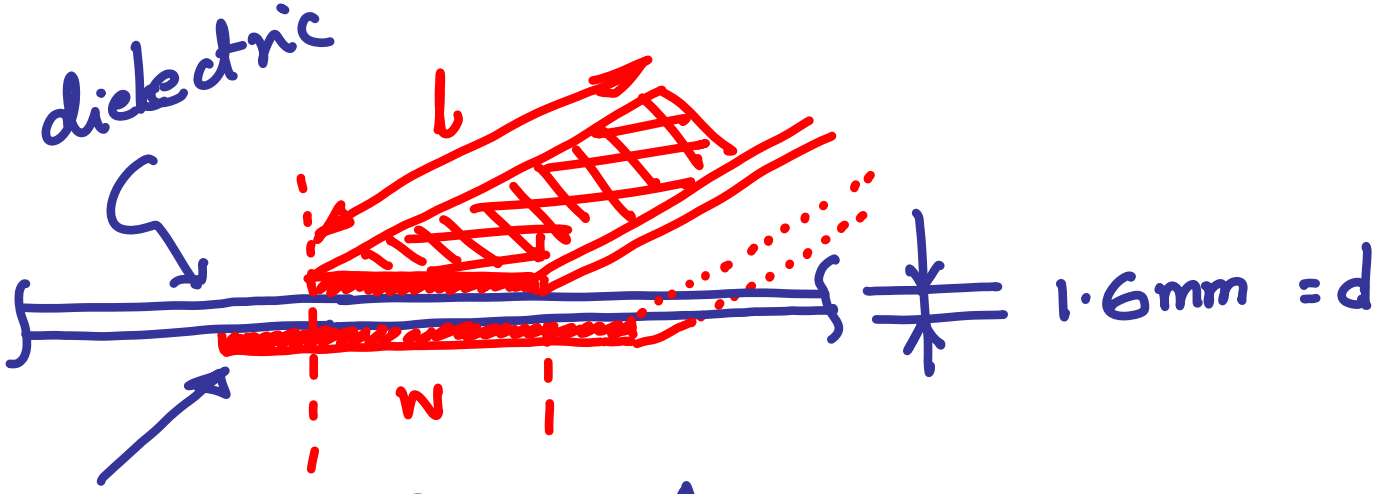
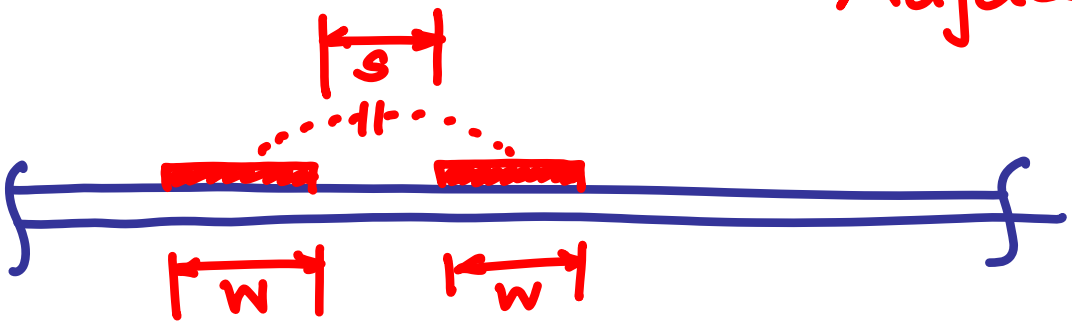
CAPACITANCE PARASITIC



