Characteristic Curves

The spreadsheet provided has potential difference and current data for four different types of component. You should use this spreadsheet to carry out the following exercises.

Resistor

1. Plot a graph of voltage against current.
2. What physical quantity does the gradient show? Use the gradient to work out the resistance. Will this method always work?

Filament Lamp

1. Plot graphs of current against voltage and resistance against current.
2. Look at the graphs. Does the lamp obey Ohm's law? If not, then how does the resistance change with current?
3. Plot a graph of the power in the lamp against current. Describe and explain the pattern.

Neon Lamp

1. Plot graphs of current against voltage and conductance against current.
2. Can you explain the shape of the curve given what you know about the way the lamp operates?

Silicon Diode

1. Plot a graph of current against voltage.
2. Can you explain the shape of the curve?