

Equations of CPW used for plotting the graphs.

- The characteristic impedance of CPW

$$Z_0 = \frac{30\pi^2}{\sqrt{\epsilon'_e}} \left(\ln \left(2 \frac{1 + \sqrt{k}}{1 - \sqrt{k}} \right) \right)^{-1}$$

where k is

$$k = \frac{s}{(s+2w)}$$

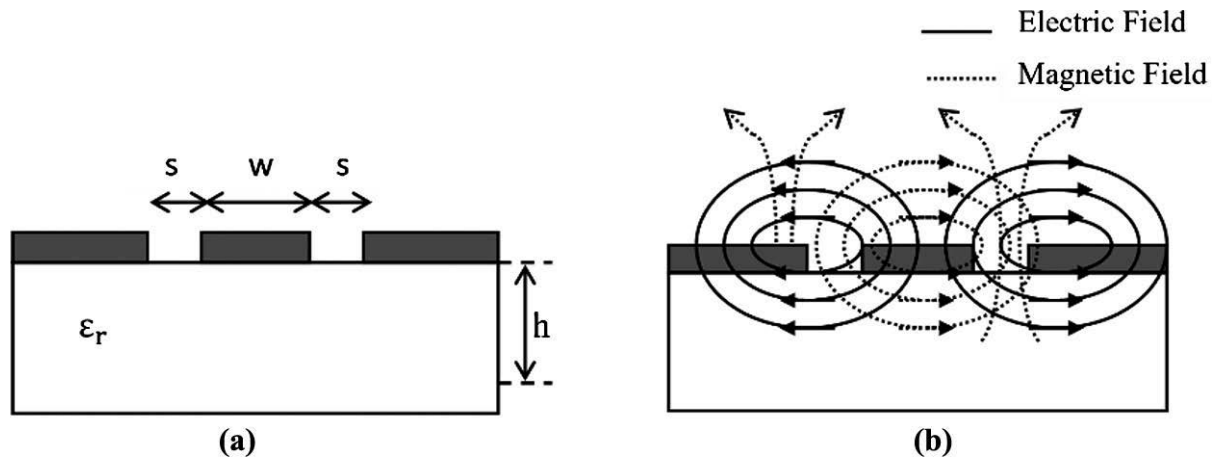
- The Effective permittivity

$$\epsilon_e = \frac{(\epsilon_r + 1)}{2} \text{ for } \left(\frac{h}{w} \gg 1 \right)$$

$$\epsilon'_e = \epsilon_r \left[\tanh \left(0.775 \log \left(\frac{h}{w} \right) + 1.75 \right) \right] + \frac{k}{\left(\frac{w}{h} \right)} [0.04 - 0.7k + 0.01(1 - 0.1\epsilon_r)(0.25 + k)]$$

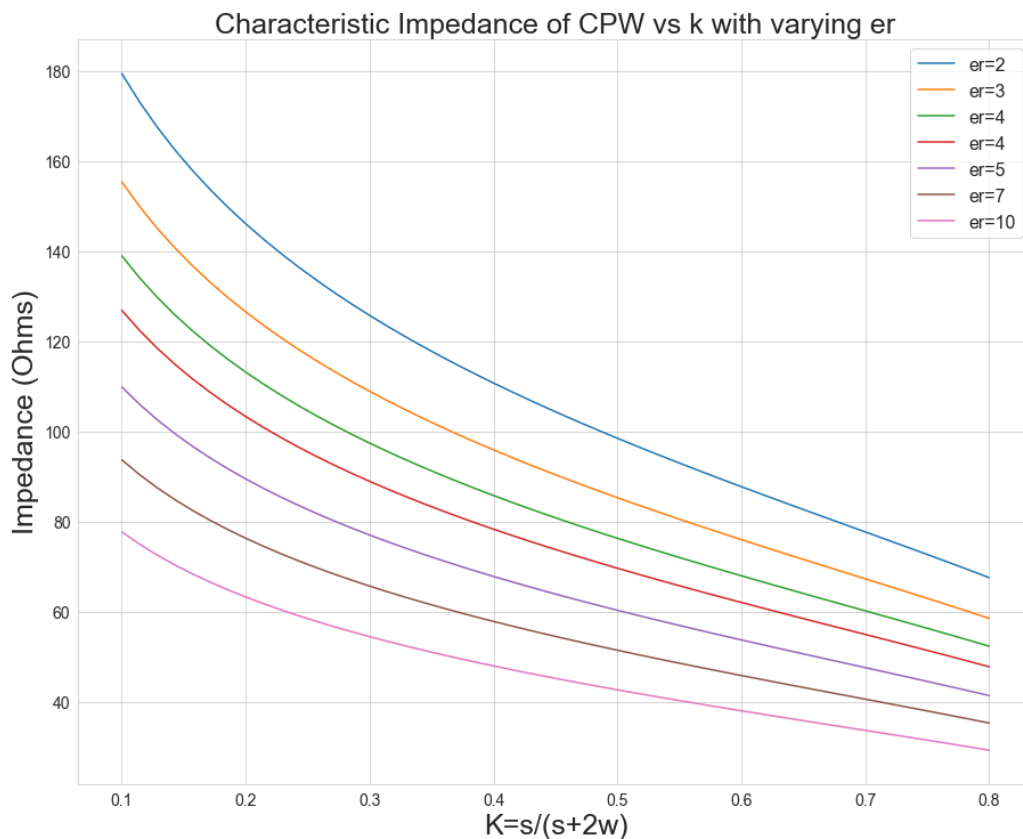
$$\frac{Z'_0}{Z_0} = \sqrt{\frac{\epsilon_e}{\epsilon'_e}}$$

