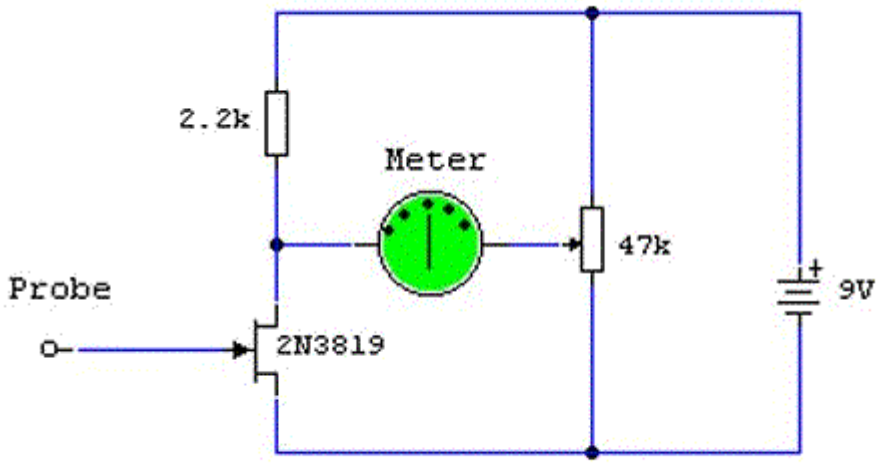
Static Electricity / Negative Ion Detector



Notes

This circuit relies upon the extra high input impedance of a FET, and also demonstrates the gate terminals sensitivity to changes in voltage. The gate terminal here is left open circuit, connected only to the "probe" this being just a few inches of bare copper wire. With no fixed DC biasing, the gate terminal will respond to micro changes in voltage or "field strength". It is important not to make this circuit on veroboard or PCB material as this will reduce the effective gate impedance. Instead use an "open" construction technique soldering each component together. The probe should not be touched directly and is best insulated in a plastic pen sleeve.

As static electricity can have either a positive or negative charge, the meter used should be a centre zero type. Full scale deflection can be 1mA or 250uA for greater sensitivity. Remove the meter and use a multimeter to measure the voltage between FET drain and the preset resistor. Adjust the preset for 0 volts and then replace the meter. This will avoid "bending" the needle.

If placed in a room the meter will detect changes in static charge, positive charge deflecting the needle one way and negative the other way. You can test the circuit by placing the unit say 5 feet away from a TV set. When switched on, the meter needle should jump to full scale deflection and then drop down again. If you have a room ioniser, its output can be monitored by moving the probe in front of it. As the detector responds to changes in charge, you may need to move the detector around to see the effect, but it will prove the output from such an ioniser.