There are many electronic devices in the world and each has an array of internal components. One particular device is the tone generator which is mainly used for tracing wires during the installation and maintenance of audio, video, telecom, and data networks. The generator is a handheld unit that sends tone across two wires simultaneously via alligator clips; it will emit pulsating audible signals indicating the condition and the location of the wires. This device offers network professionals ease-of-use in wiring identification.

This tone generator consists of various electronic components: Three Toshiba inverters, two unbranded capacitors, 39 resistors, one speaker, one 9v battery terminal, and two semiconductors all interconnected to a printed circuit board. The function of the inverters is to step down the voltage input from the battery to the desired output on the circuit board. The resistors are designed to limit the flow of the current. The capacitors store and release electrical energy periodically while the semiconductors regulate the conductance of the current. The function of each component is pertinent to the operation of the generator.

The function of the tone generator begins with the 9v battery delivering power to the circuit board. The inverters receive the 9v power and step it down to 3v, then they energize the capacitors that store the power and release it periodically to the semiconductors. The semiconductors pass interval currents to the resistors, which convert the electrical signal into an audible signal via a built-in speaker when tracing wires.

Many lessons were learned from this experiment; the function of each individual component and the interconnection of these components as a whole, such as the capacitors, inverters, and the semiconductors that make up a tone generator. This knowledge can be applied when troubleshooting complex telephone, computer, and audio systems.