Circuit Simulation Project on

12 volt and 5 volt power supply

Name of the Participant: Shekhar Maruti Nandanwar, Kc College of Engg and Mgmt Studies and Research.

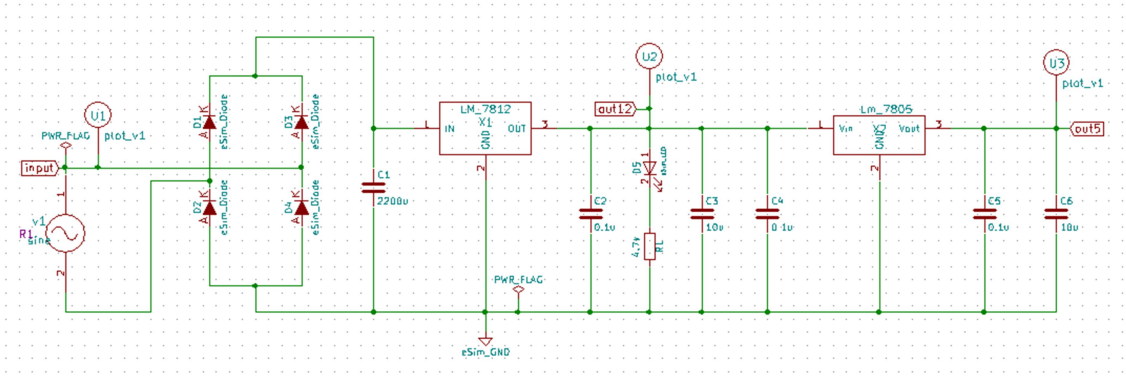
Title of the circuit: 12 volt and 5 volt Power Supply

Theory/Description: This is a simple approach to obtain a 12V and 5V DC power supply using a single circuit. The circuit uses two ICs 7812(IC1) and 7805 (IC2) for obtaining the required voltages. The IC1 regulates this voltage to obtain a steady 12V DC. The output of the IC1 will be regulated by the IC2 to obtain a steady 5V DC at its output. In this way both 12V and 5V DC are obtained.

Such a circuit is very useful in cases when we need two DC voltages for the operation of a circuit. By varying the type number of the IC1 and IC2, various combinations of output voltages can be obtained. If 7806 is used for IC2, we will get 6V instead of 5V.Same way if 7809 is used for IC1 we get 9V instead of 12V.

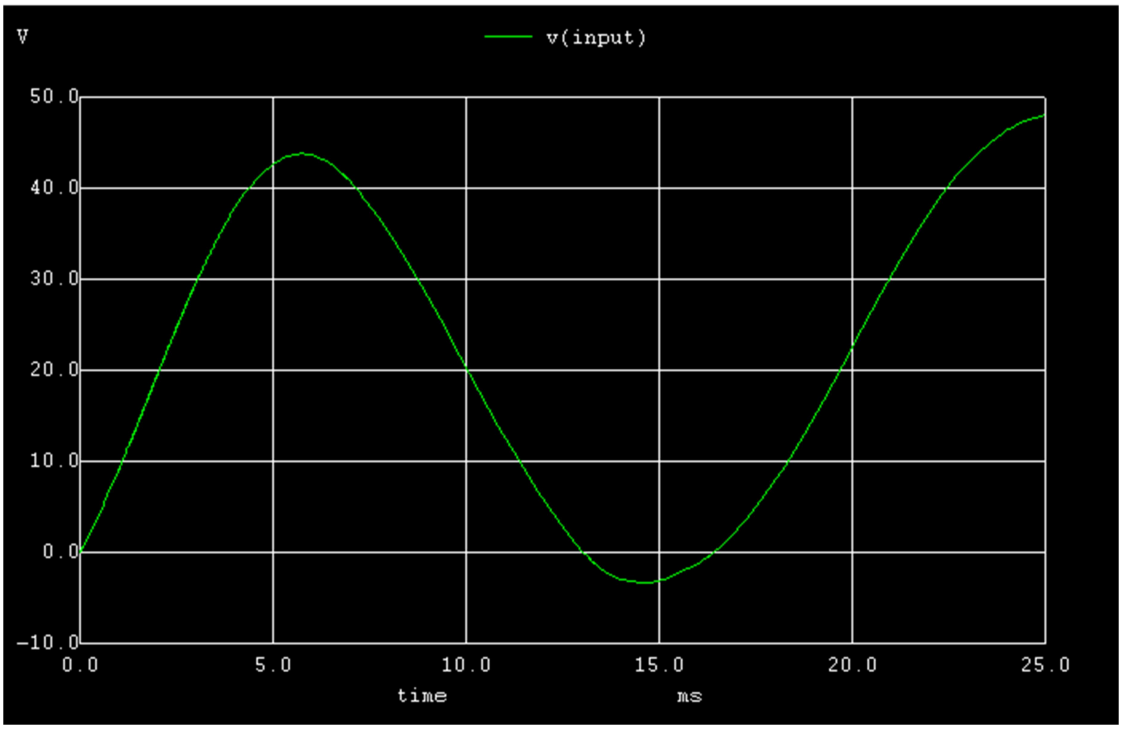
78XX series ICs can deliver only up to 1A output current.

