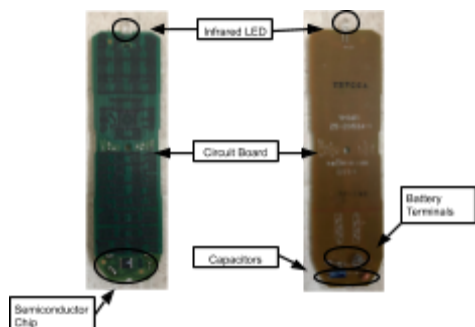# Electronics Online Challenge Sponsored by Texas Instruments

While I was brainstorming for what I should do this project on I thought about all of the electronics in my house. I thought of my computer, my headphones, my Xbox, and even my microwave. However, I kept thinking and realized that the electronic that I used the most was the one I knew the least about. This electronic was the TV remote. This got me to decide to use one of my old TV remotes for the challenge. In particular, I chose the TOSHIBA SE-R0066 TV remote. I thought it was strange that I had no idea how a TV remote works even though I used it almost daily. Therefore, I thought that it would be fascinating to finally learn about the electronic that I used so much.

I found a variety of interesting components inside of my TV remote while taking it apart. I found an infrared led, a circuit board, a semiconductor chip, battery terminals, and capacitors. However, I did not find any TI components. The infrared led is used to send light signals to the TV to give it commands. These signals are sent by the way of the infrared light. The circuit board is used to sense your finger touching the buttons of the TV remote. It then sends that signal to the led light through the semiconductor chip in order to transfer that signal to the TV. The battery terminals are used to extract electricity from the batteries that are placed in the TV remote. The capacitors are used to store and better handle that same electricity. Finally, the semiconductor chip holds on to the various binary signals of the TV remote. This is important because without this information the TV remote would not be able to emit the proper infrared light signals to the TV.
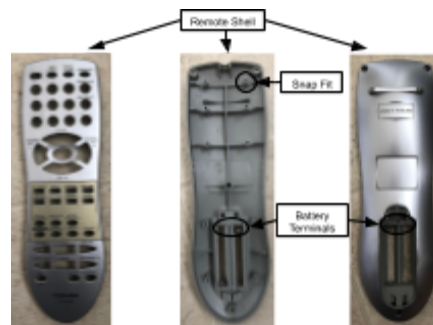
I learned a variety of information about TV remotes while doing this project. They are quite simple. When your finger touches a button the circuit board detects that press. Then, the circuit board sends a signal to the infrared led light with the help of the semiconductor chip. The semiconductor chip ensures that the message sent to the led light is in binary. Then, the led light emits a signal that corresponds to that binary signal. The result is the TV receiving that signal and doing what that signal tells it to do. I also learned that this signal is the same reason that you have to point directly at the TV without any disruptions to actually get a response. If a wall is in the way, or you are not pointing directly at the TV the light signal that has been given off by the remote will have

no way to reach the TV. In the past I had no clue how a TV remote works; however, thanks to this project, I now know exactly how the electronics that I use so much operate!