

January 1965

Brief 65-10011

NASA TECH BRIEF



NASA Tech Briefs are issued by the Technology Utilization Division to summarize specific technical innovations derived from the space program. Copies are available to the public from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia, 22151.

Circuit Improvement Produces Monostable Multivibrator with Load-Carrying Capability

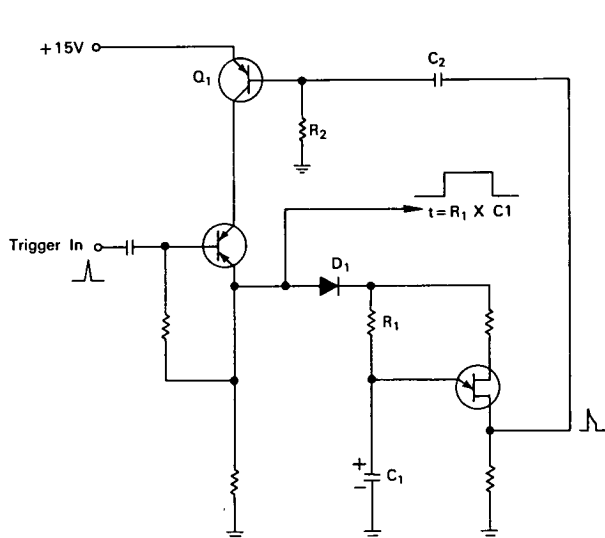


FIGURE 1

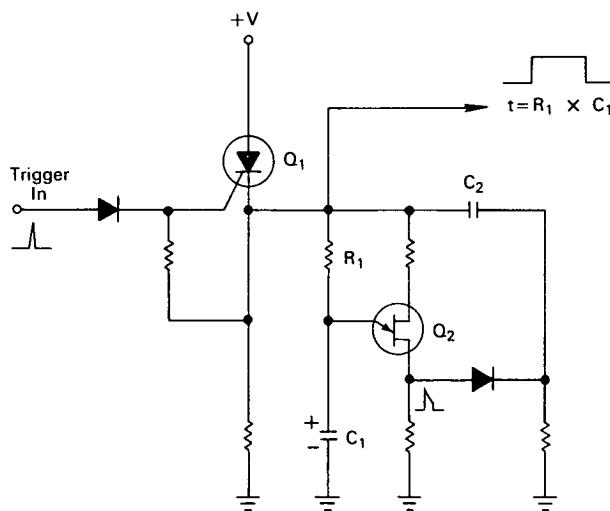


FIGURE 2

The problem: The circuit shown in figure 1 (U.S. Patent No. 3,085,165) is satisfactory for certain applications of light loading. If one is required to drive a heavy load from the cathode of Q_1 , the biasing resistor R_2 must be of such a low value that circuit efficiency in standby would suffer. The reset capacitor C_2 would have to be so large that circuit cutoff by negative transients on the supply bus could occur.

The solution: Improvement of the circuit to provide greater reliability and load-carrying capability.

How it's done: In the circuit shown in figure 2, the reset transistor Q_2 and coupling diode D_1 (of figure 1)

have been eliminated. This circuit is inherently insensitive to both positive and negative transients on the supply bus. It is more efficient when heavily loaded and has essentially zero standby current (the leakage current of Q_1). In this circuit, reset is accomplished by adding the low impedance output from base 1 of Q_2 to the cathode voltage of Q_1 . This effectively back biases Q_1 and reduces the current to a value below its holding current. Coupling capacitor C_1 is large enough for the time constant R (effective load) $\times C_2$ to sufficiently exceed the turn-off time of Q_1 . A resistance at R_1 of 470K ohms and a capacitance at C_1 of 100 microfarads give a time interval of approximately 50 seconds.

(continued overleaf)

Notes:

1. The circuit has driven loads up to 150 ma over a temperature range of -30° to $+80^{\circ}$ C.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland, 20771
Reference: B65-10011

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

Source: Justin C. Schaffert and
Norman E. Goldman
(GSFC-34A)