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REFRENCES: https://circuitdigest.com/electronic-circuits/simple-white-noise-generator-circuit-diagram

SIMPLE WHITE NOISE GENERATOR

Every single circuit designer uses different techniques to remove noises from their circuit design. Noise is one of the main issues while building any circuit specially related to Audio or Power Electronics, but today, we will make a circuit which will produce noises. A special type of noise denoted as **White noise**.

WHITE NOISE

The term White came from the White Light. A white light is a mixture of all lights in equal density. So like white light is the mixture of all lights, **White noise** is a random signal which has an equal density of different frequencies. But there is a difference between White Light and White noise. The light which is white by appearance does not have flat power spectral density, whereas White noise has a constant power spectral density.

A simple example of white noise is when the Radio does not capture any radio station, we can hear the white noise. In this project, we will build a **Simple White Noise Generator Circuit** using a single transistor, two resistors, and one Zener diode and Electrolytic Capacitor.

APPLICATIONS OF WHITE NOISE GENERATOR

White noise has a wide range of usage.

1. It is widely used in Music Production.
2. White noise is useful to obtain the impulse response of an electrical circuit. It is a part of Electronics engineering.

3. White noise has random frequency thus we can generate random numbers from white noise.

4. It has medical implementation too. White noise is used in Tinnitus Treatment.

5. Sound and Acoustic engineers use white noise to balance sound equalization in a concert or other performance venue.

Working of the White Noise Generator

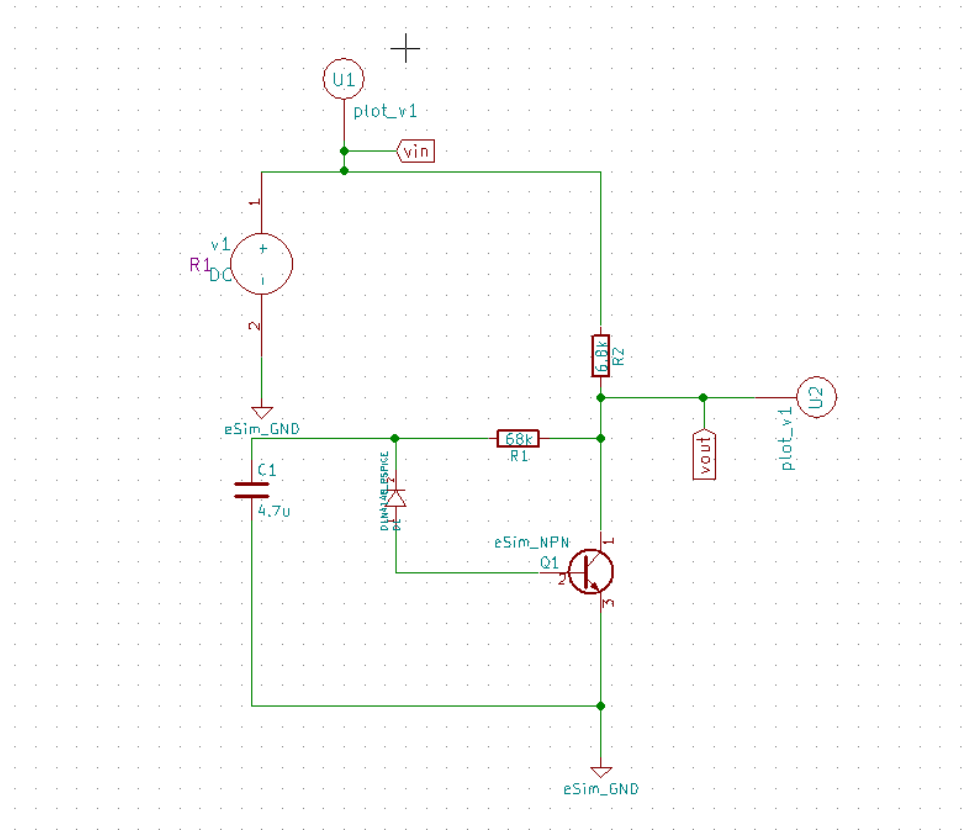
Transistor BC108 is getting the bias current through the 10V Zener diode which is placed in reverse bias with the transistor base. The 10V Zener diode is acting as a Noise source. Other two resistors are connected for current control. The 4.7uf Capacitor is working as a filter capacitor. The circuit needs fairly high voltage to provide noise at the output. We provided 26V as the input voltage of the circuit.

