A simple heater controller by Paul Evans, W4/VP9KF.   2017-12-15

This project started as a simple way to warm up an old analogue VFO, controlling the heater and stopping drift. As a plus, it can also save quite a bit of un-necessary power usage as it is proportional.

Since then, I've also used it to control a couple of other heaters (one under the car engine block on the garage floor*) and, with a relay instead of the heater load, it could be used to do various other heftier (AC) tasks, if needed.
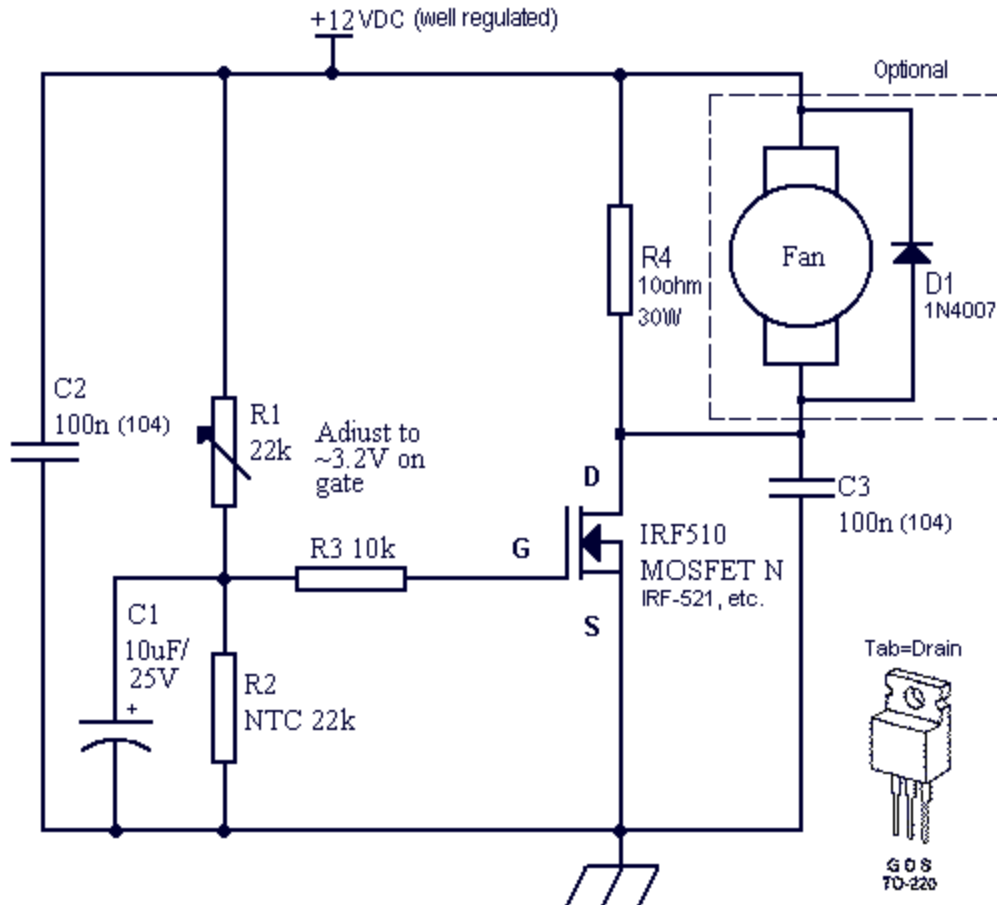
It is all very non-critical and the parts came from my junk box. I simply adjust the pot so that the heat is off at room temperature and check that, when I cool the thermistor, the heat turns on. With such a small parts count it can be made very tiny and can fit almost anywhere. With the decoupling capacitors shown it also performs well even next to very high RF fields (like right inside a PA). Do not omit them or falsing will occur near RF fields and hysteresis may be lost during power spikes.

From my favourite supplier, BGMicro, the parts cost is minimal:
Thermistor: 50k RES1400, $0.33; FET IRF521 $0.49; Pot: 50k RES1422 $0.15. R4 is a 10Ω 30W cement resistor. See, the parts really are non-critical! A tiny square of vector board (or Vero board) can be used to make this handy little circuit.

The IRF521 can be used to switch 8A of load. The fan and diode are optional and only used where you need to spread the heat a little. ***Make sure your choice of resistor is suitable for the task!***
* In this application build in a rugged diecast box and ensure it is not under any petrol/gasoline line.

Open-Hardware

Please note: This circuit is open-hardware. Do not change these notes or remove reference to the design source. You may link to it, but do not copy to other servers or group files.