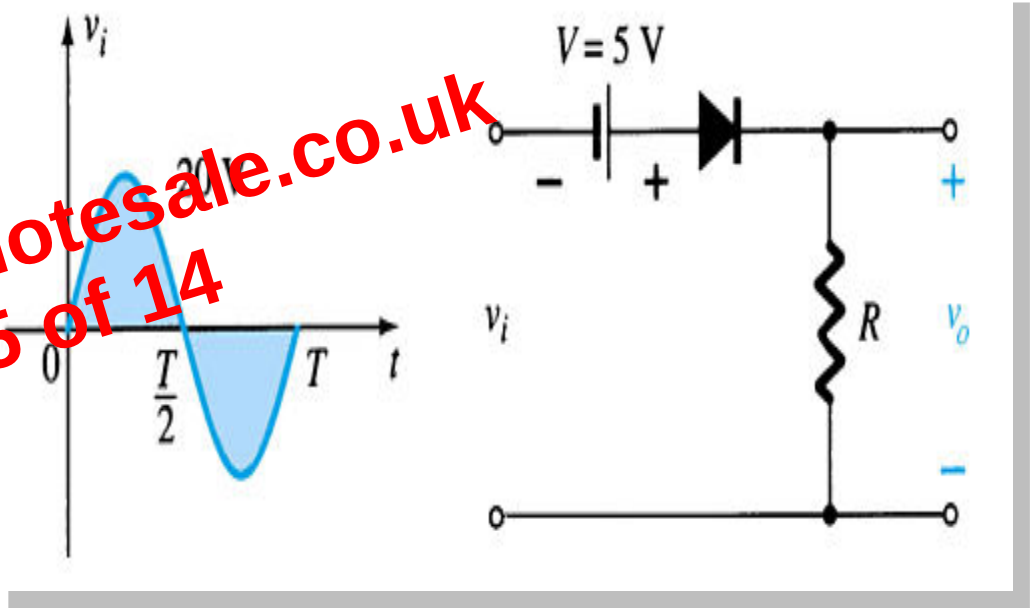
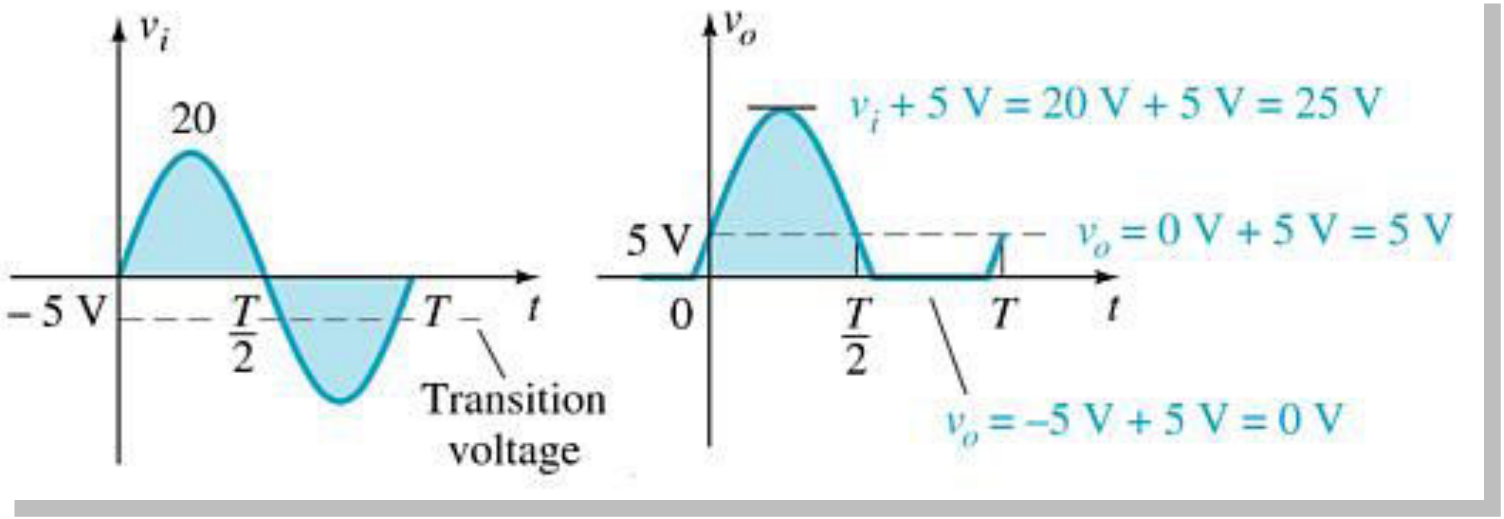
Biased Clippers

Adding a DC source in series with the clipping diode changes the effective forward bias of the diode.

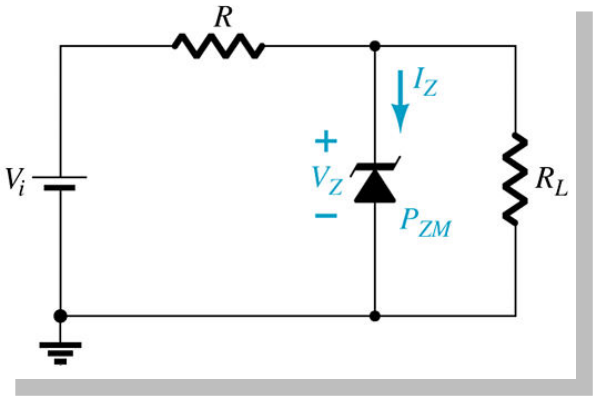




Zener Resistor Values

If R is too large, the Zener diode cannot conduct because the available amount of current is less than the minimum current rating, I_{ZK}. The minimum current is given by:

$$I_{L\min} = I_R - I_{ZK}$$



The *maximum* value of resistance is:

$$R_{L\max} = \frac{V_Z}{I_{L\min}}$$

If R is too small, the Zener current exceeds the maximum current rating, I_{ZM}. The maximum current for the circuit is given by:

$$I_{L\max} = \frac{V_L}{R_L} = \frac{V_Z}{R_{L\min}}$$

The *minimum* value of resistance is:

$$R_{L\min} = \frac{RV_Z}{V_i - V_Z}$$