

2018 Texas Instruments Vex Challenge

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Upon hearing about this challenge on the Vex forum website, I started thinking about what I could take apart and write about. After brainstorming multiple ideas, I eventually chose a Dell Inspiron 1501 for this challenge because it was something that we had lying around in the robotics room, and also since it has a very simple build design.



Thanks to my experience with phone/computer repair this computer was a fun and easy project. After disassembling the computer, I started searching the chips that I found. Of all the chips, only two were Texas Instruments chips, and they both were a TI 2062. After some research on the TI website, and of TI data sheets for the 2062. The purpose of this chip is as a power regulator chip, the chip regulates amperage to 1.1-1.9 Amps, and operates between 2.7 and 5.5 volts. The reason this chip is needed is to prevent short circuits and capacitive overload. When power output is too high, or a short has occurred, the chip regulates the current to a safe level. If the output is consistently too high, the chip will sense if it is too hot, and shut down to protect itself. After shutting down and cooling off the chip is automatically switches back on.

The next chip I decided to look into was a Broadcom BCM4401KQL. After some reading on a Broadcom datasheet I learned that this chip is an integrated Ethernet chip responsible for onboard Ethernet reception, including from network interface cards, LAN, and mini PCI boards.

After researching the Broadcom network chip, I started researching another chip on the main board. The new chip as a Macronix MX29LV160DTTI-70G. After a while I was able to track down a data sheet for the new chip, I was surprised to learn that this chip was a flash storage consisting of thirty-two 64 kilobyte blocks. Since this chip is mounted on the motherboard, I assume that this is a chip responsible for reading and writing a certain command. After a lot of research, I could not find a specific purpose for this chip in this computer. This chip is offered in a pinned version for surface mounting, as well as a balled version. The chip is rated by the manufacturer to last 100,000 cycles of operation, or roughly twenty years, and also is compliant to RoHS lead standards.

This project taught me how little we know about how our devices that we take for granted work. Even though I have disassembled and repaired many electronic devices, I always learn something every time that I work on a new device. When disassembling a device, you learn how it is put together, how it works, and how you can fix it if it breaks. I am always amazed when I think about how many different people contribute to the making of one device. For one computer, there are so many parts from so many different companies; to think that the production of one computer can provide for people anywhere in the production process is just mind-blowing to me.

In conclusion, I believe that I learned a lot, and I hope that anyone that reads this will be inspired to take something apart, and learn!