

Efficiency for centre tapped

* Ratio of o/p dc power to applied i/p ac power

$$\therefore \eta = \frac{P_{dc}}{P_{ac}} \rightarrow (1) \quad P_{dc} = I_{dc}^2 \cdot R_L \rightarrow (2)$$

$$P_{ac} = I_{rms}^2 (r_f + R_s + R_L) \rightarrow (3)$$

put (2), (3) in (1),

$$\eta = \frac{I_{dc}^2 \cdot R_L}{I_{rms}^2 (r_f + R_s + R_L)} \quad R_L \gg (r_f + R_s)$$

$$= \frac{I_{dc}^2 \cdot R_L}{I_{rms}^2 (R_L)} = \frac{I_{dc}^2}{I_{rms}^2}$$

$$= \frac{(2 I_m / \pi)^2}{(I_m / \sqrt{2})^2}$$

$$= \frac{(2/\pi)^2}{(1/\sqrt{2})^2}$$

$$\eta = 0.812 \times 100$$

$$\eta = 81.2\%$$