Important Notes

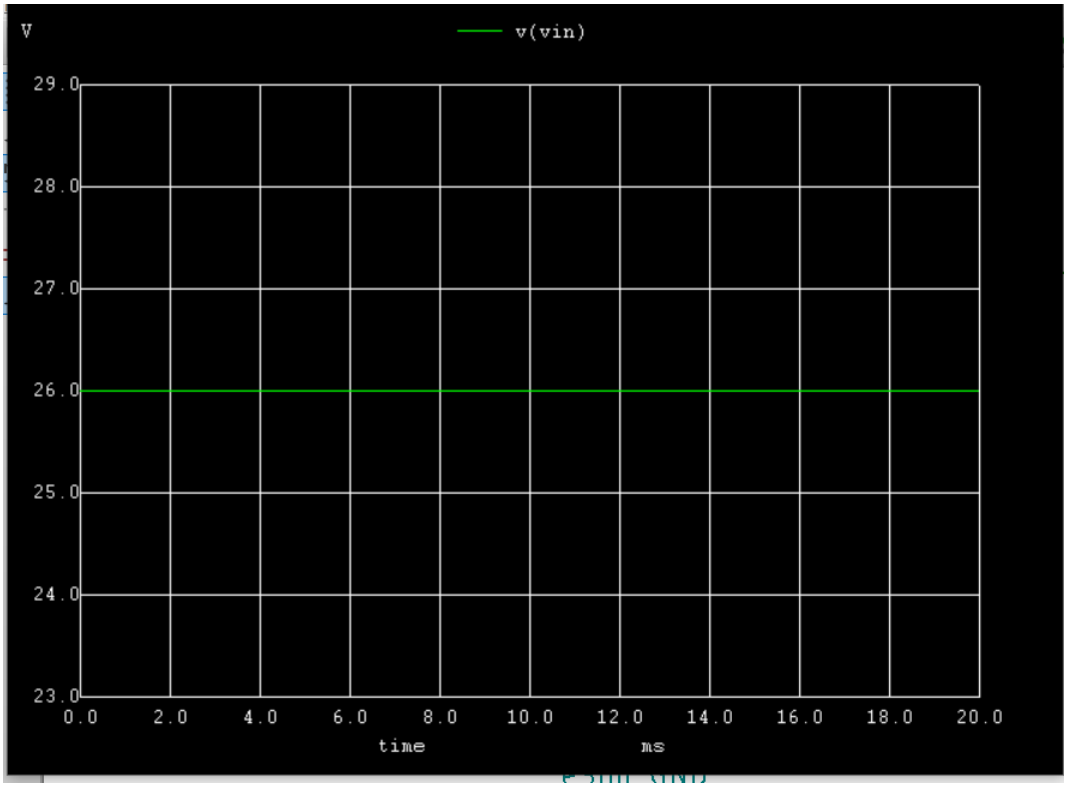
1. Make the Circuit on PCB board.
2. Make sure the length of the traces is short.
3. Use a clean power supply. The noisy power supply could affect the output.
4. Be careful about the Zener diode orientation.
5. Add an Amplifier to make the noise audible.

USING eSIM SOFTWARE:

