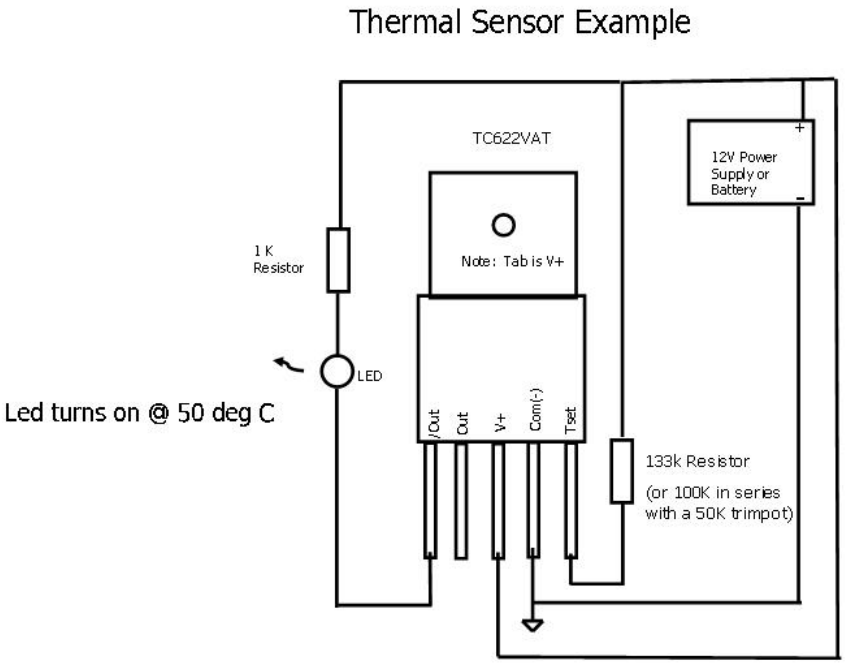
Simple Battery Temperature Monitor

Based on Microchip Technologies TC622 Low Cost Single Trip Point Temperature Sensor.

Sample Schematic:



In this example the Temperature Sensor acts as a thermal switch. The switch turns on an led when the temperature exceeds 50 deg Centigrade If the variable resistor (“trimpot”) is incorporated in the set point circuit the trip point can be adjusted over a wide range of temperature.

The 50 deg C point is somewhat arbitrary and may not be ideal. It was taken from the settings for my battery charger as the maximum charging temperature.

Below is a graph of temperature vs resistance, and how to calculate the resistance for a particular set point.

For example, as shown in Figure 3-1, to program the device to trip at 50°C, the programming resistor is:

$$R_{TRIP} = 0.5997 \text{ x } ((50 + 273.15)^{2.1312}) = 133.65 \text{ k}\Omega$$

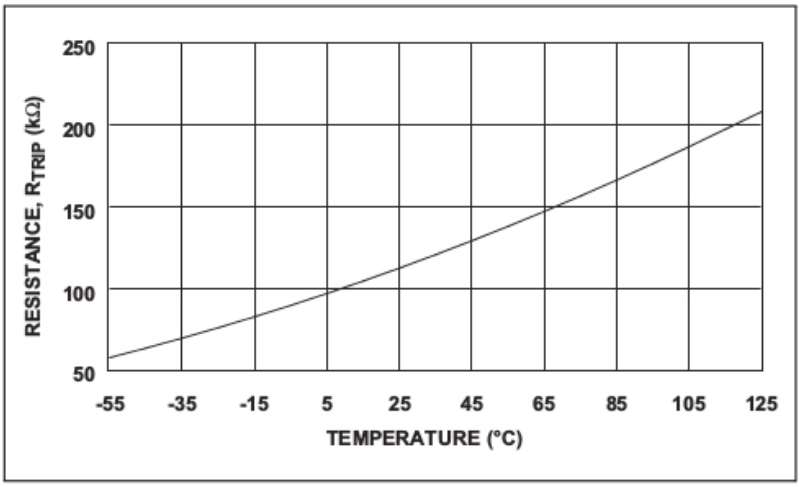


FIGURE 3-1: *Programming Resistor Values vs. Temperature*

There are a couple of ways of applying the sensor to a battery. One way is to stick it down on the battery surface with a bit of thermal compound. A good place would be as near the negative battery terminal as possible. Another way is to pot the device in a battery lug with some epoxy. Note that the tab on the TC622VAT is at the devices positive voltage. Shrink rap enclose the device before potting in the terminal. The terminal then may be bolted to the negative battery terminal which seems to tend to be the hottest point.

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