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<b>Name</b>	<b>Gateway® Computer Keyboard</b>
<b>Model No.</b>	KB-0532
<b>Power</b>	AC 5V / 200 mA
<b>Manufactured</b>	China

Some Research:

Doing research prior to the deconstruction of the keyboard, I have done some research on how a keyboard works. As it turns out, there are many different types of keyboards that can function in different ways. The keys work by allowing a specific amount of current to flow to the internal processor, which is then sent to the computer as a key depression. In some keyboards, the keys can connect a circuit to a matrix, allowing electricity to flow through, or in others, keys just simply change the current flow in the matrix. The categories that can describe most keyboards are as follows.

- Capacitive (non-mechanical)
- Rubber dome
- Membrane
- Metal contact (optional foam element)

Electronic Component Description:



The keyboard prior to disassembly

This Gateway Keyboard is a standard Windows QWERTY keyboard. It has the main panel containing the letters of the English alphabet and punctuation. However, as an added bonus, it has several built-in auxiliary keys, including a volume control and a play/pause/stop/seek feature for videos. It uses a classic keyboard AC and input cord called a PS/2 cable (though it is no longer commonly found on keyboards anymore).



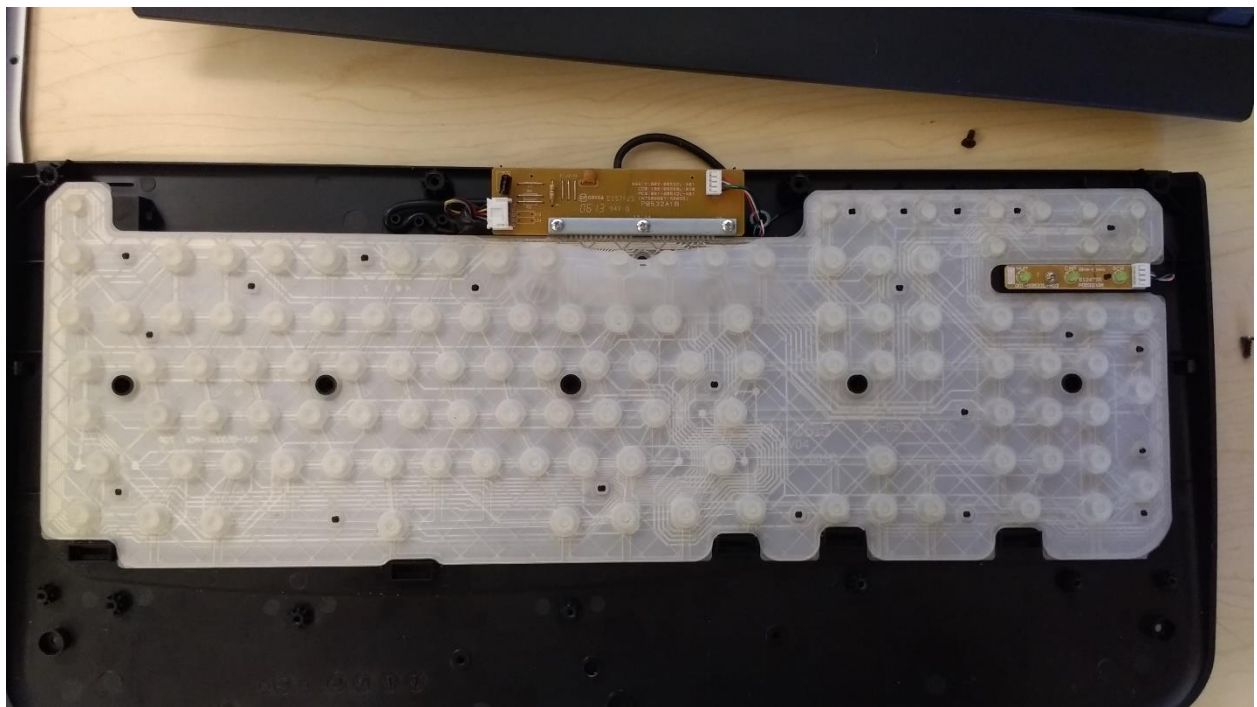
The output/power cable used on the keyboard.

