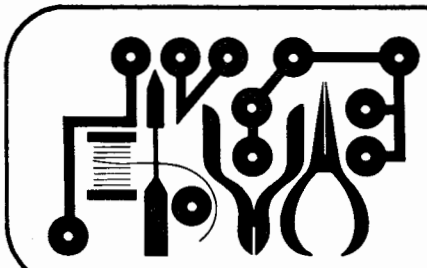
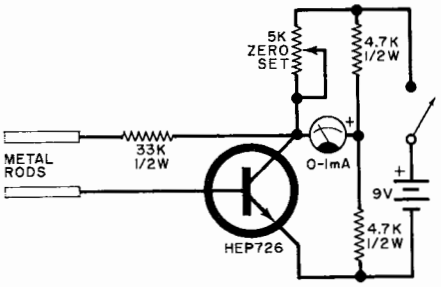


Hobby Scene

Beginner's Lie Detector

Q. *I have often wanted to build one of those "emotion detectors" you have featured in the past. However, I am a beginner and don't feel I am up to building one with IC's so I haven't tried yet. Do you know of any simple type of lie detector that a beginner could try?*

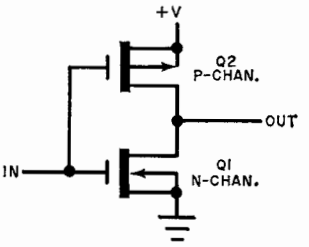
A. The circuit shown below is just about as basic as you can get. The two probes, which can be almost any kind of smooth metal rods, are held firmly in the palms of the hands, and the potentiometer is set for meter zero. When the subject is embarrassed or lies, the palms of the hands usually start to perspire, thus changing their resistance. This changes the transistor bias, and the meter deflects.



CMOS Logic Mini-Power

Q. *I have been reading about CMOS (complementary metal oxide semiconductor) logic and still can't understand one thing. How can it work with such low power requirements?*

A. Take a look at the schematic. Note that there are two MOSFET's in this typical CMOS gate—one a p channel and the other an n channel—connected in series between the positive supply and ground. When the input is low (ground), *Q1* is off forming a very high resistance and *Q2* is on making a very low resistance. Current flows only



during the switching transition and this is very low. The output is then at the +V level. When the input goes high, *Q1* turns on and *Q2* turns off. Again only switching current flows and the output is virtually at ground. If the load is another MOS circuit, the latter will have a very high input resistance and require very little current. Only voltages are being switched. You can also guess that the actual value of +V is relatively unimportant so a well-regulated supply is not needed.