

DESIGNING OF CLASS D POWER AMPLIFIER

This thesis is presented in partial fulfillment for the award of the

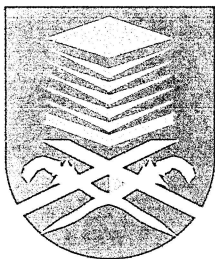
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ABSTRACT

Class-D audio power amplifiers were first introduced about 50 years ago. By then, it has been implemented in many electronic devices up until today such as laptops, MP3s, smartphone and small power efficient systems. It is necessary to exploit the benefit of class D amplifier with its excellent power efficiency and at the same time maintaining a good thermal temperature level. Class D may prove that it is possible to make a smaller and cheaper device and at the same time boosting the lifespan of the battery powered system.

The main reason this thesis is made is to research about the possibilities available in using pulse width modulation with a class-D power amplifier and a low pass filter for audio purposes. Power efficiency is what being aimed for this project both in practice and theory. Easy implementation and the quantity of components used will be taken into account too. The system are to be fed with and audio signal or a sampled digital version within the speech range with a 3Khz bandwidth estimation. As digital signal generator a DSP with 40 MHz output and 8 kHz sampling rate is used as well as an implemented PWM generator.

We have installed a prototype of an audio amplifier, including driver stage, power stage and filter. The filter is recorded using different patterns for conclusions. Variable load is the only parameters adjustable within the driver stage. The power stage is used in two configurations which is the half-bridge and the H-bridge. The final measurement will be recorded only the most important parameters to get a successful achievement in using a PWM amplifier.

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