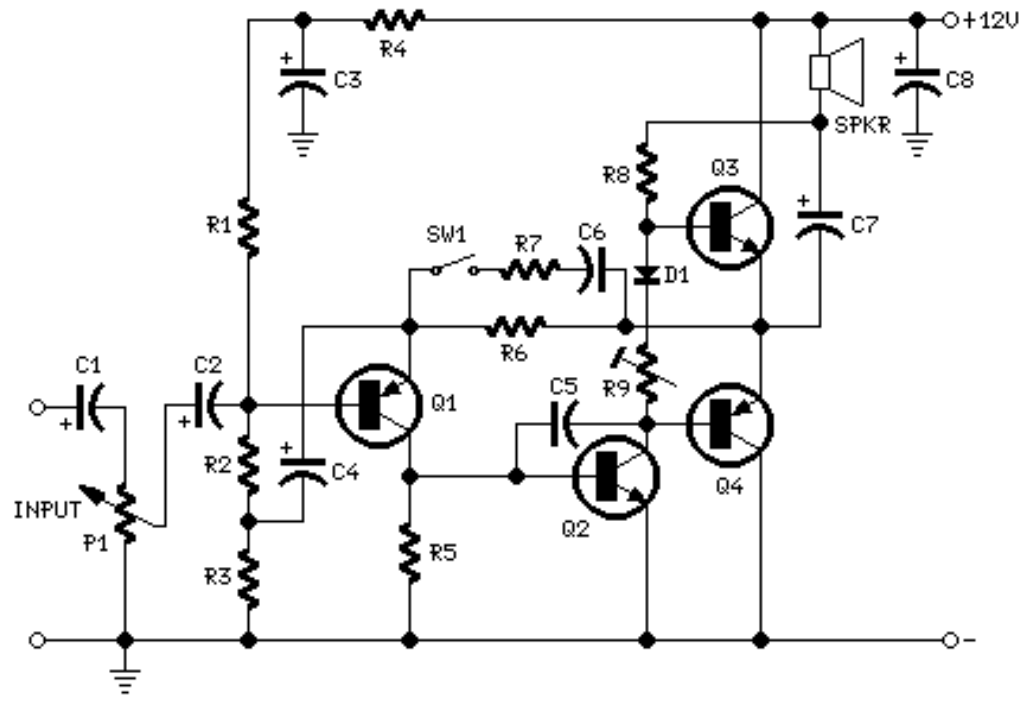


Mini-box 2W Amplifier

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 _____ 10µF 63V Electrolytic Capacitors

C3 _____ 100µF 25V Electrolytic Capacitor

C4,C7 _____ 470µF 25V Electrolytic Capacitors

C5 _____ 47pF 63V Ceramic Capacitor

C6 _____ 220nF 63V Polyester Capacitor

C8 _____ 1000µF 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.