



Answer Key Switching Amplifiers: Class D Switching Amplifiers

Objectives:

1. Describe the classifications of amplifiers.
 2. Differentiate between classes of amplifiers.
 3. Describe amplifier performance in terms of gain, frequency response, the power output, efficiency, and the total harmonic distortion.
 4. Describe the effects of harmonic distortion related to amplifier types.
 5. Describe the types of switching amplifiers.
 6. Describe how PWM is used in switching amplifiers.
 7. Explain switching amplifier operation at the component level.
 8. Evaluate the advantages and disadvantages of switching amplifiers.
 9. Identify applications of switching amplifiers.
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1. Class S amplifiers are also known as class ____ amplifiers.
 - . A
 - . B
 - . C
 - . D
 2. Pulse width modulation (PWM) is generated by comparing the audio or other signal to be amplified to a
 - . Pulse
 - . Sine wave
 - . Square wave
 - . Triangle wave
 3. When using a class D amplifier, the original audio signal may be recovered by passing the PWM signal through a
 - . A to D converter
 - . Band pass filter
 - . High pass filter
 - . Low pass filter
 4. Class D amplifiers are primarily used for the amplification of audio and
 - . High frequency industrial signals
 - . Low frequency industrial signals
 - . Radio frequency signals
 - . Video signals
 5. The efficiency of a class D amplifier is typically in the _____ range or higher.
 - . 40-50%
 - . 60-70%
 - . 78.5%
 - . 80-90%



6. The switching transistors in class D amplifiers are typically
 - . Bipolar
 - . FETs
 - . MOSFETs
 - . NPN
7. The amplifier type with the lowest THD is
 - . Analog
 - . Digital
 - . Linear
 - . Switching
8. A _____ amplifier is used with both linear and switching amplifiers to boost output power.
 - . Bridge
 - . Parallel
 - . Power
 - . Series
9. Bridged amplifiers increase the power output to the load by a factor of
 - . 1
 - . 2
 - . 4
 - . 8
10. The frequency of the saw tooth waveform used in a class D amplifier should be
 - . 2 times the maximum input frequency
 - . 4 times the maximum input frequency
 - . 10 times the maximum input frequency
 - . 10 times the minimum input frequency
11. The best THD in a class D amplifier occurs when the sawtooth frequency is
 - . Equal to the input
 - . Higher than the input
 - . Lower than the input
 - . None of the above
12. In comparing amplifiers up to approximately 50W, the class D is much more efficient and requires
 - . A heat sink
 - . An NPN transistor
 - . A single power supply
 - . No heat sink



13. Class D amplifiers used with digital inputs sometimes have a _____ which provides the proper PWM input to the amplifier.

- . DSP
- . PCM
- . PMM
- . RFI