$$C = \frac{\epsilon A}{d}$$

Adjacent tracks



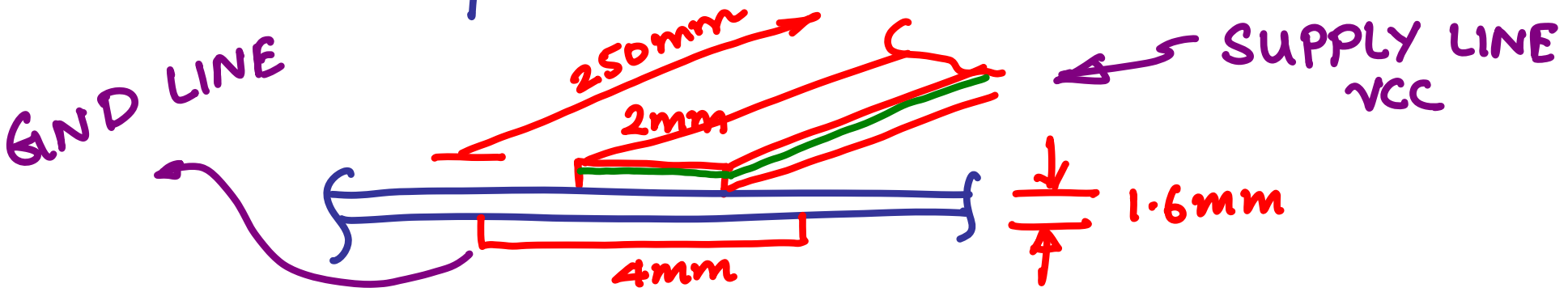
Coupling factor $\Rightarrow$ pF/cm

Capacitance between conductors on opposite sides of the PWB.

