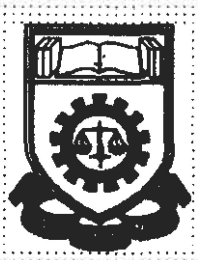
PRODUCTION OF THE REPETITIVE PULSES FROM A SINGLE SHOT PULSE USING CHOPPING TECHNIQUE

Thesis is presented in partial fulfilment for the award of the Advanced Diploma in Electrical Engineering of INSTITUT TEKNOLOGI MARA



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ABSTRACT

This project describes one of the method to produce repetitive pulses from the single shot pulse input. The work is divided into two sections. One is to produce a single shot pulse and the later is to convert the obtainable pulse to the repetitive pulses. The system is made from five modular circuits namely: DC power supplies, Frequency Variable Oscillator, Pulses Generator, Monostable Multivibrator and Choppert Unit Circuit. All the circuits are integrated as one complete unit. A simulation through PSpice is done to predict the output of the entire system theoretically. The hardware based on the simulation circuit has done to obtain the actual output of the proposed system. The results shown that hardware output is almost equal to the simulation output. The work has achieved the target of the project.

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1.0 INTRODUCTION

Modern solid-state semiconductor uses a wide range of strategies to satisfy diverse and demanding application. The advantages associated with semiconductor system as compared to the tube networks of prior years ago, for the most part, immediately obvious: smaller and light weight, no heater requirement or heater loss, more rugged construction, more efficient, and not requiring a warm up period.

Nowadays, solid state devices are widely used in high voltage engineering application. As far as high voltage design is concerned, the trend today is moving towards the compactness of the system as bulkiness has become solvable issue. This project is an improvement of a single shot pulse discovered by Shukor and Khanafiah [9]. In this work, pulse generator can be expanded as a high voltage pulser. In order to achieve multiplication effect, Cockcroft-Walton stack can be incorporated to the developed system in which this multiplier circuit requires a repetitive pulses as mentioned by Ismail [10]. JFET transistor plays the main role as the switching device to perform the pulser function which produces a single shot pulse in which a different switching method was introduced by Ismail [10] where the BJT perform the switching device.

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[9] Abdul Shukor Jaafar & Syed Khanafiah Syed Abas " Development of High Voltage Pulse Generation Using Solid State Devices " Adv. Dip. Thesis 1993, MARA

[10] Ismail Musirin et.al " The Use Of Solid State Devices In Pulsed Generation System ". Proceeding Of Third National Power Conference, May 1994 University Malaya, Kuala Lumpur.