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Silect Six Meter Converter

This simple and inexpensive six meter converter uses low-cost Texas Instruments plastic-cased Silect transistors. The rf stage is an FET, too.

Have you heard about the new Texas Instruments economy line transistors? TI calls them "Silect" transistors and they give excellent performance at low prices.

I recently attended a transistor seminar sponsored by TI in Dallas. Among the topics and devices discussed were a number of the Silectline transistors, including the TIS34 N-channel VHF epitaxial planar silicon field effect transistor. This transistor, which is a low-cost version of the excellent 2N3823, has been written up before in two 73 articles: "RF Applications of N-Channel FET's" by WA5KLY in the May 73 and "A Low-Cost FET Two Meter Converter" by K6HMO in the October 73. The TIS34 is ideal for VHF mixer and amplifier service. It has a low noise figure and high, high frequency figure of merit. Cross modulation is minimized by its square law transfer characteristics. This transistor is used as the rf amplifier in converter.

The TI409 transistor, which wasn't discussed at the seminar, is an excellent NPN planar silicon transistor for general use. It costs 75¢, not a bad price for a 500 MHz, 200 mW transistor. Both transistors are encased in inexpensive plastic packages. Note that the leads of the TI409 are a bit different from most transistors.

Total power consumption is 2.5 mA at 12 volts.

This converter is similar in many ways to previously-described converters except for the FET rf amplifier. I couldn't find any FET rf circuits when I was starting to build this converter, so I decided to come as close as possible to tube circuits. The gate (grid) resistor was varied from 470 kΩ to 3.9 MΩ; 1 MΩ seemed best. The source (cathode) and drain (plate) resistors were likewise varied and the best values are shown. You're welcome to try your hand at improving it.

The etched circuit board shown in Figs. 2 and 3 may be used for constructing the converter. The coil forms I used were Cambion SPC-1, 3/16" diameter and 3/4" high.

It only took two evenings to lay out the circuit and etch the board, and assemble the converter. When I tried it out, I was pleasantly surprised at its excellent performance. It outperforms my other transistor converter and can't seem to be overloaded.

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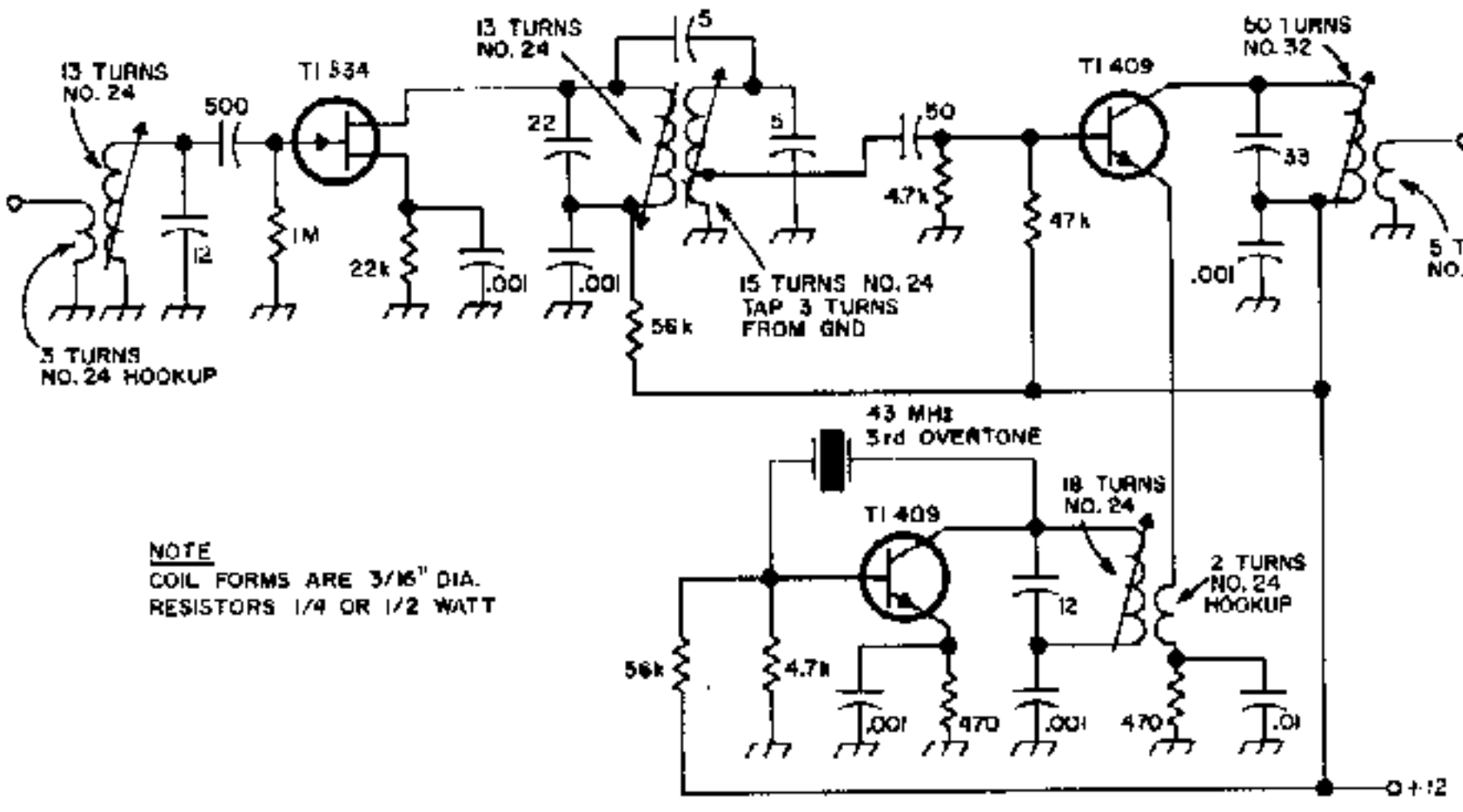

