

Research Migration Project

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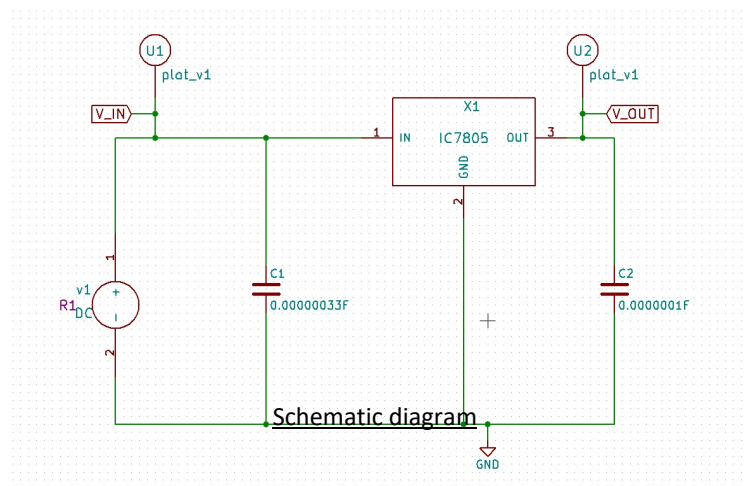
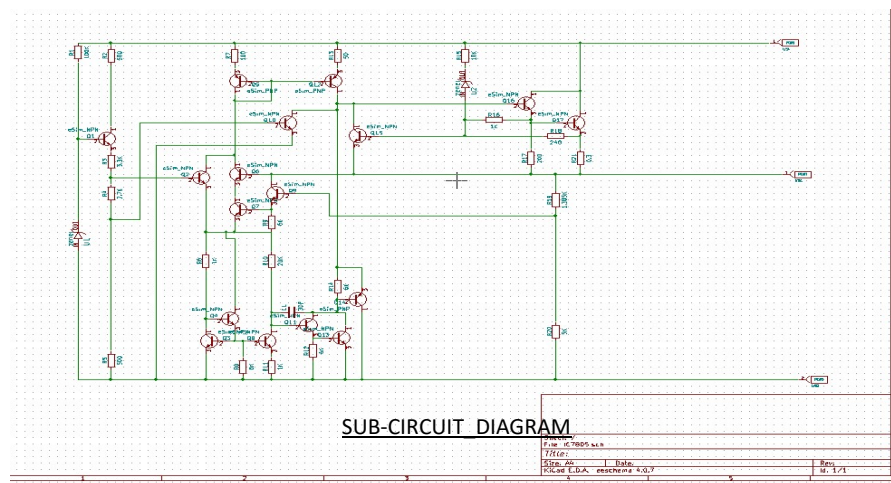
Title of the experiment:- SIMULATION AND ANALYSIS OF VOLTAGE REGULATOR

Theory:-

Basically, here I Implement a Voltage Regulator circuit with the help of IC7805 in eSim software , which is already done by C. M. Arun Kumar and P. C. Mukesh Kumar in another software , named Multisim.

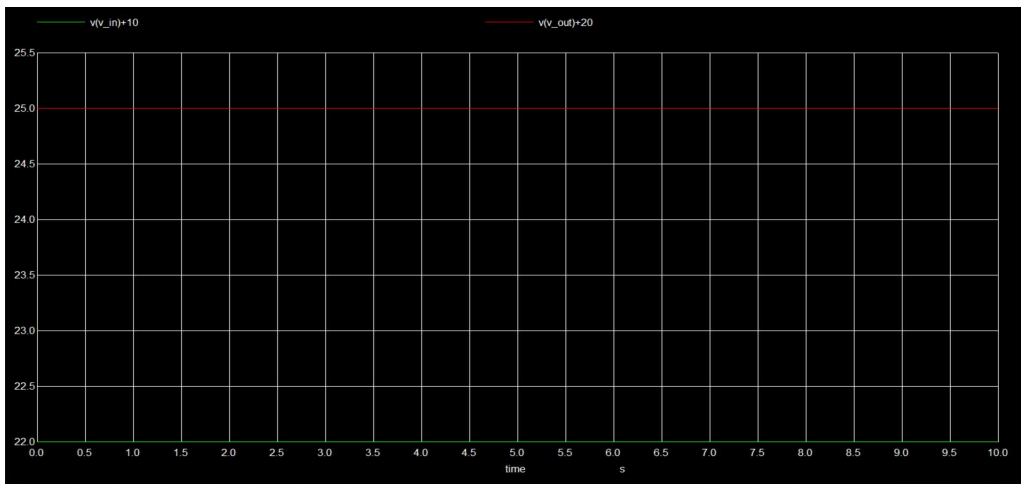
In this Research Migration project first I create the sub circuit of IC7805 and then simulate the voltage regulator circuit .LM7805 is one of the most commonly used Positive Regulator in Electronic circuits to lower down the voltage from the higher input voltage and it provides a regulated output of +5V with 2% regulation .The LM7805 is a linear voltage regulator, specifically a positive voltage regulator. It regulates a higher input voltage down to a fixed output voltage of +5 volts .The output voltage of the LM7805 is fixed at +5 volts. This makes it suitable for providing a stable power supply to digital circuits, microcontrollers, sensors, and other components that require a +5V DC power source.

