Circuit Diagrams and Specification for Hearing Aids
1898: The first electric hearing aid invented.

1913: First mass-produced hearing aid.

1920s: Production of the vacuum-tube hearing aid, which turned speech into electrical signals that were then amplified.

1948: Transistors replaced the vacuum tubes, making the models smaller, with a greater battery life, and becoming less distorted.

1970s: The creation of the microprocessor and multi-channel amplitude compression started a new wave in the world of hearing aid.

1990s: The first completely digital hearing aid.

2010s: A Bluetooth hearing introduced and now is being implemented into various different hearing aid devices.
HEARING AID SYSTEM AND DESIGN

POWER SUPPLY: Designing a hearing aid consists of a small power supply. A 3V DC battery is a great portable power supply that can be used to power the circuit.

INPUT TRANSDUCER: A transducer converts energy from one form to another, often used in hearing aids as a condenser type microphone.

PRE-AMPLIFIER DESIGN: This stage amplifies the input sound from the microphone.

COUPLING CAPACITORS: Used to block any DC components in the input and outputs of the pre-amplifier to prevent upsetting the DC bias of the pre-amplifier.

MEDIUM POWER AMPLIFIER STAGE: Amplifies the output and pre-amplifier stage to an audible level.

RC DECOUPLING UNIT: Used to smooth out the noise.

Source: Design and Construction of Hearing Aid Device
NOTE: Hearing aids are usually composed of at least two amplifying stages, a preamplifier stage and output stage.

COMMON CLASSES FOR HEARING AIDS:

- **CLASS A**: Current is in constant flow, with low distortion, and used in the pre-amplification stage of hearing aids.
- **CLASS B**: Current flows about half the time, with a higher output level, and is more efficient with energy use, but has higher levels of distortion than Class A.
- **CLASS D**: Unlike the analog approach, Class D amplifiers use pulse and switching technology; step between analog and digital signal processing; high efficiency with the switching transistors.