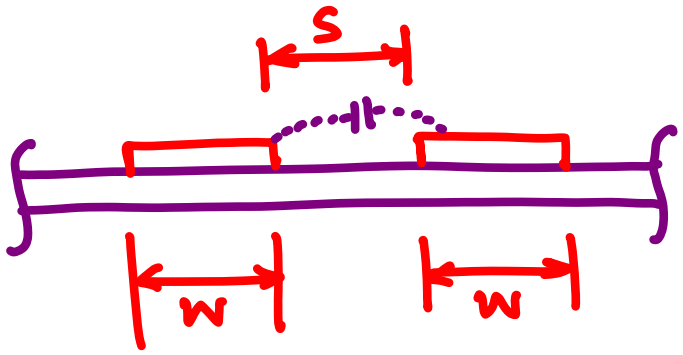
line width = 2 mm

Total common length = 250 mm

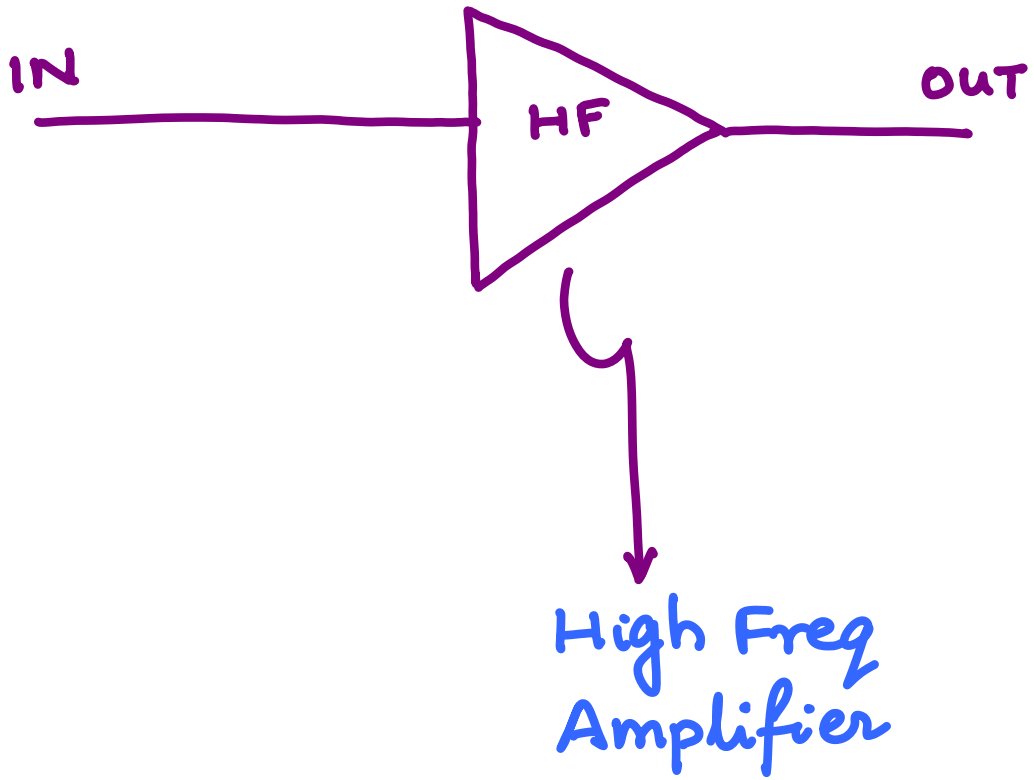
line width of bottom track = 4 mm

