

FSK transmitter uses gated oscillators

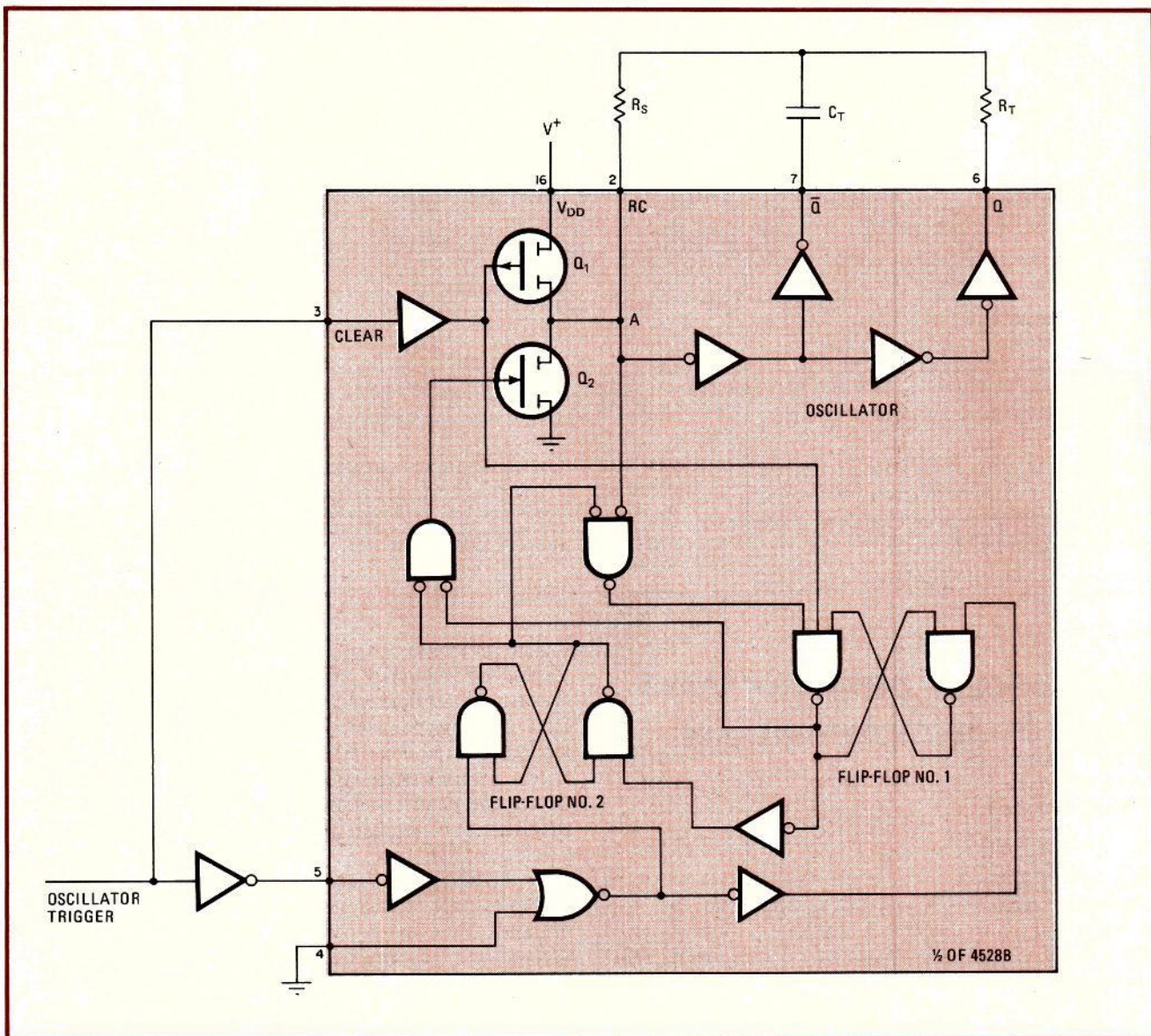
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The 4528B complementary-MOS dual monostable multivibrator can operate as a frequency-shift-keyed (FSK) transmitter. Each half of the chip, shown in Fig. 1, is used here as a gated oscillator and is activated either when a mark or a space frequency is to be transmitted.

