

**Chapter 11, Solution 68.**

$$\text{Let } \mathbf{S} = \mathbf{S}_R + \mathbf{S}_L + \mathbf{S}_C$$

$$\text{where } \mathbf{S}_R = P_R + jQ_R = \frac{1}{2} I_o^2 R + j0$$

$$\mathbf{S}_L = P_L + jQ_L = 0 + j\frac{1}{2} I_o^2 \omega L$$

$$\mathbf{S}_C = P_C + jQ_C = 0 - j\frac{1}{2} I_o^2 \cdot \frac{1}{\omega C}$$

Hence,

$$\mathbf{S} = \frac{1}{2} I_o^2 \left[ R + j \left( \omega L - \frac{1}{\omega C} \right) \right]$$