

Figure 2 (a). The corrected PC board foil pattern for the Programmable Frequency Audio Generator. (b). Parts placement.

Programmable Frequency Audio Generator

Refer to the above article in the January 1993 issue, page 16. The PC board foil pattern shown in Figures 5 & 6 shows U9 as a 8-pin device; it should be a 16-pin device. Figure 2 shows the corrected version of the PC board foil pattern and parts placement.

In addition, author Loyd Redman has some comments and improvements that will help you the circuit up and operating:

It is recommended that you use only a 74LS73 for U7. If you substitute a 7473, the circuit may start operating at a random frequency when power is applied since the 7473

triggers on a positive-going pulse while the 74LS73 triggers on a negative-going pulse. If you do use a 7473, the connections to S1 should be changed so that U7 does not toggle until S1 is activated.

When using the ML2035, its output frequency may initially be half or double the desired frequency specified by the digital word. This indicates that the 16 bits of the digital control word are shifted either one bit right or one bit left. I noted that the pulse directly out of pin 2 of the CD4049 (U9) was poorly shaped, depending on the value of C3, R_t and R_{in}. I remedied the problem by first routing the output from pin 2 through one of the unused inverters in the CD4049, then on to pin 2 of the ML2035 and to pin 14 of the 74LS93 (see Figure 3). I also recommend that you not use the same PC board for both the ML2035 and the ML2036 (i.e. populating the board for both parts but removing one of the ML parts). I used separate boards for each version of the IC and carefully cut any traces not needed.

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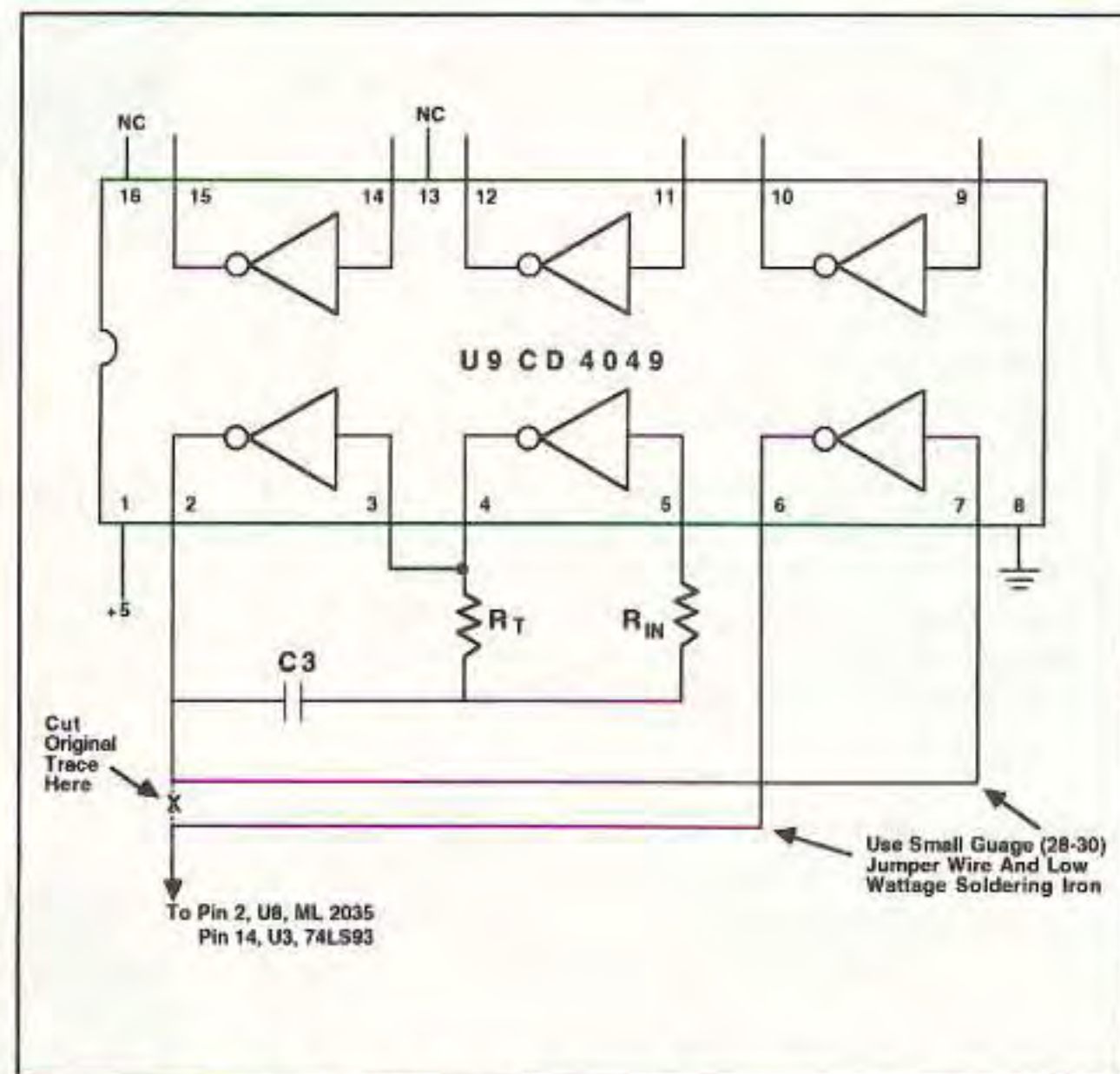


Figure 3. Modification of the U9 connections to provide an improved pulse shape to the serial clock input of the ML2035 and to the CP0 clock input of the 74LS93 counter.