Fig. 1. Schematic of the simple six meter converter with an FET rf amplifier. A suggested etched circuit board is shown in Fig. 2.

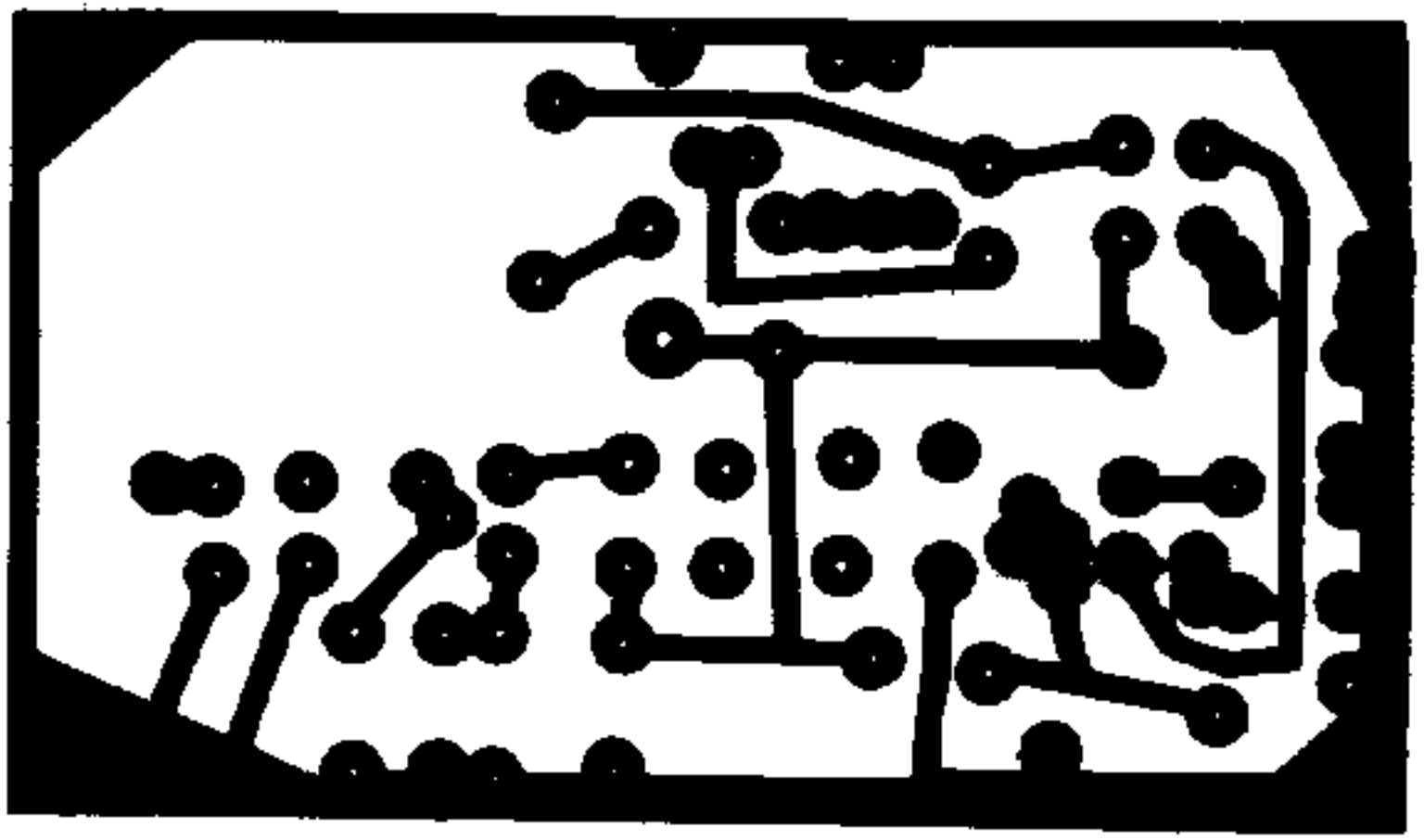

Fig. 2. Copper foil side of the etched circuit board for the six meter converter. The board is available for $1 from the Harris Co., 56 E. Main Street, Torrington, Conn.

