

ABSTRACT

The characterization is done through measuring the current flowing on the component. Measurements are usually carried out by stressing the components and reading the currents. Measuring current values in components already exists, for example, such as multimeters, which can measure voltage, current, and resistance in a component. However, the idea is very limited to only the order of mA or mV. The solution of this, there are current and voltage measuring devices, namely Keithley 2400. The tool can also be used for I-V characterization, namely plotting current and voltage curves with the order of measurement of pA and pV. However, this tool is very expensive and must be imported.

The prototype created for the I-V characterization system can be explained as follows. Microcontroller gives the output of digital values 0 - 4095 so as to create an output that is digital, then the output is converted using a DAC to control the voltage. Controlled voltage generated from the microcontroller can output from 0-13 Volts with 99% accuracy. The resulting output voltage is then given a load of resistors and diodes. After there is a loading effect, the current released is then read by IC Log 112, the IC is a current sensor that can measure currents from 100 μ A - 1mA. After getting the current value, through calculations and commands on the microcontroller. Then, the current data obtained is transmitted using the PLX DAQ software which functions to move the values on the Arduino serial monitor into Microsoft Excel as a data presenter.

Keywords: Microcontroller, DAC, LOG 112 IC