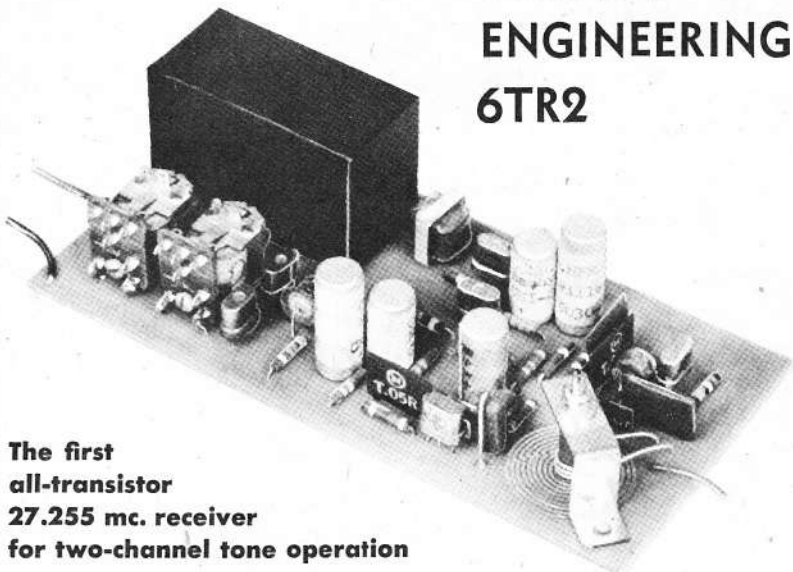


THOMAS ENGINEERING 6TR2



**The first
all-transistor
27.255 mc. receiver
for two-channel tone operation**

● Transistors are paving the way to new pinnacles of electronic achievement. Crash-proof portable radios, tiny electronic devices for guided missiles, and compact consoles for automation controls have been made possible through the use of these tiny semiconductors. The most recent development in the field of transistor application is the new Thomas Engineering 6TR2—an all transistor receiver for models.

What are the advantages of transistors? The first thing that comes to mind is battery saving, since the A battery supply can be eliminated. In addition to this bounty, the B battery supply can also be reduced because of the low drain characteristics of transistor circuits. The 6TR2 uses only one 22½ v. B battery making installation in a model simpler and more convenient.

Six transistors are used in this circuit. It should be pointed out that this is not the usual "transistorized" receiver which we are accustomed to seeing on the flying field. There are no tubes at all in the 6TR2. Current drain is 4 milliamperes with signal off and the receiver rises another 4 mils when one of the two available channels is operated. The relays are adjusted to pull in at 1 mil., providing a safety factor of 3-1. Operation of this receiver is possible until the B battery voltage drops to about 15v.

Shock resistance provides the second desirable factor, for model planes, in particular, are prone to the misfortune of crashing. It is acknowledged that transistors excel in this field far beyond the possibilities of tubes. Bouncing transistors off the walls and then using them in receivers is one way to prove their worth—and a way to prove the worth of tubes. Some reports indicate that transistors can withstand up to 20,000 G's.

The crash resistance of the 6TR2 is further fortified through the use of

high-quality potted components and an epoxy glass receiver base. Both of these innovations provide for the abusive handling which the receiver might receive in a plane—we might also add boats for some of these craft pile into the shore a high speed at times. The epoxy glass base includes an etched circuit complete with a tank circuit.

The tank circuit is factory tuned to operate on the 27.255 mc. Citizens Radio Band and can be adjusted over a range of 1 megacycle. According to Thomas Engineering, the receiver is designed to operate over a range of 20 to 50 megacycles.

Use of transistors also provides the advantage of long life. Vacuum tubes have an expected life of 100-500 hours and gas tubes considerably less. Transistors have a life expectancy of some 75,000 hours according to reports received.

The total weight of the receiver, which includes all components plus the tone-filter block and two relays. Weight is 7 ounces with battery. Note that the installation possible with this receiver is light-weight because of the elimination of the heavy battery component necessary with most other units. Lighter weight might possibly be achieved through the use of a reed bank to sort out the two tone channels but this would bring about the necessity of tuning the reeds. Electronic filtering eliminates this need, making for easier adjustment and installation. In addition, the filter block is a rugged sealed unit, made to take abusive handling.

The size is well within reason and suited to installation in almost all R/C ships. Dimensions of the base are 2-¾" x 5-¼" x 1-¼". Wiring is simplified and the receiver is supplied with three leads. Two attach to the B battery and the other is for the antenna. The only other connections are those which must be made to the relays.

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The maker, THOMAS ENGINEERING INC. (Los Angeles, Calif.) is also planning production of other all-transistor equipment. Plans are under way for a three-channel receiver and a three-channel transmitter.

Tone frequencies of 720 cycles and 1620 cycles are provided so that on-the-market transmitters may be used with the 6TR2. The effect of noise pulses is controlled through the use of an automatic-volume-control circuit to provide greater stabilization.

Price of the Model 6TR2, ready to use, less battery, is \$69.95. The price includes relays.

Modellers who are just planning to enter the field of multi-channel should find this an excellent rig to start with. Its functional simplicity is most important for it eliminates adjusting and tinkering which consumes considerable time on the ground.

Though any type of actuator will work with this equipment, as is true of most other types, we suggest the use of servo motors to get maximum multi-channel benefits.

Hooking up the servos is very simple. The relay contact connections are easily accessible and wires from them to the servos and batteries are simple to connect. A switch can be wired into each of the servo circuits so that they may be closed off at will. We suggest that each servo be supplied with its own battery complement to prevent excessive drain or cross-circuitry.

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