

WHAT'S NEW AND HOW TO USE IT

A Minimum Component, Ultra-Simple IC Oscillator

We all are familiar with crystal oscillators, to be sure, and we also are aware of the many possible circuit variations to implement them. The decision as to what circuit to use in a particular application is not so simple, however, and the choice of component values can also be confusing at times.

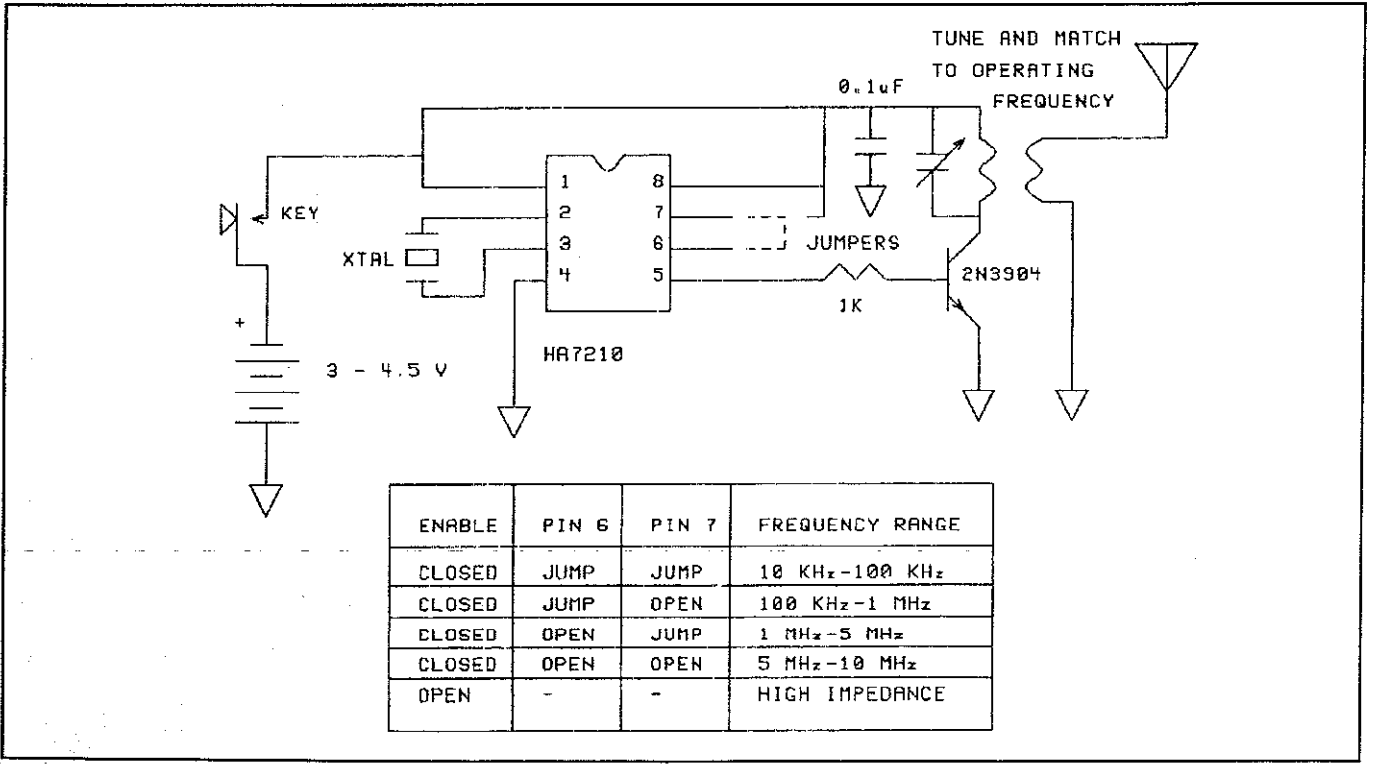
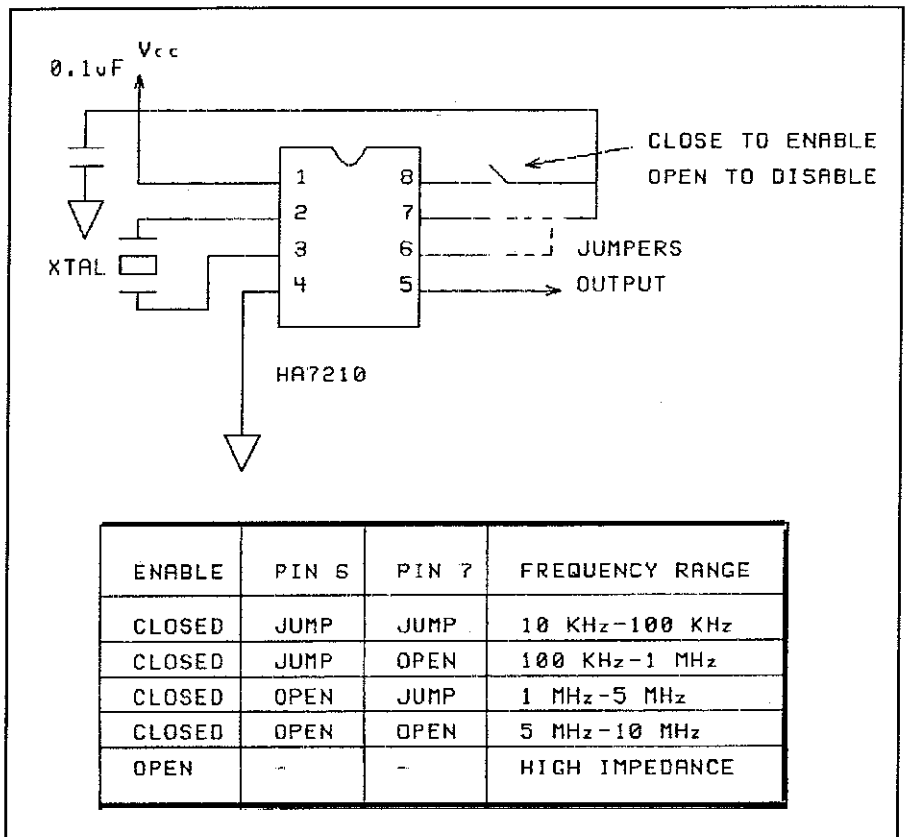
Our offering this month can go a long way toward simplifying the design of such oscillator circuitry, since it is a complete, self-contained crystal oscillator in an 8-pin IC. The HA7210, manufactured by Harris Semiconductor, is so simple it only requires the crystal, a 0.1 μ F bypass capacitor, and a couple of jumpers for stable operation from 10 kHz through 10 MHz. The chip also features an enable/disable mode which switches the output to a minimum-current-drain/high-impedance state for standby operation.

