

Erratum

• The projects in *Modern Electronics* and other electronics magazines have helped my fellow students and me win prizes in our industrial arts shows. But out of all the magazines dealing with electronics, I find yours to be the *best!* Thank you. Incidentally, I spotted a slight error in the schematic of "The (Car) Thief Chaser" in the October 1986 issue. Pins 1 and 3 of the 555 timer should be transposed.

John Hiett
Flagstaff, AZ

Connections to pins 1 and 3 should indeed be transposed.—Ed

Authors' Updates

• My "\$20 Drum Synthesizer" that appeared in the January 1987 issue looks good. Since a reader telephoned me to ask about a source for the SN76477 chip used in the project, I figured other readers might be experiencing difficulties. If any are, I suggest they try Anchor Electronics, 2040 Walsh Ave., Santa Clara, CA 95050 or Jameco Electronics, 1355

Shoreway Rd., Belmont, CA 94002. Anchor's price is \$3.82 and Jameco's price is \$5.95 each. Both companies carry the other semiconductors used in the project, so there should be no problem with the minimum-order charge of \$20.00.

This aside, I noted in "How to Design Ultra-Long Delay Timers" in the January 1987 issue that Fig. 7 will not work as shown. To function, pin 7 of IC2 must be grounded. In addition, pins 3 through 6 and 8 through 12 should be grounded to prevent accidental damage to the chip from static discharge.

C.R. Fischer

• Great magazine! However, there are a lot of unanswered questions with regard to the Digital Amplifier featured in the December 1986 issue:

1.) If one were to use an ac power supply, how much current and maximum supply voltage need it supply?

2.) I can see how to modify the input stage for home use (eliminate C7 and R46), but how much input signal do I need for full output?

3.) Exactly what is the output power from the amplifier at a given frequency, load impedance and distortion?

4.) All the p-channel power MOSFETs I can find prefixed with "IRF" have four digits. Is the IRF953 specified for Q1 and Q3 correct?

Greg Woolard
Antioch, TN

The author replies: Your best bet for an ac-line-operated power supply is to keep the positive and negative supplies to between 32 and 35 volts at 5 amperes or more. The input stage is designed to provide full output with a signal of 5 volts peak, the maximum delivered by most car radios. With the radio at full output, the amplifier will be at a level near clipping. To use the amplifier with a home stereo system, you need a preamplifier. This can be built around the LM381N with good results. Several good circuits are provided in the National Semiconductor data books. The output power

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from each channel is 100 watts into 4 ohms (200 watts total with both channels driven). There is no distortion specification because a normal linear distortion measurement just does not work with an amplifier whose output is a 64-volt peak-to-peak square wave.

One reason the sound produced by the digital amplifier is better than with a linear amplifier is that 64 volts is instantaneously delivered to the speaker's voice coil. Current flowing in an inductor is proportional to time; driving the speaker with a large-excursion square wave forces the voice coil into the desired position, so the circuit does not have to wait for the field to build up when a voltage is applied.

Updates: CR1 through CR4 should be nitrode diode type BYM29—not the BY299 given in the schematic; the correct type number of the p-channel power MOSFET is IRF9530; CR1's cathode goes to the +35-volt supply (as shown for CR3/Q3); all npn transistors are 2N2222 types, and the output inductors should be wound with 21 turns each.

—C. Barry Ward.

• My apologies to readers who have had problems with the program in AC-to-DC (May 1986). The remark in line 1 should read "REM LOAD CURRENT Conversion". The variable VO in line 550 should be V0. The = in the last statement of line 2060 should be >. The statement should read "IF ZX>0 THEN 2060". The program will run faster if an ARCSIN function is substituted for the subroutine beginning A0 = ATN(S0/SQR(1 - S0*S0)).

Duane M. Perkins

• In the September '86 Letters column, a reader wrote about a problem running the "AC to DC Conversion" program (May '86). The author pointed to the ARCSIN routine as the likely culprit. I had similar problems. I found that, indeed, the problem was the ARCSIN routine. After carefully checking that it was input properly, I tested the subroutine separately and found that the results were significantly in error on my C-64. Luckily my C-64 has an ARCTAN function from which the ARCSIN can be derived. After deleting lines 2050 through 2080 and substituting the following lines,

the program worked perfectly!

```
2050 A0 = ATN(S0/SQR(1 - S0*S0))
```

```
2080 RETURN
```

Readers who don't have the ARCTAN function can use the following:

```
2050 AZ = P/4
```

```
2060 SZ = SIN(AZ):IF ABS(S0 - SZ)
```

```
<1E - 5 THEN A0 = AZ:RETURN
```

```
2070 AZ = AZ + (S0 - SZ)/COS(AZ):
```

```
GOTO 2060
```

```
2080 RETURN
```

This successive approximation method slows things down only a little.

Bill English
Orinda, CA

EPROM Burnout

• The "EPROM Programmer for the Commodore 64" in the November 1986 issue had some errors: in the Parts List, D4 should be a 1N4148, and in Fig. 2, pin 18 of IC2 is actually pin 15 and the pin 16 that goes to +5 volts is actually pin 20. The program listing had no errors, making life much easier. Thank you for publishing projects dealing with EPROMs, and keep up the good work!

Brian L. Miller
Johnson City, TN