



ELECTROMECHANICAL TRANSDUCERS: GENERAL OVERVIEW AND DRIVING CIRCUITS

Functional Description

The diaphragm is magnetically pulled towards the core due to the magnet. When AC signal is applied, the current flowing through the coil produces fluctuating magnetic field which causes the diaphragm to vibrate, thus, producing a sound. The frequency of the sound produced is the same as the frequency of the AC signal. The electromechanical audio indicators (AI) have built-in electronic oscillators and wave shaping networks to provide siren, pulsating or continuous tone sound output when a DC voltage is applied. Like the piezoceramic audio transducers (AT), electromechanical AT require an AC signal of frequency equal to the device's resonant frequency in order to operate optimally.

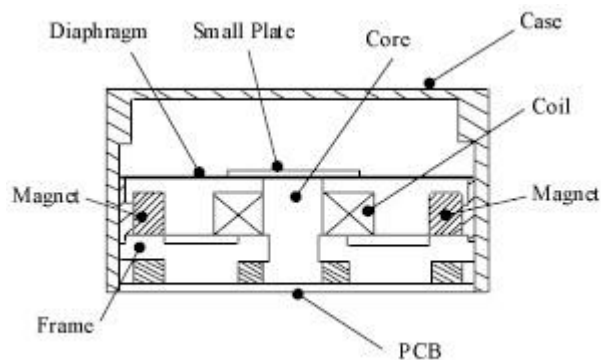


Figure 1

Driver Circuits For Electromagnetic Transducers

As mentioned above, electromechanical audio indicators only require a DC voltage supply to turn the device on. Audio transducers, on the other hand, require driver circuits to operate. Figure 2 has some examples of basic circuits that will be sufficient for electromechanical AT.

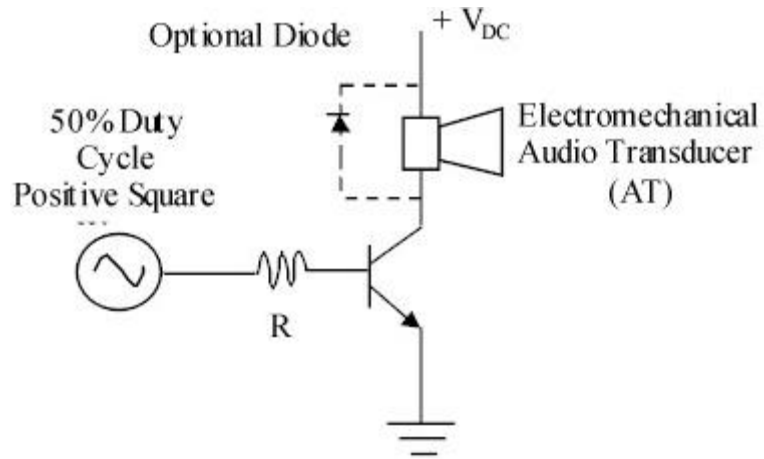


Figure 2-a

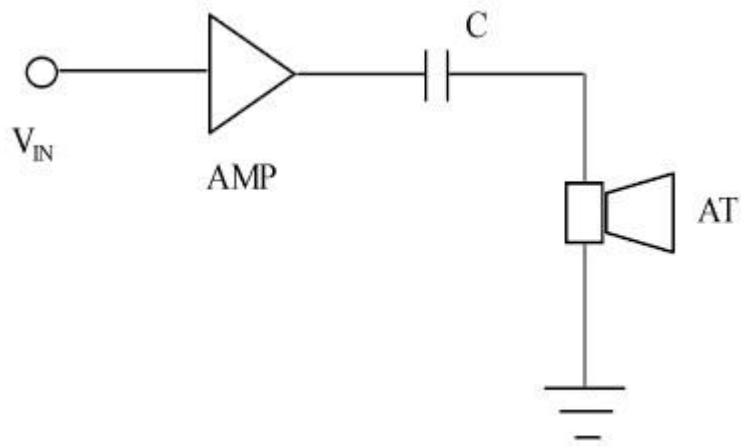


Figure 2-b

The capacitor, in Figure 2B, will remove any DC component and couple the AC output from the driver. In order to limit power dissipation in the capacitor, the capacitor must be sized so that its series reactance at 500 Hz is approximately 10% of the resistance of the electromechanical device. In addition, power audio amplifiers can also be used to drive the electromechanical transducers.

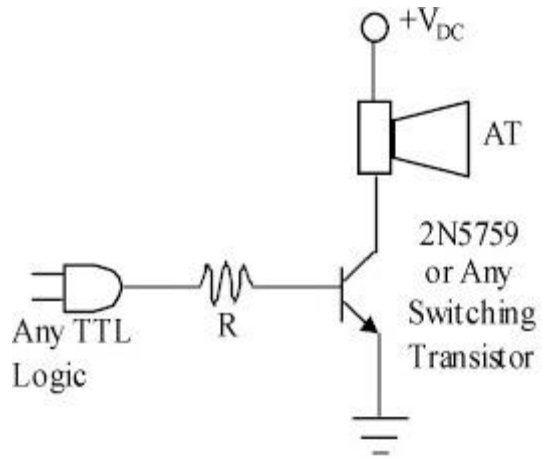


Figure 2-c

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