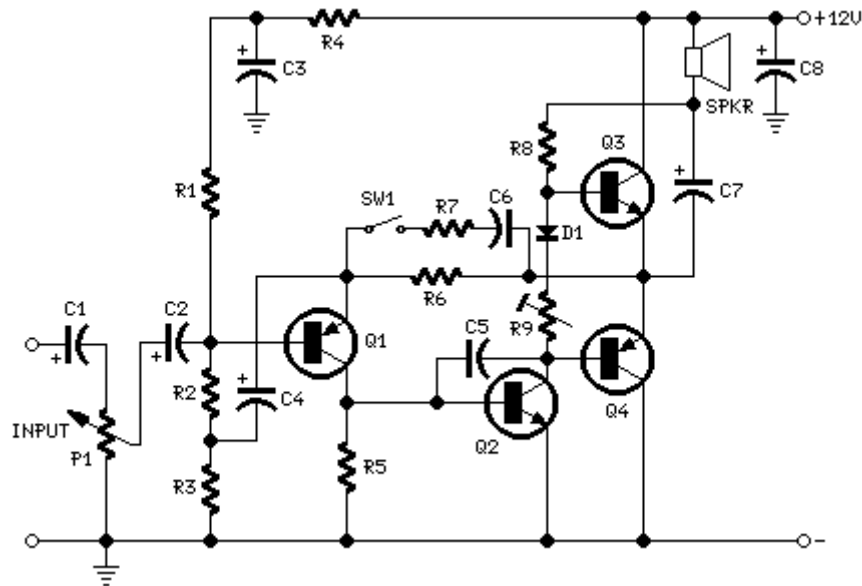


Mini-box 2W Amplifier

Designed for self-powered 8, 4 & 2 Ohm loudspeakers
Bass-boost switch

Circuit diagram:



Parts:

P1_____	10K	Log. Potentiometer
R1,R2_____	33K	1/4W Resistors
R3_____	33R	1/4W Resistor
R4_____	15K	1/4W Resistor
R5,R6_____	1K	1/4W Resistors
R7_____	680R	1/4W Resistor
R8_____	120R	1/2W Resistor
R9_____	100R	1/2W Trimmer Cermet
C1,C2_____	10 μ F	63V Electrolytic Capacitors
C3_____	100 μ F	25V Electrolytic Capacitor
C4,C7_____	470 μ F	25V Electrolytic Capacitors
C5_____	47pF	63V Ceramic Capacitor
C6_____	220nF	63V Polyester Capacitor
C8_____	1000 μ F	25V Electrolytic Capacitor
D1_____	1N4148	75V 150mA Diode

Q1 _____ BC560C 45V 100mA PNP Low noise High gain Transistor
Q2 _____ BC337 45V 800mA NPN Transistor
Q3 _____ TIP31A 60V 4A NPN Transistor
Q4 _____ TIP32A 60V 4A PNP Transistor

SW1 _____ SPST switch

SPKR _____ 3-5 Watt Loudspeaker, 8, 4 or 2 Ohm impedance

Device purpose:

This amplifier was designed to be self-contained in a small loudspeaker box. It can be feed by Walkman, Mini-Disc and CD players, computers and similar devices having line or headphone output. Of course, in most cases you'll have to make two boxes to obtain stereo.

The circuit was deliberately designed using no ICs and in a rather old-fashioned manner in order to obtain good harmonic distortion behaviour and to avoid hard to find components. The amplifier(s) can be conveniently supplied by a 12V wall plug-in transformer. Closing SW1 a bass-boost is provided but, at the same time, volume control must be increased to compensate for power loss at higher frequencies. In use, R9 should be carefully adjusted to provide minimal audible signal cross-over distortion consistent with minimal measured quiescent current consumption; a good compromise is to set the quiescent current at about 10-15 mA.

To measure this current, wire a DC current meter temporarily in series with the collector of Q3.

Technical data:

Output power: 1.5 Watt RMS @ 8 Ohm, 2.5 Watt @ 4 Ohm, 3.5 Watt @ 2 Ohm (1KHz sinewave)

Sensitivity: 100mV input for 1.5W output @ 8 Ohm

Frequency response: 30Hz to 20KHz -1dB

Total harmonic distortion @ 1KHz & 10KHz: Below 0.2% @ 8 Ohm 1W, below 0.3% @ 4 Ohm 2W, below 0.5% @ 2 Ohm 2W.
