SIMPLE ELECTRONIC KEYER

Despite my most dedicated efforts, some of you still have not built any of my projects. Among the excuses are "The parts are too expensive" or "I hate mail order". Some amateurs have complained that the parts are too small to read despite the availability of magnifying glasses at almost any drug store. Still others claim they don't have a soldering iron which is surprising when one considers all the soldering irons given away at RASON meetings. In any event, the circuit in figure 1 is designed to make it very difficult for you not to build something soon.

This month's circuit is an electronic keyer which uses only two inexpensive IC's which are available at any Radio Shack store. Some of you gasped at the $20 cost of a Curtis chip and the "Ugh!" concept of mail order in an earlier construction article. This circuit lacks the bells and whistles of the Curtis chip but is capable of producing perfectly sounding CW. For as little as $6 (maybe even less) and some junk box parts, you could build a keyer which will serve you well for many years.

The circuit in figure 1 uses a quad Nor gate chip and a dual D flip flop chip. To my knowledge, no one (not even Ramsey) has been able to perform this miracle with only two IC's before. Two of the Nor gates are used as the clock generator and the frequency is determined by C1, R1 and R2 which sets the keying speed. This clock signal is fed into Pin 3 of IC 2 which is the dot flip flop. Nothing happens at this point until the dot paddle is grounded. When the dot paddle is depressed, Pin 1 of the flip flop changes states for as long as the dot paddle is depressed. When the dash paddle is grounded, this in turn causes the dot paddle to be grounded also through Diode D1. This starts the dash cycle which continues until Pin 13 of IC-2 changes state again. Diode D2 keeps the dot paddle low until the dash cycle finishes. Pins 1 and 13 of each flip flop form the output to transistor Q1. Because Pin 1 is not always high during the dash cycle, Diodes D3 and D4 form an Or gate to keep Q1 saturated during a dash cycle.

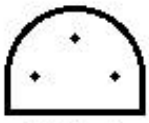
This circuit has one anomaly which operators should be aware of. The dash paddle always has priority and attempts to squeeze the paddle (both dot and dash depressed) results in a continuous stream of dashes. This means the operator must release the dash paddle before depressing the dot paddle. Experienced CW operators will have no problem with this circuit but sloppy high speed operators will need to refine their sending since it is not as forgiving as a Curtis chip.

This circuit uses CMOS chips which require special handling to prevent static charges. Sockets are highly recommended. The circuit requires very low power and can be powered from 8 to 15 volts. A 9 volt battery should last over a year meaning an on/off switch isn't needed. No weight control is provided because experience has shown that it is often misused by operators causing code which is difficult to copy.

DE N1HFX

Parts List

R1	100K Resistor (brown, black, yellow)
R2	1 Meg Potentiometer (276-211)
R3,R4,R5	10K Resistor (brown, black, orange)
C1	.22 microfarad Capacitor (272-1020) (224)
C2,C3	.01 microfarad Capacitor (272-1065) (103)
D1,D2,D3,D4	1N914 or similar Diode (276-1122)
Q1	2N2222A or similar NPN (276-2009)
IC-1	4001 Quad Nor Gate (276-2401)
IC-2	4013 Dual D Flip Flop (276-2413)



Transistor Bottom View

Figure 1a

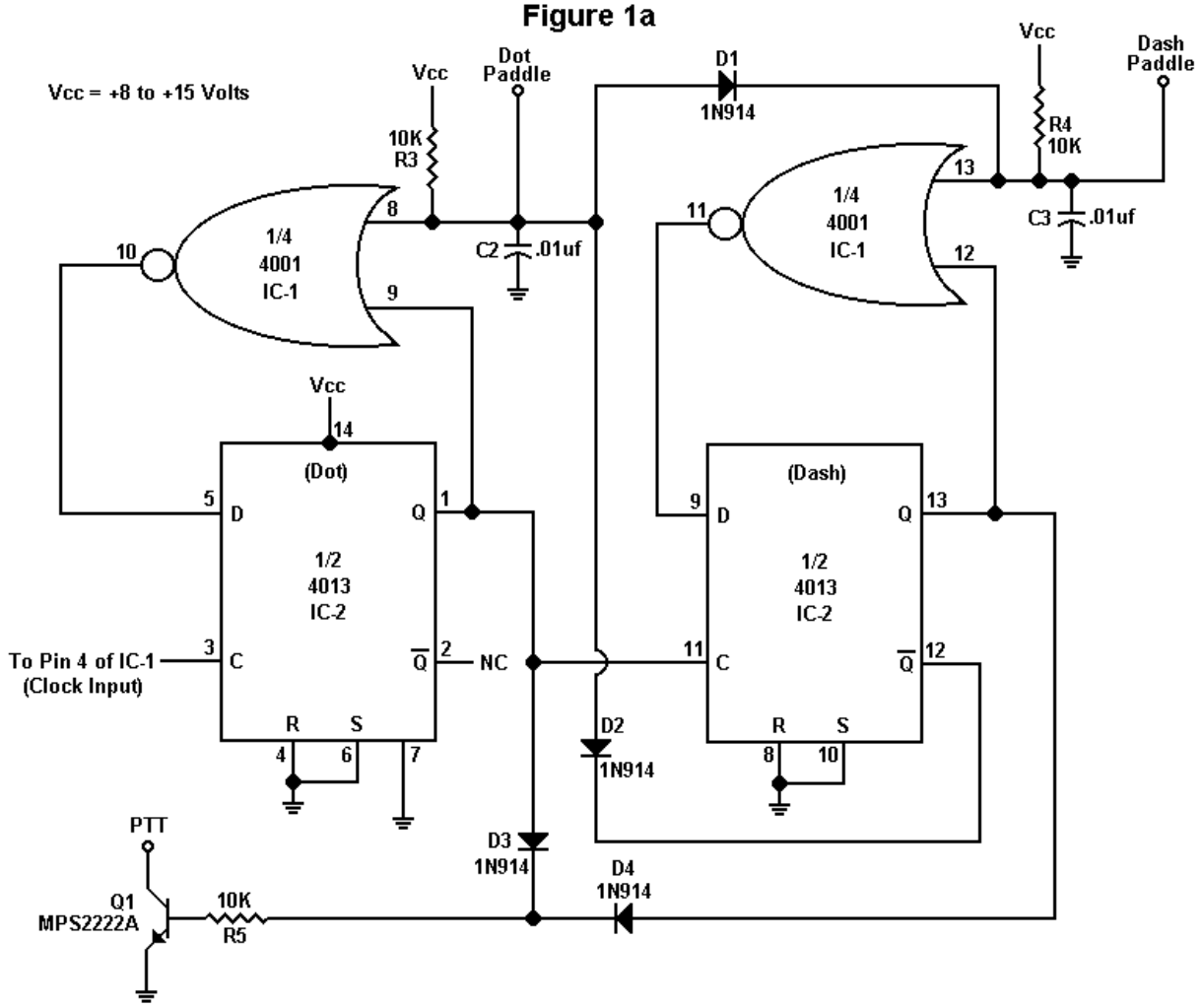


Figure 1b