



PARTS PROFILES

By DON LANCASTER

COMPONENTS OF THE MONTH

"PARTS PROFILES" IS INTENDED TO PROVIDE YOU WITH EXCITING INFORMATION ABOUT UNUSUAL OR LITTLE KNOWN ELECTRONIC COMPONENTS AND DEVICES THAT ARE INEXPENSIVE, INTERESTING, AND USEFUL. THESE PRODUCTS WILL USUALLY ENABLE YOU TO BUILD MORE INTERESTING PROJECTS AT LESS COST, IN LESS TIME, AND WITH IMPROVED PERFORMANCE. ALL ITEMS COVERED ARE AVAILABLE NATIONALLY OR FROM AT LEAST ONE RELIABLE SOURCE OF SUPPLY.
—THE EDITORS

CERAMIC FILTERS REPLACE I.F.'S



Is an i.f. transformer a *must* in every superhet receiver? Not any more. You can now use a new resonant mechanical filter by Clevite that tunes automatically to the 455-kc. i.f. in any transistor radio. It comes in two series (TO-01 and TO-02).

"Transfilters," as they are called, are tiny ceramic devices no bigger than your thumbnail, and they *never need alignment*. Features include: low cost (\$1.70 each); small size ($\frac{3}{4}$ " x $\frac{5}{8}$ " x $\frac{3}{16}$ ", maximum); low insertion loss (less than 3 db); wide bandwidths (4 to 10 kc.); and availability of all standard input and output impedances.

The same manufacturer has also put out a resonant trap (TF-01) that can be used in place of the conventional emitter bypass capacitor in transistor circuits to increase the i.f. selectivity. Figure 1 shows typical frequency response of a transfiltered i.f. stage in which both TO and TF transfilters are used. For a typical transistor i.f. circuit using the transfilters, refer to Fig. 2.

But transfilters are not limited to i.f. circuits; they have other applications. You can use one to make a test oscillator if you don't own a signal generator, or would like to have another signal source. Figure 3 shows a simple oscillator employing the TO-01 unit. This oscillator can be assembled and put into a pocket flashlight case, complete with penlight batteries, and can be used for signal injection or other test purposes.

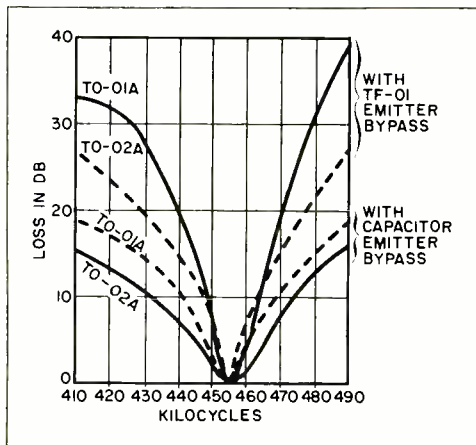


Fig. 1. Typical relative frequency response of transfiltered receiver i.f. stage. Note attenuation when Clevite TF-01 replaces emitter bypass capacitor.

You can get data sheets and application notes direct from the manufacturer, Clevite Electronic Components, 232 Forbes Rd., Bedford, Ohio. The retail outlet is Semiconductor Specialists, Inc., 5700 West North Avenue, Chicago, Ill. The TO types retail at \$1.70 each, and the TF at \$1.50.

