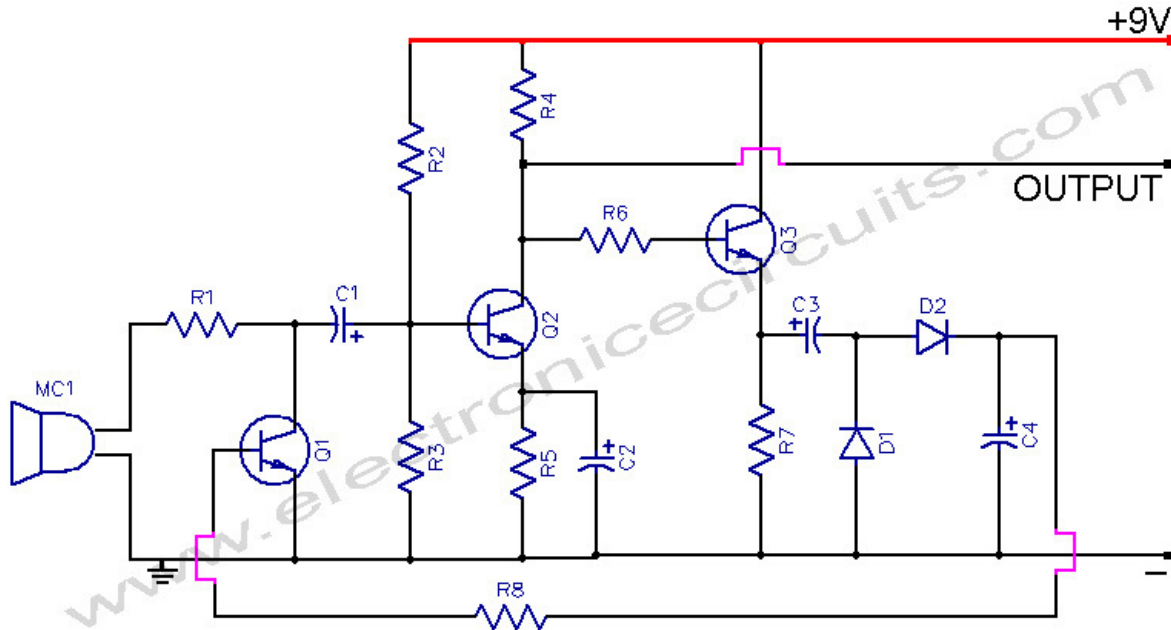


## Automatic Gain Control Microphone PreAmp

This microphone preamplifier incorporates automatic gain control, which keeps the output level fairly constant over a wide range of input levels. The circuit is especially suitable for driving the modulator of a radio transmitter and allows a high average modulation index to be achieved. It may also be used in P.A. systems and intercoms to provide greater intelligibility and compensate for variations between speakers (the users of those devices).



### PARTS LIST

R1	15k $\Omega$
R2	100k $\Omega$
R3	27k $\Omega$
R4	2.2k $\Omega$
R5	1k $\Omega$
R6	10k $\Omega$
R7	680 $\Omega$
R8	2.2k $\Omega$
C1	10 $\mu$ F 16V
C2	47 $\mu$ F 16V
C3	47 $\mu$ F 16V
C4	47 $\mu$ F 16V
D1	1n4148
D2	1n4148
Q1	BC108
Q2	BC108
Q3	BC108
MC1	<5K $\Omega$ Microphone

The actual signal amplifier stage is Q2, which operates in common emitter mode, the output signal being taken from its collector. A portion of the output signal is fed through emitter follower Q3 to a peak-to-peak rectifier comprising D1/D2 and C4. The voltage on C4 is used to control the base current of Q1, which forms part of the input attenuator. At low signal levels the voltage on C4 is small and Q1 draws little current. As the input signal level increases the voltage on C4 rises and Q1 turns on more, thus attenuating the input signal. The net result is that as the input signal increases it is subject to a greater and greater degree of attenuation and the output signal therefore remains fairly constant for a wide range of input levels. The circuit is suitable for signals with a peak input level up to 1 volt. The microphone may be replaced by a small loud-speaker for intercom use.