Schematic Diagram:-

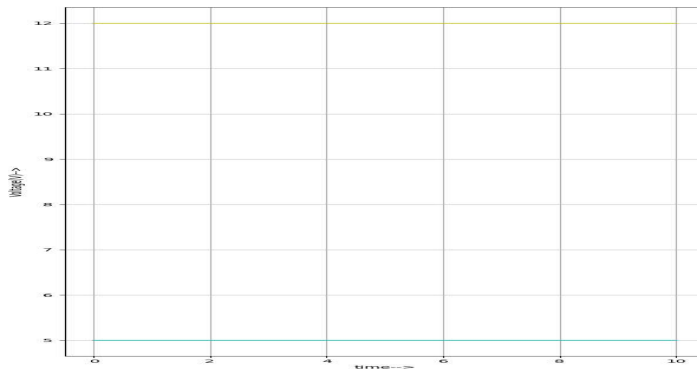


Simulation Results:-

- NqSpice plot:



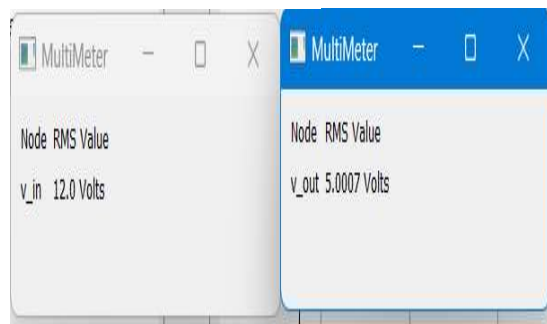
- Python plot:



Initial Transient Solution

Node	Voltage
v_in	5.00132
v_out	5.48393
x1.net_q1-pad2	11.629
x1.net_q1-pad1	4.84782
x1.net_q1-pad3	2.38662
x1.net_q2-pad2	0.372908
x1.net_q2-pad1	1.1159
x1.net_q2-pad3	1.26697
x1.net_q3-pad1	0.654938
x1.net_q3-pad2	11.8518
x1.net_q3-pad3	4.34704
x1.net_q4-pad2	3.32585
x1.net_q4-pad1	3.91559
x1.net_q4-pad3	1.14564
x1.net_q5-pad2	0.0761149
x1.net_q5-pad1	5.77422
x1.net_q5-pad3	11.8866
x1.net_q6-pad2	5.02537
x1.net_q6-pad1	0.662469
x1.net_q6-pad3	5.00142
x1.net_q7-pad2	5.13755
x1.net_q7-pad1	5.0557
x1.net_q7-pad3	10.5569
v1#branch	-0.0056718

No. of Data Rows : 59
ugspice 1 ->



Conclusion :-

Thus, we have studied and Implement a Voltage Regulator circuit using IC7805on eSim Circuit Simulation software and we get the appropriate waveform.

Reference paper: The project is taken from this Research Article-----

RESEARCH ARTICLE - AN EXPERIMENTAL AND SIMULATION ANALYSIS OF VOLTAGE REGULATOR USING THE MULTISIM.

Author - 1. C. M. Arunkumar from University College of Engineering, Pattukkottai.

2. P. C. Mukesh Kumar from University College of Engineering, Dindigul.

Published in International Journal of Advanced Research (IJAR).

Other Reference:

- <https://www.sparkfun.com/datasheets/Components/LM7805.pdf>
- [How to Make Voltage Regulator Circuits - Circuit Basics](#)
- [81 IJAR-14063.pdf \(journalijar.com\)](#)