

Boost the output of your portable radio-cassette

THIS AMPLIFIER was primarily designed for use as a booster to enable output powers of around 4 to 5 watts RMS to be obtained from a radio/cassette unit. Using a portable radio or cassette unit as a signal source will not provide hi-fi results, but using this set-up in conjunction with a speaker of reasonable quality and efficiency gives quite good results at low cost.

Of course, the amplifier is also suitable for other applications. It has an input sensitivity of approximately 350 mV rms into 10k for maximum output, and an output intended to feed an 8 ohm load.

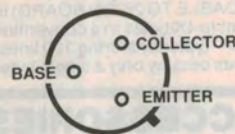
The circuit uses a well-known configuration which has common emitter input stage (Q1) direct coupled to a common emitter drive stage (Q2), which is in turn direct coupled to the complementary emitter follower output stage (Q3-Q4). R7 provides virtually 100% negative feedback at dc, giving the circuit approximately unity voltage gain at dc. R1, R2 and R4 form a potential divider which biases the input of the amplifier to about half the supply

potential. The output is also biased to about this level due to the dc unity gain. This bias level gives the optimum unclipped output voltage swing. R1 and C2 filter out any hum or noise which might otherwise be coupled from the supply lines to the input via the bias circuit. R6 and C5 are used to decouple some of the feedback at audio frequencies, and thus give the unit a useful voltage gain at these frequencies.

D1 is used to give a small standing bias to the output transistors, and together with the fairly substantial amount of negative feedback used, reduces crossover distortion to an unnoticeable level. The emitter follower output stage gives the circuit a low output impedance so that the low impedance load can be efficiently driven with the high output currents involved

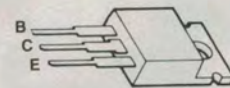
here. Q3 drives the speaker during positive-going output excursions while Q4 drives the speaker during the negative output excursions. C6 provides dc blocking at the output, and C3 provides the same function at the input. R1 and C4 aid the stability of the circuit. RV1 is a volume control, and in the amplifier's intended application, results will probably be best if the volume control on the cassette radio is set for a fairly high output (but not so high as to cause clipping), and the volume is adjusted using RV1.

The circuit requires a stabilised supply of about 18 to 22 volts that is capable of providing up to 400 mA. Q2 should be fitted with a clip-on TO5-size heatsink. Q3 and Q4 are both fitted with commercially made, finned, bolt-on heatsinks.



BOTTOM VIEW.

BFY51, BC179



TIP41, TIP42

