In response to a need for a simple clock source in a digital system using TTL integrated circuits, we have built a 2-MHz square-wave generator with two TTL gates. Inasmuch as we had encountered difficulties in locating such a circuit in the literature, we thought it might be of interest to other readers of Electronic Design.

The circuit is shown in Fig. 1. It consists of two TTL NAND-gates, two resistors, and two capacitors. With the values as shown, it generates a 2-MHz symmetrical square-wave (Fig. 2); changing capacitors $C_1$ and $C_2$ to $0.01 \mu F$ results in a frequency of 500 Hz. For the particular integrated circuits and power supply voltage (5.0 volts), the reliable operating range of $R_1 = R_2$ is $1.5 \text{k}\Omega$ to $2.3 \text{k}\Omega$.

(Submitted as a letter to Electronic Design)

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LIST OF FIGURES

1. 2-MHz square-wave generator.

2. Output waveform of the circuit of Fig. 1. Sweep speed: 0.1 μsec/div; Sensitivity: 1V/div.
Fig. 1
Fig. 2