

SPY EAR

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What binoculars do to improve your vision, this personal sound enhancer circuit does for listening. This lightweight gadget produces an adjustable gain on sounds picked up from the built-in high-sensitivity condenser microphone. So you can hear what you have been missing. With a 6V (4×1.5V) battery, it produces good results.

As shown in Fig. 1, a small signal amplifier is built around transistor BC547 (T1). Transistor T1 and the relat-



ed components amplify the sound signals picked up by the condenser microphone (MIC). The amplified signal from the preamplifier stage is fed to input pin 3 of IC LM386N (IC1) through capacitor C2 (100nF) and volume control VR1 (10-kilo-ohm log). A decoupling network comprising resistor R5 and capacitor C3 provides the preamplifier block with a clean supply voltage.

Audio amplifier IC LM386N (IC1)

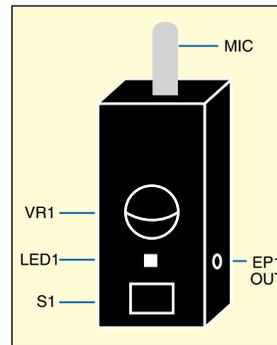


Fig. 2: Compact unit of spy ear

is designed for operation with power supplies in the 4-15V DC range. It is housed in a standard 8-pin DIL package, consumes very small quiescent current and is ideal for battery-powered portable applications.

The processed output signal from capacitor C2 goes to one end of volume control VR1.

The wiper is taken to pin 3 of LM386N audio output amplifier. Note that the R6-C4 network is used to RF-decouple positive-supply pin 6 and R8-C7 is an optional Zobel network that ensures high frequency stability when feeding an inductive headphone load.

Capacitor C6 (22µF, 16V) wired between pin 7 and ground gives additional ripple rejection. The output of LM386N power amplifier can safely drive a standard 32-ohm monophonic headphone/earphone.

Assemble the circuit on a small general-purpose PCB and house in a suitable metallic enclosure with an integrated battery holder and headphone/earphone socket as shown in Fig. 2. Fit the on/off switch (S1), volume control (VR1) and power indicator (LED1) on the enclosure. Finally, fit the condenser microphone (MIC) on the front side of the enclosure and link it to the input of the preamplifier via a short length of the shielded wire. ●

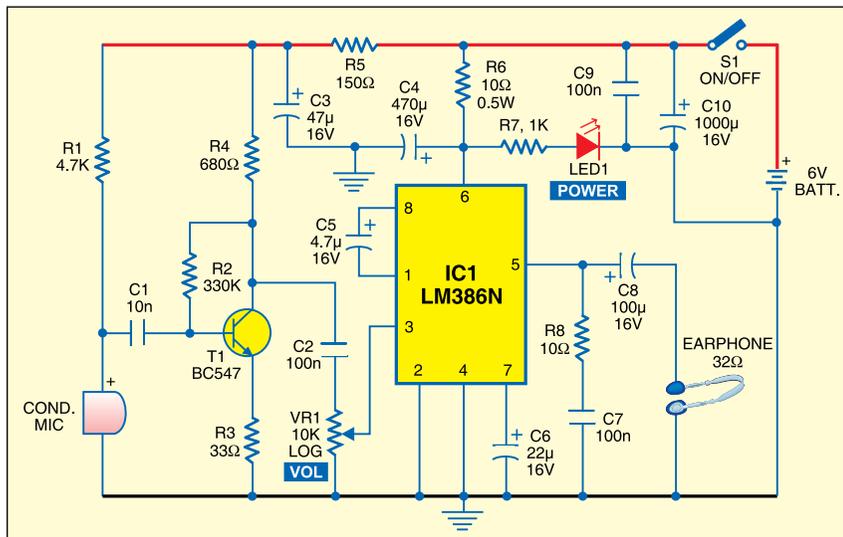


Fig. 1: Circuit for spy ear