Experiment

PIN Diode Characteristics

Read the lab handout given and the supporting document first before performing the pre-lab simulation exercises.

The aim of this simulation exercise is to do the following-

1. Plot I-V characteristics of RN142 PIN diode, measure cut-in voltage and ideality factor.
2. Measure reverse recovery time of RN142 PIN diode at different frequencies.

   (Use same circuit and procedure as previous 2 experiments for the above 2 tasks)
3. Understand how PIN diode works as RF switch by implementing the given circuit in Figure 1 and compare the same with regular PN junction diode.

   Write NGSPICE netlist and simulate the given RF switch circuit and plot output voltage, output current and diode current for different DC bias voltages (-5V, 0V, 1V, 3V, 5V).

The model files required for the exercise as given in teams

You are required to submit the NGSPICE netlists, the necessary I-V plots, transient plots, ideality factor, cut-in voltage and reverse recovery time values and RF-switch plots.

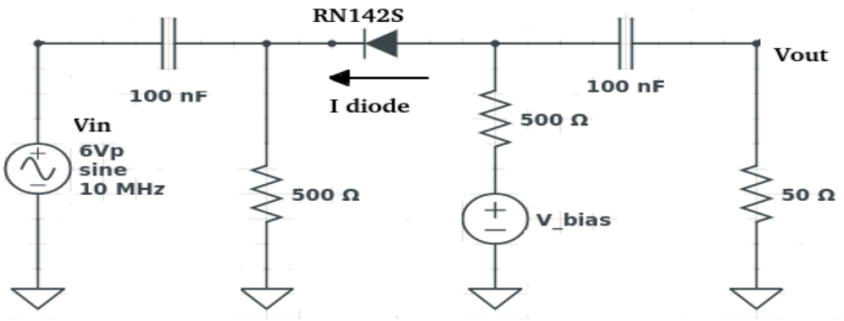

Figure 1: PIN Diode as RF switch