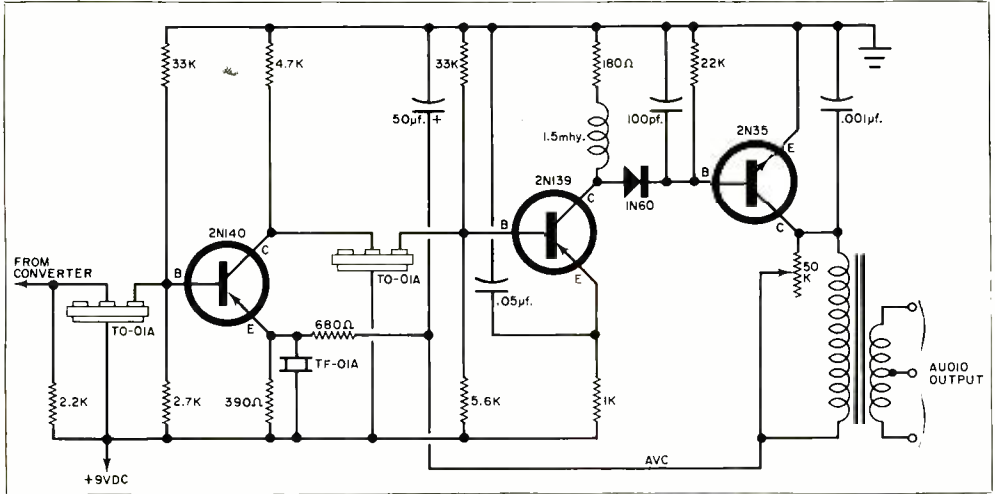


Fig. 2. This transistorized circuit uses transfilters in place of conventional i.f. transformers. Insertion loss is less than 3 db, and bandwidths of from 4 to 10 kc. provide a selective or high-quality i.f.

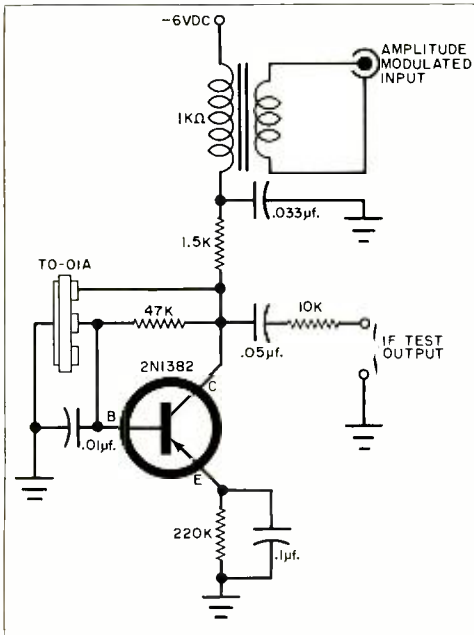
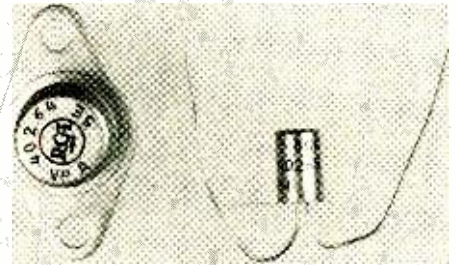


Fig. 3. Test oscillator using a TO-01 transistor and a single transistor. The unit can be built and housed in a small pocket flashlight case, complete with penlight batteries and all, at a very low cost.



knell for the vacuum tube in circuits commonly used by the experimenter or hobbyist.

With these semiconductors, you don't waste the 13 watts of heater power that vacuum tubes consume, and which does nothing more than heat up the inside of your radio, phonograph, or what have you, and cook the life out of your capacitors and other components. What's more, the silicon units cost less than the tubes.

We are not saying that these semiconductors are precisely interchangeable with their tube counterparts. What we are saying is that they will perform every circuit function that the tubes will, and at the same voltage levels. RCA plans to use these two semiconductors (plus three more you'll learn about when you write for data sheets) as the basis for a line-operated all-solid-state AM radio, as well as in other consumer items.

Let's take a look at the 40265 rectifier first. When working with this baby, remember that you are playing with an a.c.-d.c. circuit
(Continued on page 116)

NEW SEMICONDUCTORS REPLACE TUBES

Here, at last, are the long-awaited equivalents of the popular 35W4 rectifier and the 50C5 power amplifier vacuum tubes: the new RCA 40265 silicon rectifier and 40264 silicon transistor. With this double-barreled bombshell, RCA has tolled the death

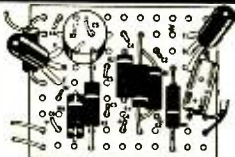
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(Continued from page 77)

connected directly across the power line, so don't take chances. You *must* use a polarized plug or a nonmetallic case. Input and output connections that could be touched accidentally must be transformer-coupled, unless you are using a power isolation transformer. A low-cost 25-watt unit will more than suffice since filament power is no longer needed.