### Disassembly:

I start by removing the screws. From there, I can take off the front panel. I can now see the lightweight rubber dome pad the keys were resting on prior to the disassembly. Each key corresponds with a dome, some keys have two. Underneath the domes, there is a small rubber spire.



Some keyboard keys removed. The rubber dome buttons are visible here.



The key panel removed; revealing the layers of electronics underneath.



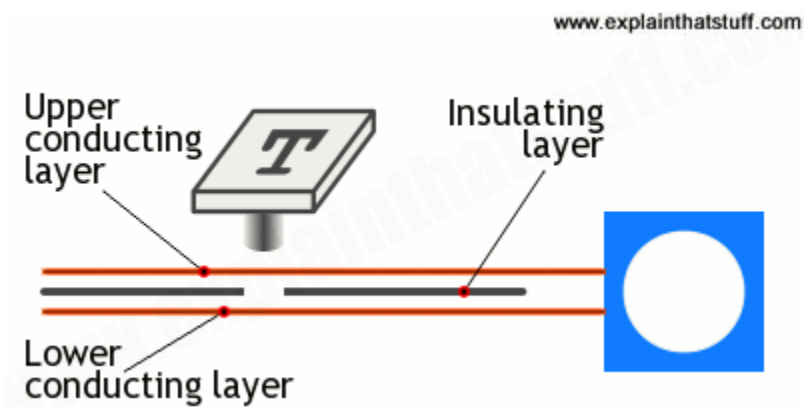
The underside of a few rubber domes. This is what presses the two layers of wire together.

Underneath the rubber pad, there are three plastic matrix plates, each has several wires embedded in them. One on top, which corresponds with the keys on the keyboard, the next insulating layer, which is just plastic, and the final underneath one, which delivers the current provided back to the processor if any keys are pressed. If the upper layer connects with the lower layer, it allows conduction between the two layers, which the processor reads as a keystroke.