Fig. 1 is a schematic of the circuit along with a table showing the upper arrangement for operation through the frequency

*c/o CQ magazine

Fig. 1- Schematic of the basic HA7210 oscillator

Fig. 2- An ultra-simple QRP transmitter using the HA7210 chip



range. As shown, the circuit will drive two CMOS loads or produce 5 volts across a 5K resistor. Current drain for the chip itself, from a 5 volt supply, will be a maximum of 350 microamperes (0.35 ma), although the operating voltage can vary between 3 volts and 7 volts. Since the chip is available in a surface-mount package as well as a standard 8-pin plastic DIP, the overall size of the complete oscillator can be quite small. The operating temperature range of -40 to +85 degrees C is also quite impressive.

A chip such as the HA7210 can easily be used to implement a very simple QRP transmitter for 160, 80, or 40 meters as shown in fig. 2. This circuit is the same as fig. 1, but with the addition of a 2N3904 "power stage." Going a step further by using a surface-mount transistor, surface-mount crystal (Digi-Key CSM-7 series), a couple of hearing-aid or watch batteries and some construction skill will result in a transmitter that can be hidden almost anywhere.

For further information you can contact Harris Semiconductor at 1301 Woody Burke Road, Melbourne, FL 32902 (407-724-3000). You might also be interested to know that Harris has acquired the entire RCA IC semiconductor product line and has many of the older RCA chips available under the same part numbers. And finally, major distributors such as Arrow/Schweber, Newark, Hamilton-Avnet, and Hall-Mark all carry the Harris line.

Until next month, best DX with your QRP rig!
73 Irwin, WA2NDM

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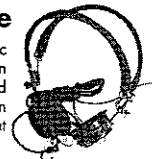
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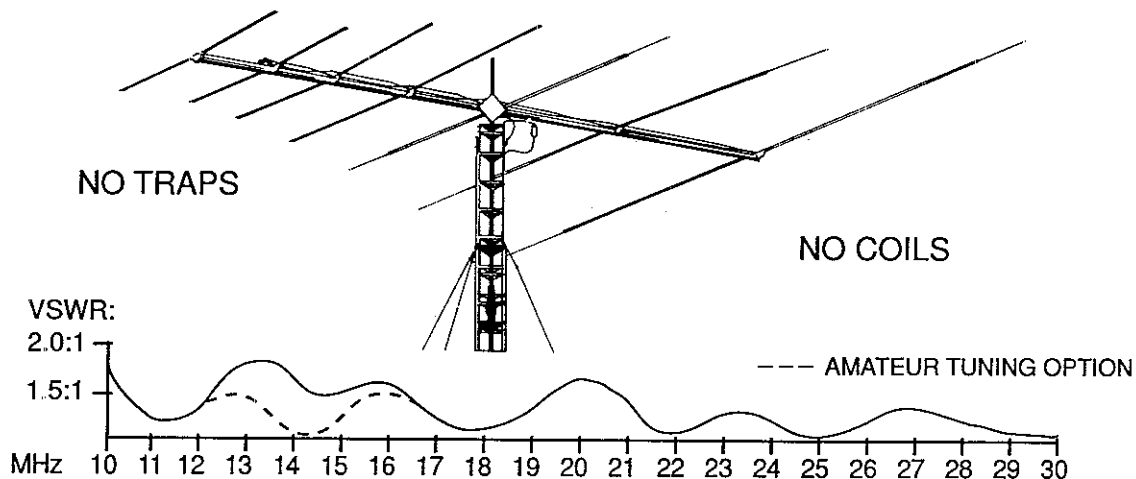
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