계산전자공학 Assignment #13 주원빈 20182018

Problem #1

Case 1: Long structure (600 nm)

100 nm: Highly doped ($5x10^{17}$ cm^{-3})

400 nm: Lowly doped ($2x10^{15}$ cm^{-3})

100 nm: Highly doped ($5x10^{17}$ cm^{-3})

Case 2: Short structure (120 nm)

40 nm: Highly doped ($5x10^{19}$ cm^{-3})

40 nm: Lowly doped ($2x10^{17}$ cm^{-3})

40 nm: Highly doped ($5x10^{19}$ cm^{-3})

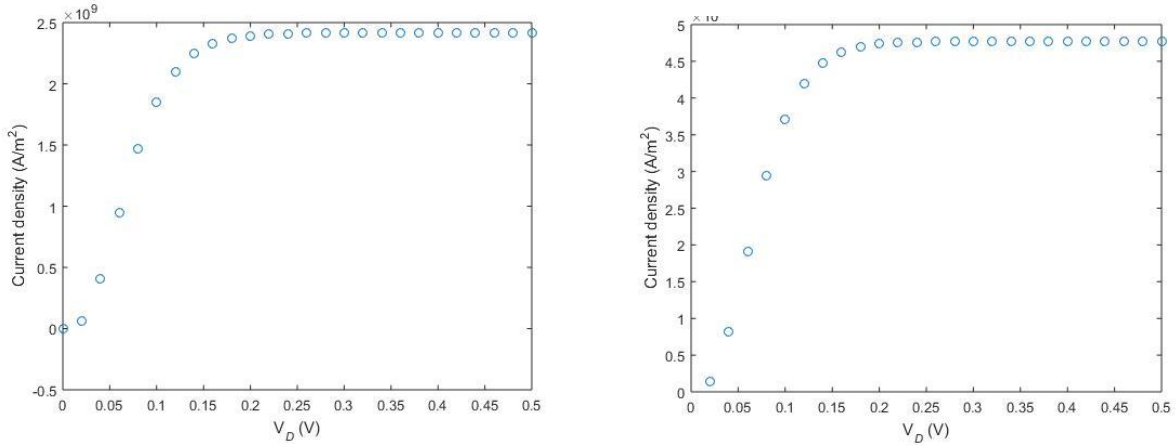

Figure 1 Current density of doped silicon. (a) Case 1: Long structure (2) Case 2: Short structure. The current density saturates over 0.2 bias voltage.

Problem #2 Series resistor-capacitor circuits

C = 5 pF

R = 2 MΩ

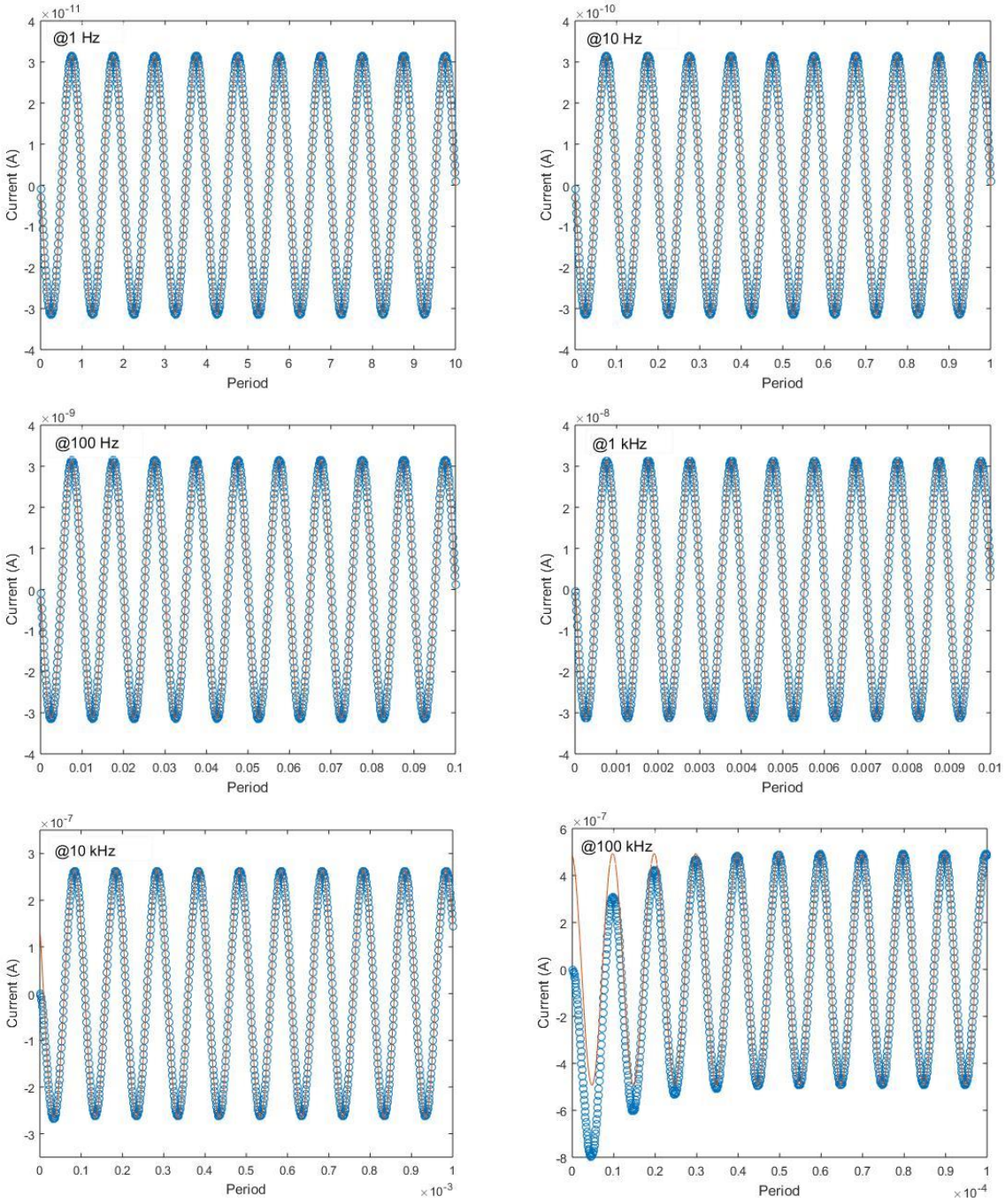

Figure 2 Numerical analysis of the series resistor-capacitor circuits at various AC frequency. The solid lines are exact solution and blue symbols are numerical results.