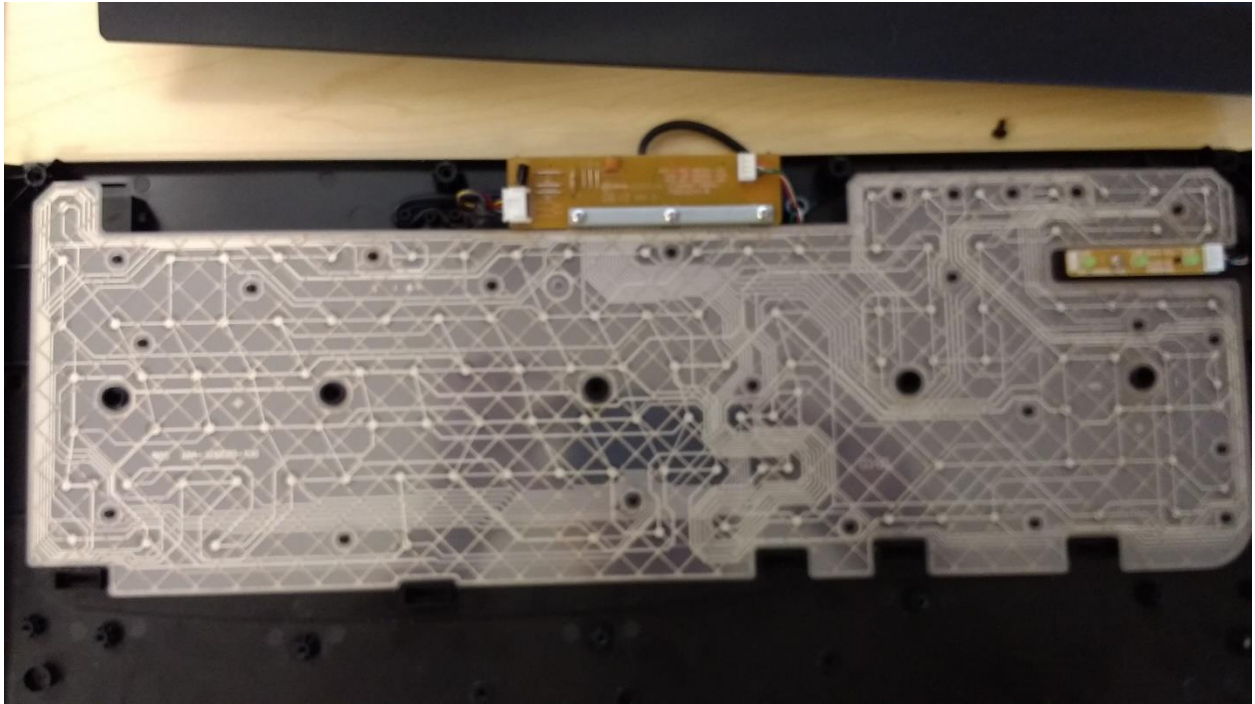




The entire keyboard disassembled. All parts are visible.



The matrix plates are connected by several wires to the keyboard's small processor, which reads the data that's currently being fed to it and turns it into a code for the computer to read via the long PS/2 cable.



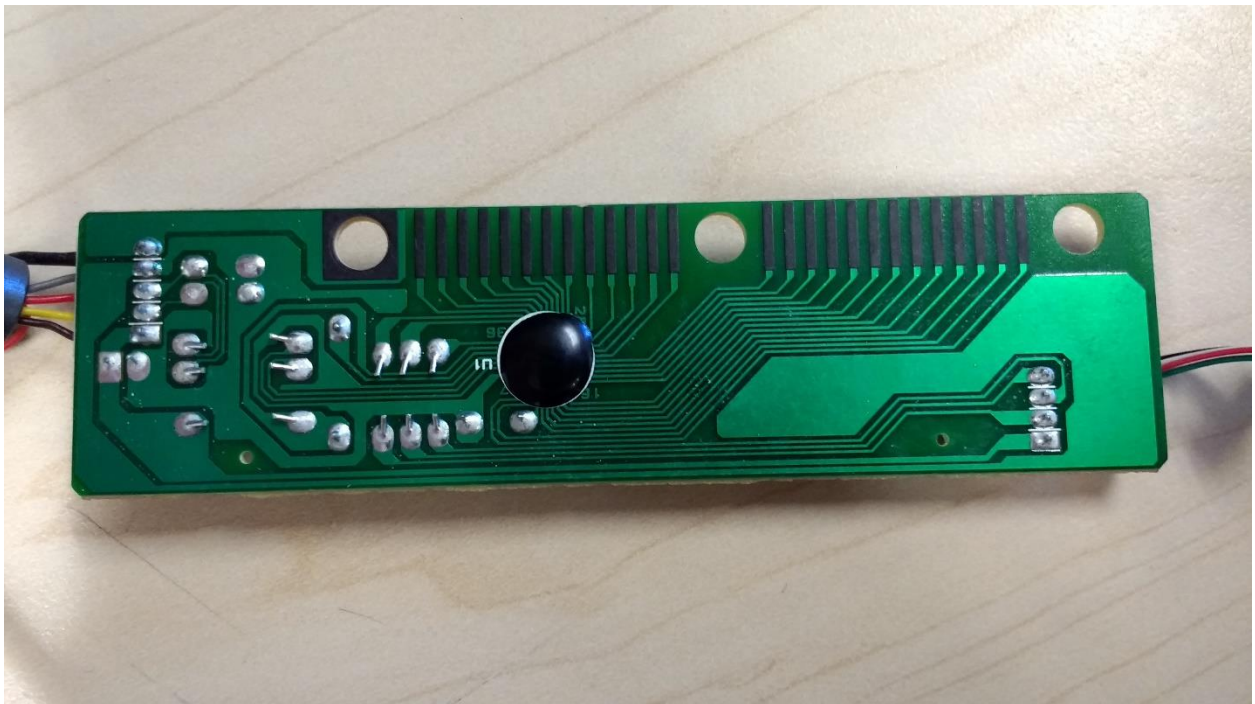
The plastic sheets containing the matrices of wires.



Here, each of the layers are more visible.