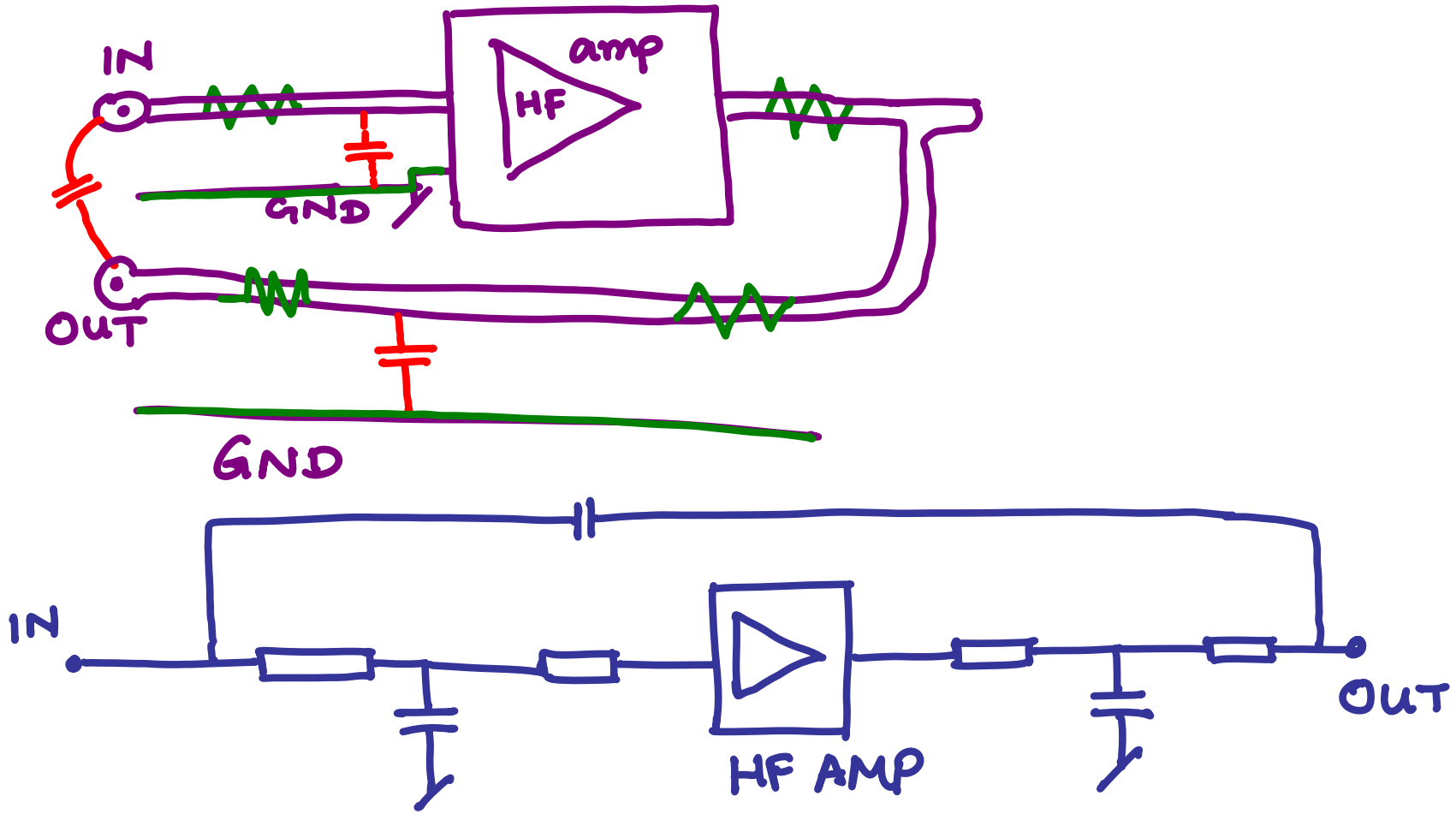


$$C = 8.86 \times \underset{(\epsilon_r)}{5.4} \times \frac{2e\text{-}3 \times 250e\text{-}3}{1.6e\text{-}3} \simeq 15\,pF$$