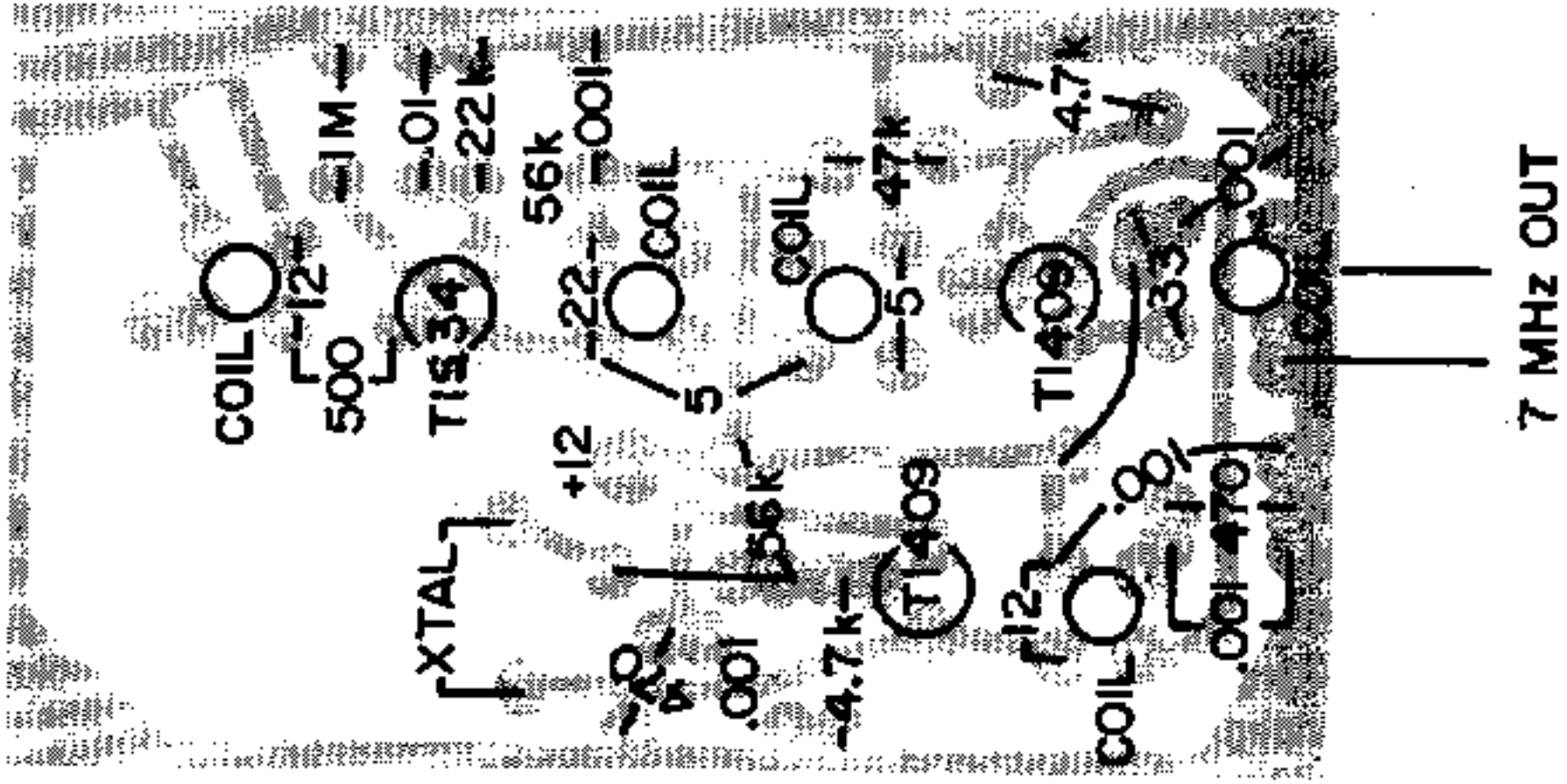

Fig. 3. Component side of the etched circuit board. The coil forms are standard etched circuit types.