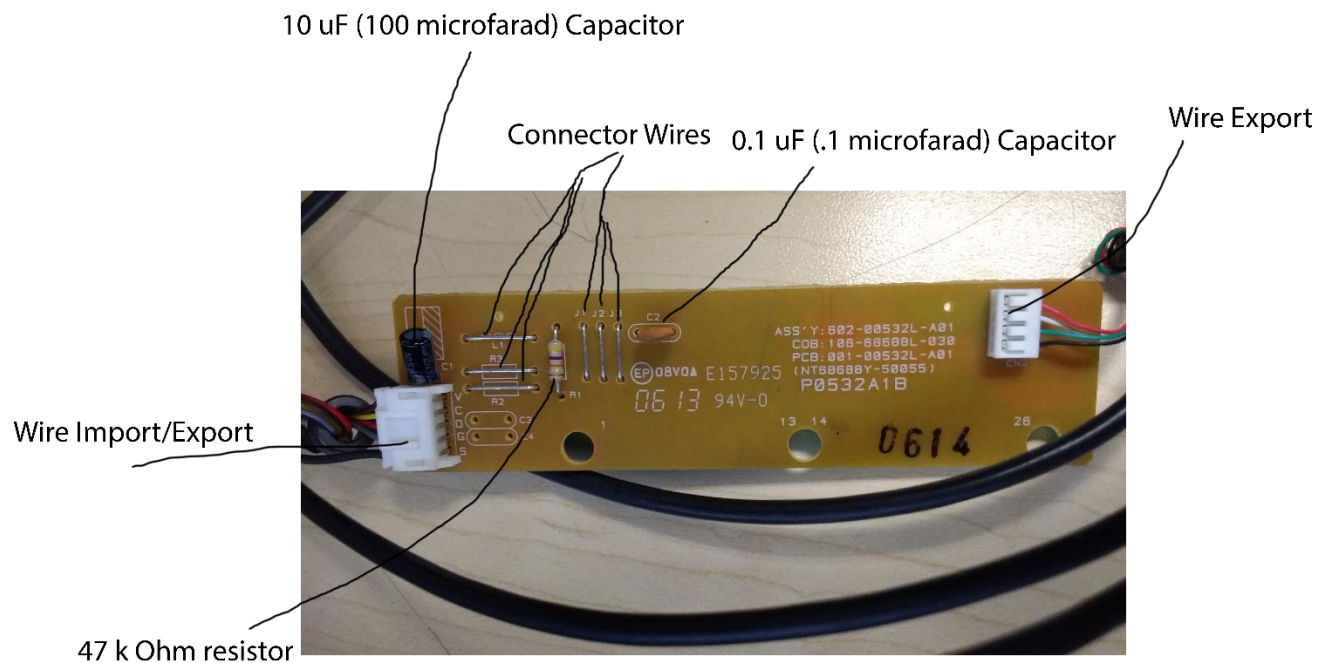
The Processor:

The processor reads the information it receives through the matrix plates. One sheet receives current through the processor. The other sheet relays the current back to the other half of the processor if the circuit is connected. A small board with several electrical components sorts the data. The information is now readable by the computer. It sends the data outward through the cable.



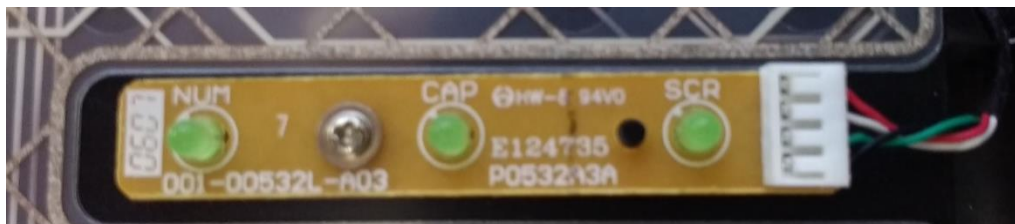
The underside of the processor.





The topside of the processor, with notable electronic components labelled.

Not all data goes to the computer. When certain keys are pressed, (i.e. NUM Lock, CAPS Lock, and SCROLL Lock,) electricity is exported through wires to the LED board, where certain LEDs light according to the key pressed.



The topside of the LED board used to light up the Lock key lights.

#### Parts List:

- Key Frame
- Back Frame

- Rubber Dome Layer
- Plastic Matrix Plates
- Processor
- Input/Output Cable

#### Conclusion:

In this report, I observed, disassembled, and researched each part included in the keyboard. The whole project has helped me to understand how keyboards work and what each part's role is. Thanks for reading.