

## SIMPLE TRANSISTOR TESTER

While experimenting with electronic circuits, it will often be necessary to rapidly test bipolar transistors and FETs before they are fitted in the circuit, or when they have been removed from the circuit when a malfunction is suspected. More specifically, constructors will need to know whether a transistor of known type and make is sound or not, and also whether an unknown device is a particular type of FET, or a bipolar transistor (PNP or NPN).

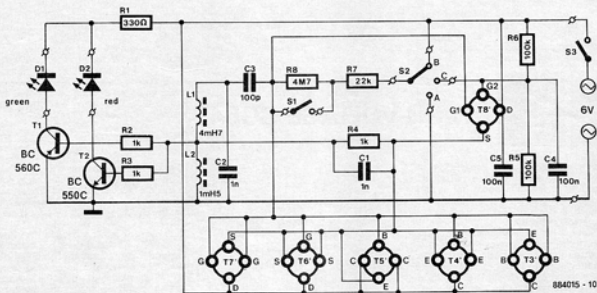
This tester can be built from parts found in the junk-box. When the transistor under test (TUT) is OK and correctly connected, the circuit will oscillate during half the period time of the alternating supply voltage (50 or 60 Hz). Red LED  $D_2$  lights when the TUT is OK and of the NPN type. The function of green LED  $D_1$  is similar for PNP TUTs. The TUT OK/not OK indication is obtained with  $S_2$  set to the centre position, and  $S_1$  opened as shown in the circuit diagram.

The LEDs will indicate that the oscillator amplitude is significantly reduced, or nought, when  $S_1$  is closed with a bipolar TUT mounted. Correctly operating FETs produce oscillation irrespective of the position of  $S_1$ . Only J-FETs and dual-gate MOSFETs produce oscillation when  $S_1$  is set to positions A and C.

The accompanying table should speak for itself. Note that  $S_1$  must be opened and closed after each change in the position of  $S_2$ .

Finally, the tester is preferably fed from a 6 VAC mains adapter.

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#### Parts list

Resistors ( $\pm 5\%$ ):

R1 = 330R  
R2, R3, R4 = 1K0  
R5, R6 = 100K  
R8 = 4M7

Capacitors:

C1, C2 = 1n0  
C3 = 100p  
C4, C5 = 100n

Inductors:

L1 = 4mH7 radial choke, e.g. Toko Type 1B1LY472 (Circuit).  
L2 = 1mH5 radial choke, e.g. Toko Type 1B1LY152 (Circuit).

Semiconductors:

D1 = green LED  
D2 = red LED  
T1 = BC560C  
T2 = BC550C

Miscellaneous:

S1 = miniature SPST switch.  
S2 = 3-way rotary switch.  
6 off 4-pin transistor sockets.  
PCB Type 884051

TUT	SWITCH	S1	S2	B	A	C
BIPOLAR		• ○ ○	• •	○ ○	○ ○	○ ○
J-FET		x	• •			
DG-MOSFET		x	○ •	○ ( $U_{GS} = \frac{1}{2} U_{GS}$ )		• • (g1 to g2)
ENHANCEMENT (MOS) FET		x	• ○			

- = oscillation
- = no oscillation
- x = irrelevant

