for a gate voltage of $+3 \text{ V}$. Assume that $R_{DS(on)}$ is approximately the same as the value given in Table 14-1.

14-12 If V_{GS} is high in Fig. 14-37c, what is the voltage across the load resistor of Fig. 14-37c?

14-13 Calculate the voltage across the E-MOSFET of Fig. 14-37d for a high input voltage.

14-14 What is the LED current in Fig. 14-38a when $V_{GS} = 5 \text{ V}$?

14-15 The relay of Fig. 14-38b closes when $V_{GS} = 2.6 \text{ V}$. What is the MOSFET current when the gate voltage is high? The current through the final load resistor?

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14-16 An E-MOSFET has these values: $I_{D(active)} = 1 \text{ mA}$ and $V_{DS(active)} = 10 \text{ V}$. What does its drain resistance equal in the active region?

14-17 What is the output voltage in Fig. 14-39a when the input is low? When it is high?

14-18 In Fig. 14-39b, the input voltage is low. What is the output voltage? If the input goes high, what is the output voltage?

14-19 A square wave drives the gate of Fig. 14-39a. If the square wave has a peak-to-peak value large enough to drive the lower MOSFET into the ohmic region, what is the output waveform?

Figure 14-38

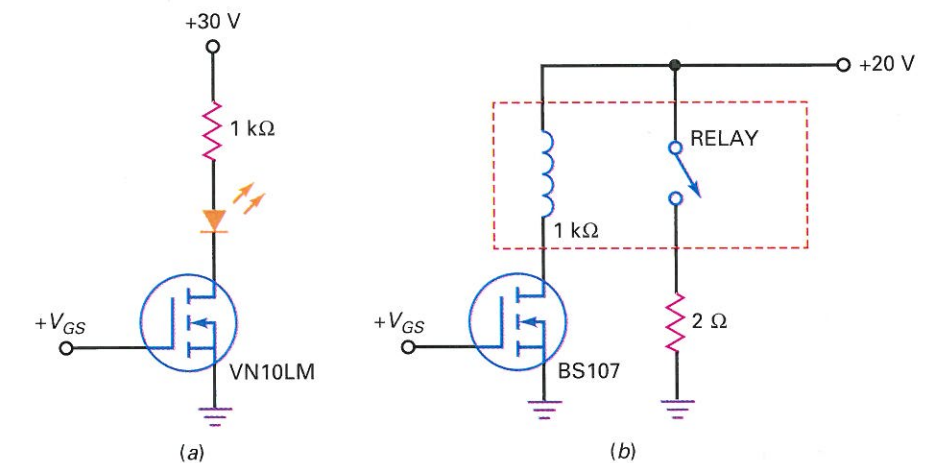


Figure 14-39