Cross-sectional view of CPW

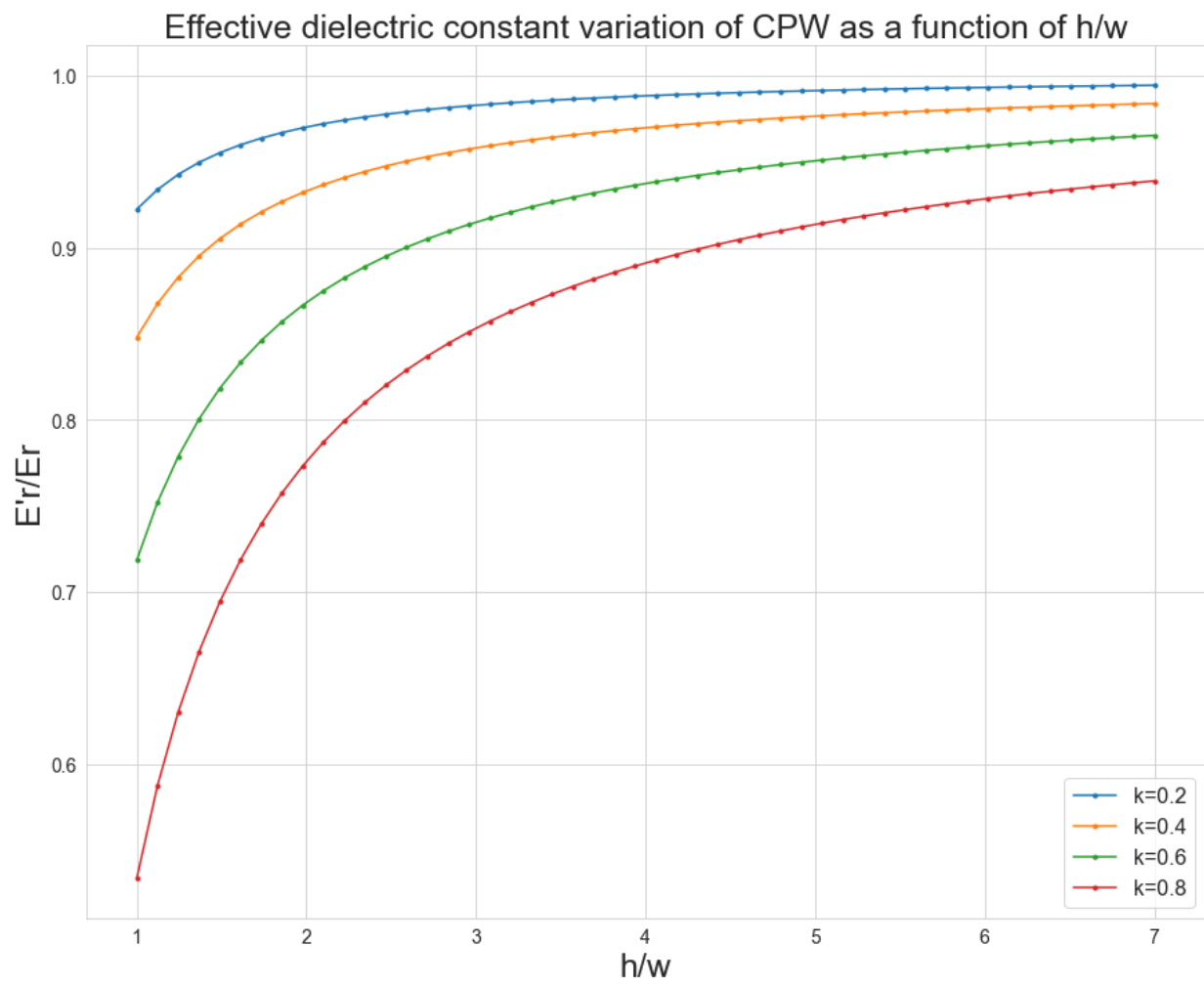


(a) Cross-sectional view of CPW and (b) field configurations

Characteristic impedance variation of CPW vs k varying dielectric constant



Effective dielectric constant variation of CPW as function of h/w



Normalized impedance of CPW variation as function of h/w

