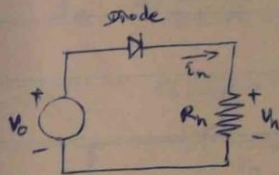


Chapter 3

RECTIFIER OPERATIONS

3.1 Single phase rectifier resistance load.



Half wave ~~rectifier~~ rectifier
with resistance load.

V_n = average load voltage

V_n = load voltage

$$V_n = \frac{1}{2\pi} \int_0^{\pi} V_n d(\omega t)$$

$$= \frac{1}{2\pi} \int_0^{\pi} \sqrt{2} V_0 \sin \omega t d(\omega t) = \left[\frac{-\sqrt{2} V_0}{2\pi} \cos \omega t \right]_0^{\pi}$$

$$V_n = 0.45 V_0$$

$$I_n = \left[\frac{1}{2\pi} \int_0^{\pi} \frac{2 V_0^2}{R_n^2} \sin^2 \omega t d(\omega t) \right]^{\frac{1}{2}}$$

$$= \frac{V_0}{R_n} \left[\frac{1}{\pi} \left(\frac{\omega t}{2} + \frac{\sin 2\omega t}{4} \right) \right]_0^{\pi} \right]^{\frac{1}{2}}$$

$$I_n = 0.707 \frac{V_0}{R_n}$$