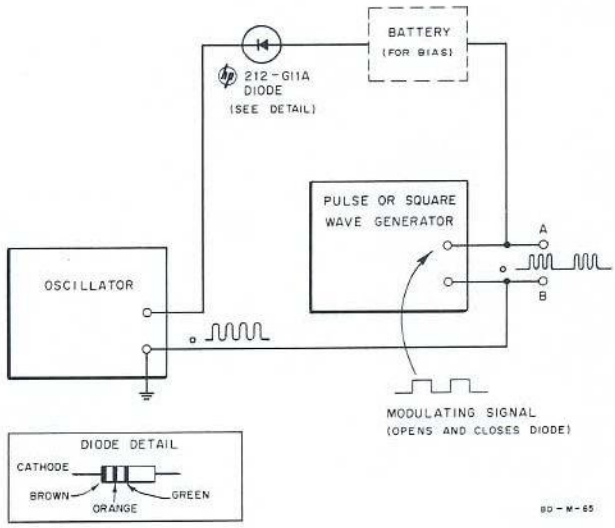
PULSE MODULATION OF AUDIO OSCILLATORS

A convenient method for pulse modulating oscillators is shown below. Very little external equipment is required. Briefly, the method employs a diode in the oscillator output which is biased on and off from a Pulse or Square Wave Generator.



DESCRIPTION

A positive pulse from the Pulse or Square Wave Generator closes the 212-G11A diode, so that the oscillator delivers its output to the output terminals AB. Then, the square wave or pulse goes negative and opens the diode to cause an open circuit so that the audio oscillator output is not delivered to terminals AB. Thus, the audio oscillator output appears at AB during the positive duration of the pulse or square wave.

OPERATION

Typical Pulse or Square Wave Generators are:

- Model 202A Function Generator
- Model 211A Square Wave Generator
- Model 212A Pulse Generator
- Model 218A Digital Delay Generator

Typical Audio Oscillators are:

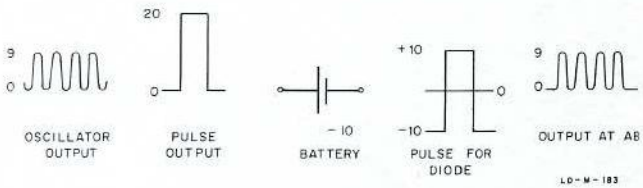
- Model 200AB Audio Oscillator
- Model 200CD Wide Range Oscillator
- Model 207A Audio Sweep Oscillator
- Model 650A Test Oscillator

Important considerations are:

1) The oscillator frequency and the pulse width should be adjusted so that several oscillator cycles occur during one pulse. For example, at 5 cps, each cycle requires 0.2 sec or 200 ms. Thus for six audio output cycles a 1.2 second pulse is necessary.

2) The sine wave amplitude should be less than the zero-to-peak pulse amplitude to prevent sine wave clipping.

3) The pulse should go above and below zero volts to open and close the diode properly. When a single-ended output pulse which starts at zero and goes either positive or negative is used, it can be balanced around zero volts by using a battery as shown by dotted lines in the diagram. Battery polarity and amplitude will depend on the amplitude and polarity of the output pulse. For example:

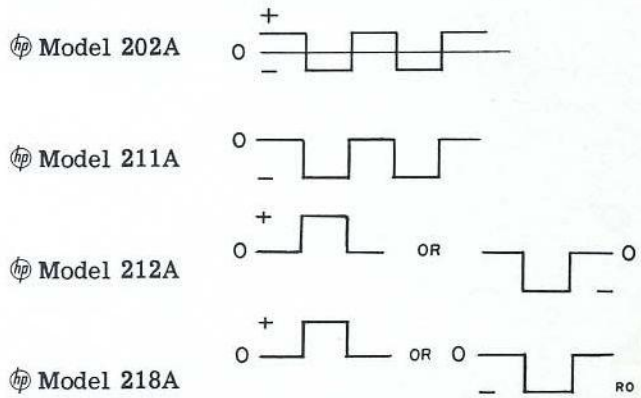


A capacitor instead of a battery is not desirable because of two opposite requirements:

1) A large capacitor to keep its reactance to the lower audio frequencies small.

2) A small capacitor to maintain good pulse rise time for positive diode operation.

As a guide to diode operation here are output configurations for typical generators.



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