Hardwire Senderbug

Whenever hardwire becomes the mode of choice, as it does a lot more often than the open literature implies, the ultra-versatile hardwire senderbug (HWS) can meet the most demanding application.

CIRCUIT FUNCTION

Microphone M1 gets its bias through R1. M1 output couples through C1 to the base of Q1, configured as a common-emitter amplifier by R2, R3, and R4. Q1 output couples through C4 to base of Q2, configured as a common-emitter amplifier by R5 and R7, with Q2 collector load consisting of the 10 K winding of T1, shunted by R6. C6 takes the edge off the treble emphasis produced by C3 and C5. The 600-ohm winding of T1, loaded by R8, drives the transmission line.

C2, C7, and R9 decouple the supply.

DETAILS

The board is laid out for ⅛ W resistors and miniature caps. Device will function over the range 1.5 to 15 V. From 1.5 to 10 V, output rises with supply voltage. The prototype (built with 3565s) drew 260 ua at 1.5 V; 440 ua at 3 V; 680 ua at 5 V; 980 ua at 7.5 V; 1.3 ma at 10 V; 2.2 ma at 15 V.

A 1,000 mah 3 V lithium coin cell (e.g., Panasonic CR2477-1HF) should run it for more than three months; a 5,000 mah "C"-size lithium cell should power it for longer than a year.

Further details are discussed in conjunction with the hardwire receiver.

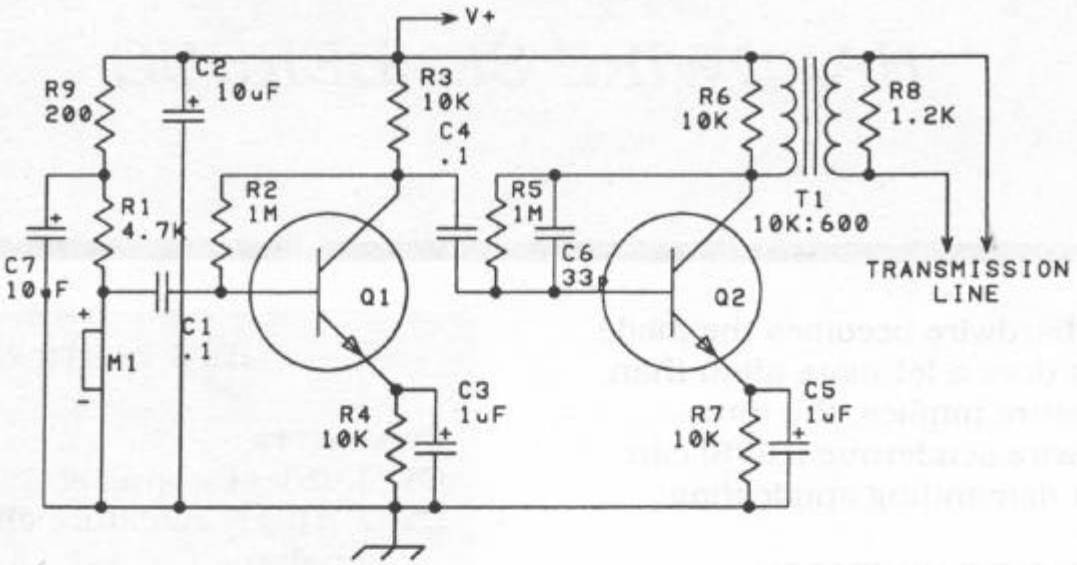
HWS PARTS LIST

Capacitors
C1, 4 0.1 μF coupling
C2, 7 10 μF miniature aluminum or tantalum
C3, 5 1 μF tantalum
C6 33 pF ceramic

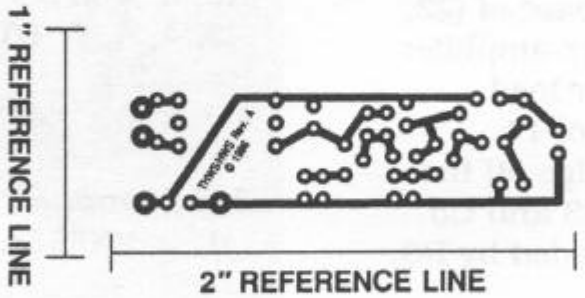
Resistors
R1 4.7 K
R2, 5 1 M
R3, 4, 6, 7 10 K
R8 1.2 K
R9 200

Semiconductors
Q1, 2 2N3565 or 2N3904 NPN transistor

Miscellaneous
M1 Radio Shack 270-090 electret condenser microphone
T1 600:10 K transformer (Mouser p/n 42TL019 or equivalent)
Power supply, printed circuit board, solder, wire, etc.



HWS Circuit Board



HWS Stuffing and Wiring Diagram