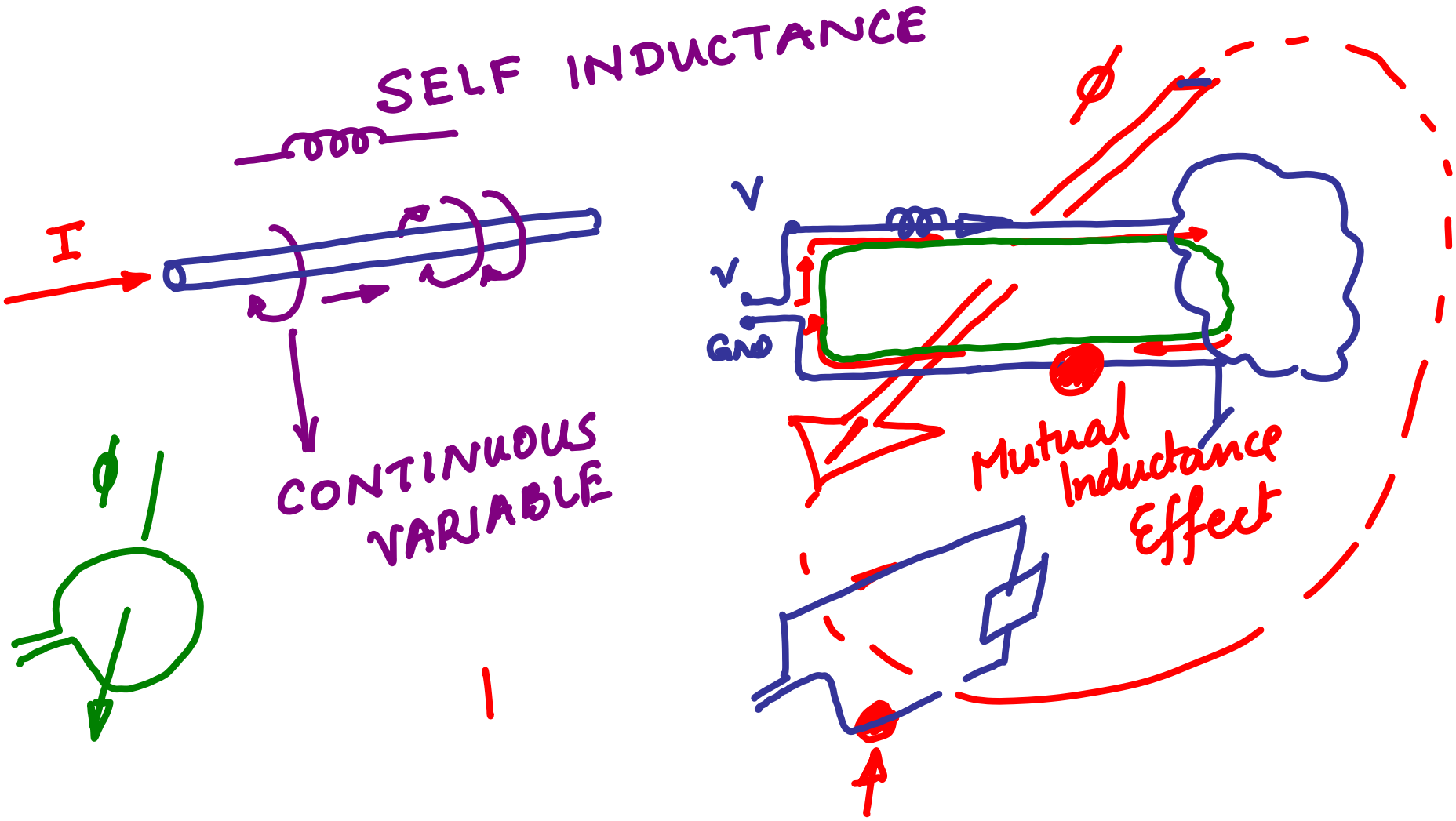


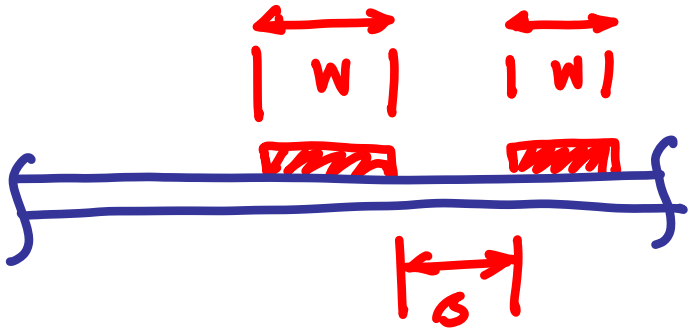
- OCTAVE
- MATLAB
- SCILAB


IN
HF
OUT
High Freq
Amplifier


IN
amp
HF
GND
OUT
GND
IN
HF AMP
OUT

INDUCTANCE Parasitic





L per unit length

Inductance factor nH/cm

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

$$C \equiv$$

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

$$C = 8.86 \cdot \epsilon_r \cdot \frac{A}{b}$$

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Dielectric thickness, m

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

Overlap area, m^2

$$C = 8.86 \cdot \epsilon_r \cdot \frac{A}{b} \quad \text{pF}$$

Dielectric thickness, m

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

Relative dielectric constant

Overlap area, m^2

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Dielectric thickness, m

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Overlap area, m^2

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1. $\varepsilon r = 5.4$ **for G-10, G11, FR-4, FR-5**

CAPACITANCE BETWEEN CONDUCTORS ON OPPOSITE SIDES OF PCB

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Overlap area, m^2

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Dielectric thickness, m

1. $\varepsilon r = 5.4$ **for G-10, G11, FR-4, FR-5**
2. $\varepsilon r = 4.8$ **for FR-2, FR-3**

CAPACITANCE BETWEEN ADJACENT CONDUCTORS

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CAPACITANCE BETWEEN ADJACENT CONDUCTORS

Coupling Capacity

$$pF/cm = 0.122 \cdot \frac{t}{s} + 0.0905\,(1 + \epsilon_r) \cdot a$$

Where $a = \log\left(1 + \frac{2w}{s} + 2\sqrt{\frac{w}{s} + \frac{w^2}{200}}\right)$

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INDUCTANCE BETWEEN ADJACENT CONDUCTORS

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per unit Inductance

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3. **w = conductor width, mm**
4. **l = parallel run length, cm**