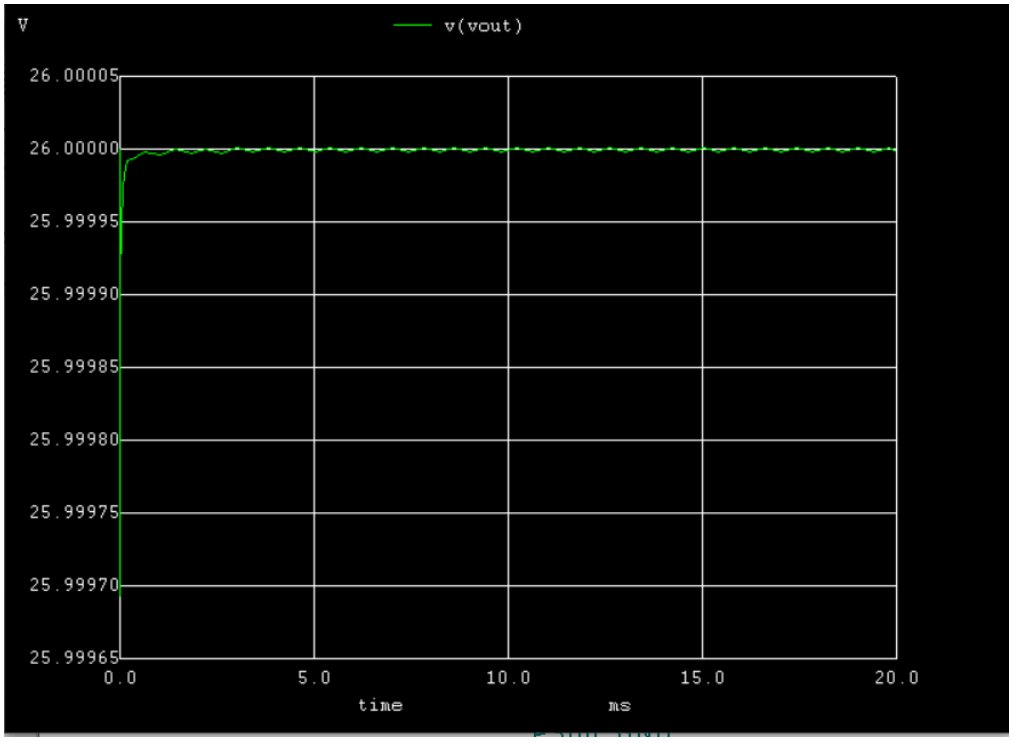
CIRCUIT DIAGRAM



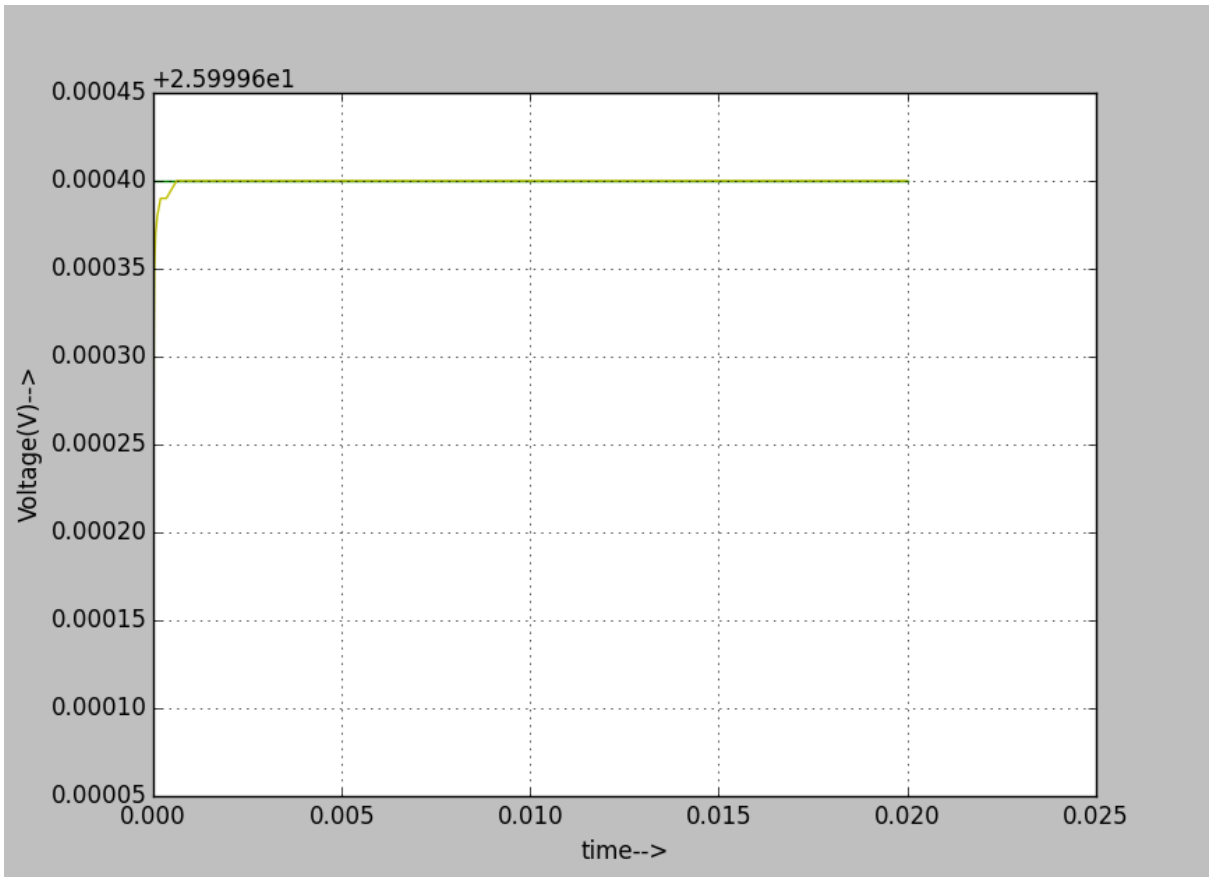
INPUT GRAPH



OUTPUT GRAPH



PYTHON PLOT



VIN : GREEN
VOUT : YELLOW