Figure 4 shows a line-operated half-wave power supply that provides a no-load d.c. output of about 165 volts. Resistor *R1* is a limiting resistor that also takes care of current surges. You can use this supply as a direct replacement in any tube or selenium rectifier circuit that calls for approximately 150 volts at not more than 150 mils. The 40265 makes a dandy power supply for experiments with neon lamps.

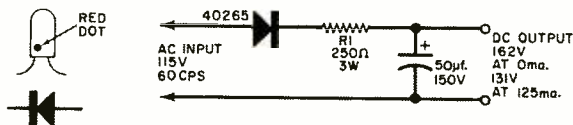


Fig. 4. Low-cost, line-operated, half-wave power supply using RCA 40265 400-volt, 125-ma. silicon rectifier, semiconductor equivalent of 35W4 tube.

Now let's give the 40264 the once-over. This job needs a heat sink because of its high power rating (4 watts, 300 volts). The heat sink must be insulated, or you will have to use a mica washer and silicone grease between it and the transistor. It's best to use nylon screws for insulation; if you use ordinary hardware, then use nylon bushings for mounting. The thing to remember is that the transistor case is at line potential and must be mounted where it cannot be touched accidentally.

Figure 5 shows the 40264 in a basic two-stage amplifier that can serve as a phonograph amplifier or be used in the audio output stage of an AM receiver. At 1/2-watt output, the distortion is only 2%. If you don't mind 10% distortion, then you can crank it up to a full one watt of power.

The frequency response, which can be quite good, is determined by the quality of the output transformer you use. The amplifier will put out 600 milliwatts with an input of around 1/2 volt into 50,000 ohms. This is usually adequate for most inputs except magnetic pickups and other extremely low-level sources.

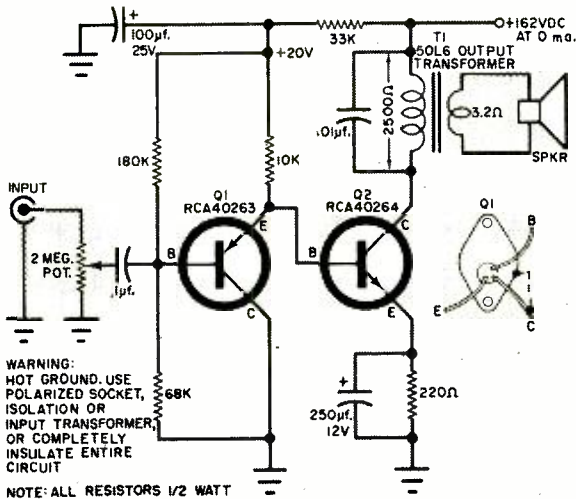


Fig. 5. Basic line-operated solid-state amplifier delivering up to one watt of audio power at 10% distortion; at one-half watt distortion is only 2%. Frequency response is a function of the quality of the output transformer used, but is usually good.

A data sheet, No. ICE-313, on RCA solid-state devices 40261 through 40265, is available on request from: Radio Corporation of America, Electronic Components and Devices, Harrison, N.J. The RCA 40264 power transistor and 40265 rectifier are priced, respectively, at \$1.20 and 35 cents, and are available from RCA semiconductor distributors.

AMATEUR RADIO

(Continued from page 94)

dots and dashes (half of them dashes). When spoken, "XYL" contains three syllables; "wife" contains one. Furthermore, Elsie complains, being called an "ex" young lady casts aspersions on her state of preservation, and is an insult to her intelligence and to the skill of her beauty operator. Elsie realizes, by the way, that she is fighting a lost cause.

As reported in the June 15 issue of the *DX-pedition of the Month Bulletin*, John H. Gayer, HB9AEQ, honorary president of the International Amateur Radio Club, Geneva, Switzerland, speaking at the Second SSB Banquet in London, England, related that one of the problems plaguing amateur radio was unauthorized commercial intruders moving into the ham bands at hours



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