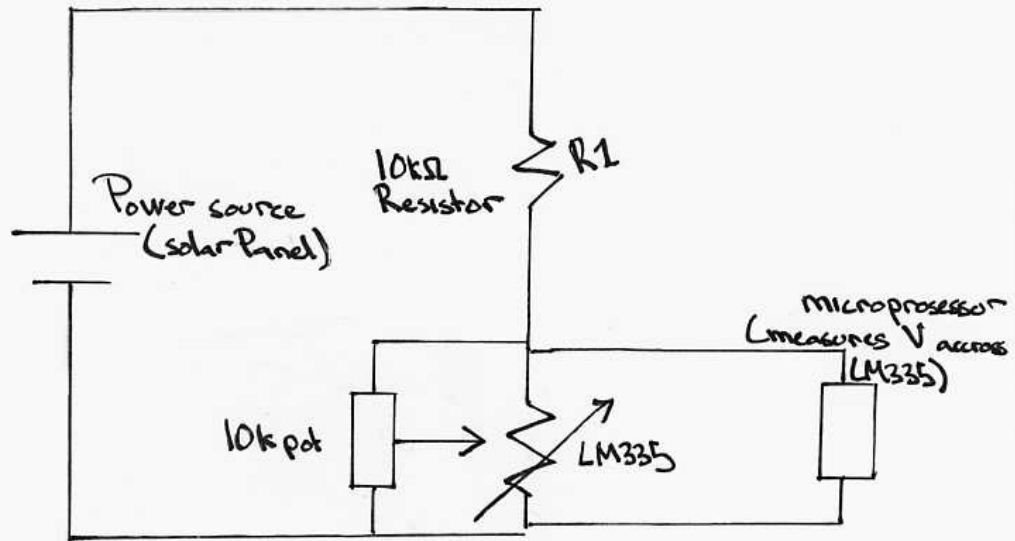


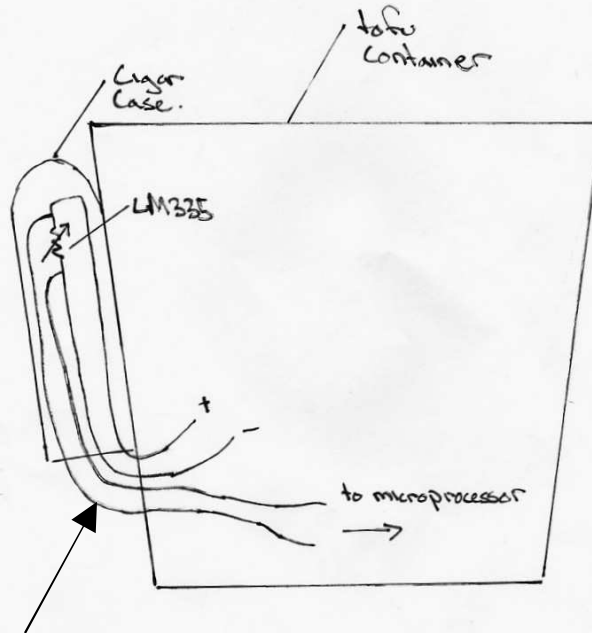
The



Description:

All of the components, ~~excepting the LM 335~~ will be placed within a tofu container for protection against moisture, wind, etc. The LM 335 will be placed in a cigar case suspended as shown: The wires will be of the insulated, outdoor type: the kinds on Christmas lights. The cigar case will be attached to the tofu container using super glue and duct tape. A garbage bag will be placed over this device to prevent moisture from attacking the super glue and tape. Also, metal screws will be used to secure the cigar case to the tofu container

Note: the bottom of the cigar case has been left off in order to facilitate the insertion of wires and to increase the chip's exposure to the outside temperature. Also, the cigar case would be cut down to about 2 inches in length using a hack-saw to facilitate efficient circulation of air to prevent the heat generated by the Lm 335 from affecting Our measurements



Side view

The LM 335 releases 10mV/deg K and thus the temperature can be calculated by the formula

$$^{\circ}\text{K} = \text{mV}/10$$

The minimum power supply for the Lm 335= max temperature range in kelvins (10mV)

$$\begin{aligned}
 &= 100\text{C} (10\text{mV}) \\
 &= 373.15\text{K} (10\text{mV}) \\
 &= 3731.5\text{mV} \\
 &= 3.7315 \text{ V}
 \end{aligned}$$

However, we will need a resistor (R1) in order to prevent short-circuiting

To calculate the total power supply, including the resistor, we will need to apply ohms law of:

$$\text{Ohms} = \text{volts/amps}$$

However, since we do not know the total voltage needed, nor the amps needed, we cannot apply this formula

Therefore, we can only guess at the minimum power demand and we place it at 5V

We can afford to make estimates because the Lm 335 has no maximum power supply and thus we can have a surplus of power without damaging the Lm 335.

Statistics:

Parts list and Cost

| Part | Cost |
|-------------------------|---------------|
| Lm 335 | \$ 0.50- 1.00 |
| Tofu container | Free |
| Cigar case | Free |
| Insulated outdoor wires | \$ 1.00- 2.00 |
| Resistor | \$ 0.50 |
| Metal screws | \$0.50 |
| Duct tape | Free |
| Super glue | \$0.25 |
| Total | \$2.75-4.25 |

Accuracy: The Lm 335 is accurate to the 05. degree K

Durability: Tofu containers and cigar cases are very tough and sturdy. The duct tape, super glue and metal screws strongly attach the cigar case to the tofu container

Simplicity: Very simple and straightforward to make

Feasibility: All of the required parts are readily available: tofu containers can be found at Brian's house, as well as duct tape, metal screws and the required wires. The Lm 335 and resistor is available via the in class parts catalogue and the cigar case can be provided by Mr. Oswald.