Circuit Diagram(s):

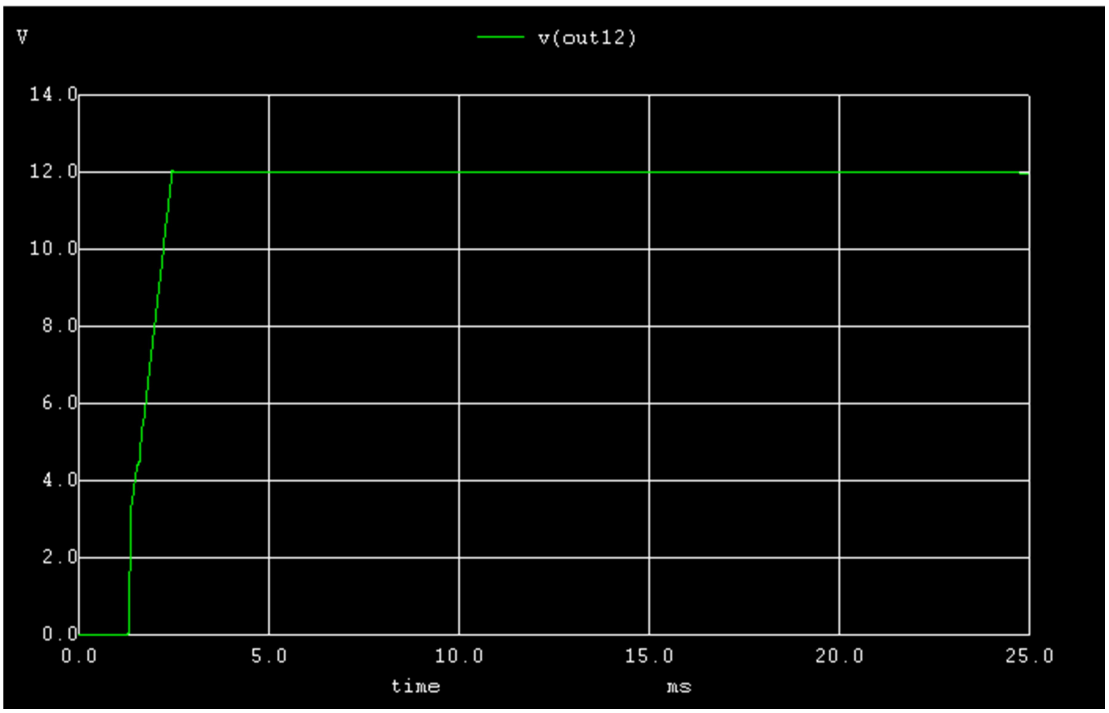


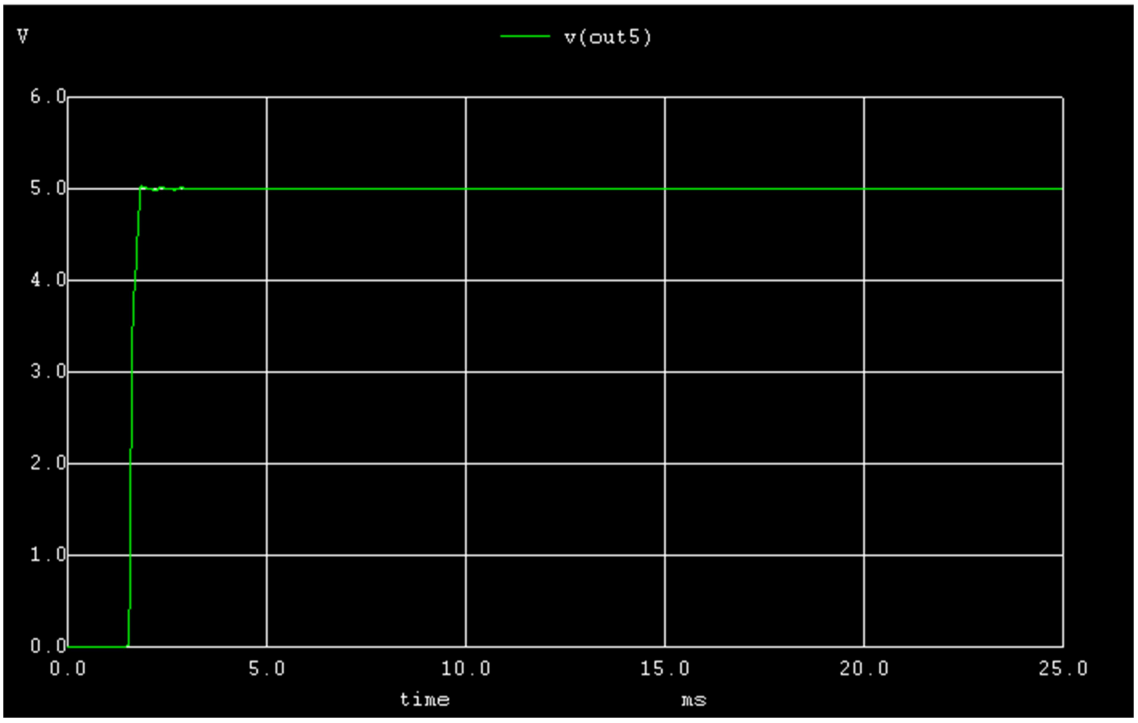
Results (Input, Output waveforms and/or Multimeter readings):