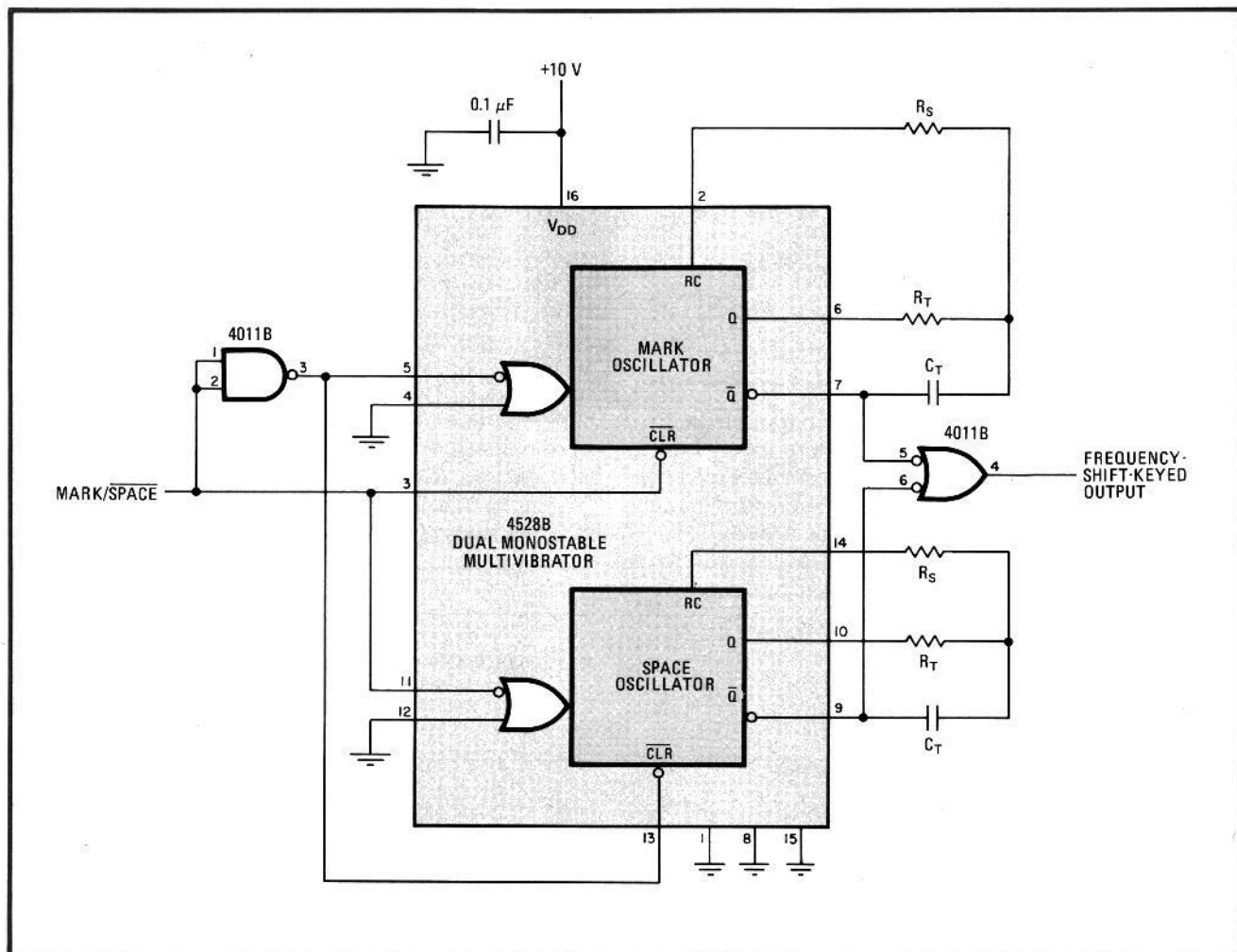
As long as the input signal to the clear input (CLR pin 3) is present, transistor Q_1 is turned on and the oscillator will not oscillate. Once the CLR pin is pulled high, however, Q_1 turns off and the outputs of flip-flops No. 1 and 2 turn low. Transistor Q_2 turns on for an instant, triggering the self-starting oscillator. At the same time flip-flop No. 1 senses that point A, shown in Fig. 1, has gone low and turns Q_2 off.

With Q_1 and Q_2 off, the oscillator runs at a frequency determined by resistor R_T and capacitor C_T and is given by the expression: $F = 1/(2.3 \times R_T \times C_T)$ for 1 kilohertz $\leq F \leq 100$ kHz, where $R_S \approx 2 \times R_T$.

When the CLR input is pulled low, Q_1 turns on and the oscillation stops. The complete FSK transmitter circuit is



1. Shifty. The core of the frequency-shift-keyed transmitter is a gated oscillator, which is controlled by a signal present at the clear (CLR) pin. The full circuit uses two such oscillators—one for a mark and another for a space—contained in a 4528 dual one-shot package.



2. Coupled. A complete frequency-shift-keyed transmitter is formed by coupling the outputs from both monostable multivibrators through a dual-input NAND gate, as shown here. Mark and space frequencies are fixed by R_T and C_T , where $R_S = 2R_T$.

shown in Fig. 2. It is formed by coupling both oscillator outputs. When the mark-to-space control input goes high, the mark oscillator signal appears at the FSK output, and when the same line is low, the space oscilla-

tor signal appears at the FSK output. □

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