Ngspice Plots- Input Signal

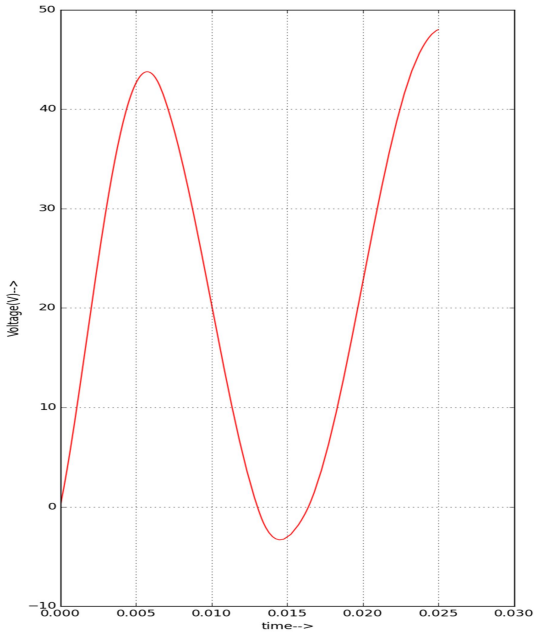


Ngspice Plots- Output Signal

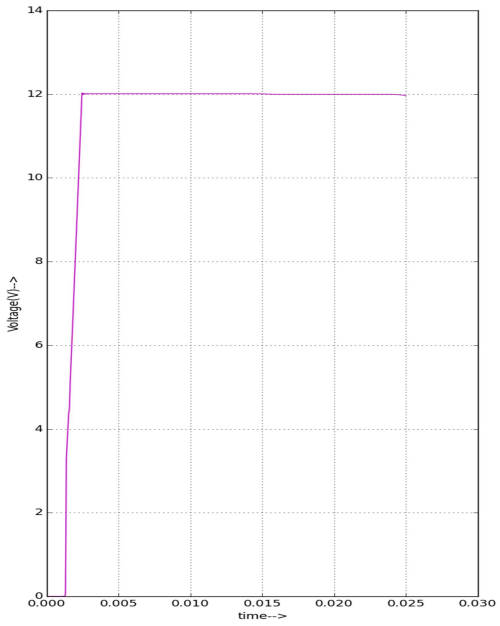


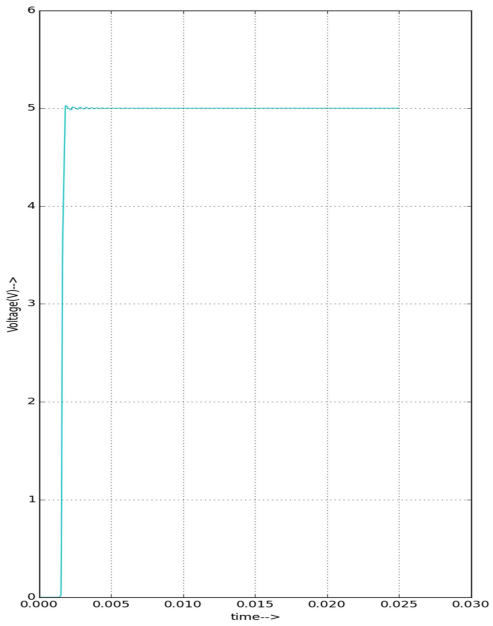


Python Plots- Input Signal



Python Plots: Output Signal





Conclusion: Thus, we have studied the 12 volt and 5 volt power supply using eSim circuit simulation and the simulation plot of ngspice and python plot obtained in eSim.

Source/Reference(s):

http://www.circuitstoday.com/12v-5v-combo-power-supply
https://www.electronics-lab.com/project/5v-12v-regulated-power-supply/