

## Design and Develop a Trap Lizard

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“I hereby declare that I have read this report and in my opinion this report in term of content and quality requirement fulfils the purpose for the conferring of the Degree of Bachelor in Electrical Engineering.”

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“I hereby declare this report is a result of my own work except for the excerpt that has been cited clearly in the reference.”

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Date : 6 MAY 2009

## **DEDICATION**

Specially dedicated to my beloved family especially my mother (Umi Kalsom Bte Mohd Elah) and my father (Ahmad Bin A.Ghani) whose very concern, understanding, supporting and patient. Thanks for everything. To my entire friend, thanks for everything. This work and success will never be achieved without all of you.

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In the name of ALLAH S.W.T, Most Generous and Most Merciful

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## ABSTRACT

Lizard trap circuit is the new design which can attracts the lizard using insect as a bait and small light emitting diode (LED), it also placed at the square line with LDR opposite it the trap have a bowl contain soap water under the line circuit as a place when the lizard get shock and fall into it. The soap water and glass bowl avoid the lizard to exit from the water, the circuit operate when LDR detect and voltage will drop. The pulse circuit combine with the doublers circuit will generate high voltage. The lizard will shock and fall into bowl. It can't exit of the bowl because of the bowl slippery and the surface of glass bowl.

## ABSTRAK

Litar Perangkap Cicak ini merupakan satu inovasi dan rekaan baru. Dengan menggunakan umpan serangga di tengah-tengahnya, ia mampu menarik perhatian cicak. Diod pemancar cahaya diletakkan berhampiran dengan umpan serta di luar penjuru beserta sensor pengesan cahaya, apabila cicak melintas segi empat penjuru tersebut, LDR akan mengesan dan rintangan akan jatuh. Litar akan menghantar isyarat ke litar kawalan denyut (SG3526) digabungkan dengan litar *doubler*. Ia berfungsi meningkatkan voltan tinggi dalam masa satu minit sebelum putus semula.. Cicak akan terkena kejutan dan jatuh ke dalam air yang berisi sabun. Ia tidak dapat keluar kerana mangkuk gelas dan air sabun melicinkan permukaan kakinya.

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## CHAPTER 1

### INTRODUCTION

Lizard is species of reptiles which has possess scaly in skin and a skull with many fused of reduced bones. There are 3 species of lizard which easier to found. For example wall lizard (*Cosymbotus platyurus*), wood lizard (*Hemidoctrylus frenutus*) and sugar lizard (*Gehyra mutilate*). In this section we focused of the Common Wall Lizard which small, thin and has a scale with variable in colors and pattern. Their coloration is generally brownish or grayish and may occasionally be tinged with green. In some individual, the row of spot along their back may form a line, while others may have a reticulated pattern with dark spot of the side and scattered white spot. The spot can be blue in the shoulder region. Basically on their tails found a few colors [1]. Most people in the world dislike lizard because it will damage an electric device when the body short the circuit and also their eggs. It shit will cause pollution. The lizard is easier to breed and smell no good.

There is a way to control a lizard and keep the populations down by treating the foundation and landscape around the buildings. The product like cypermethrin is quick to knockdown and control of outdoor roaches, ants and crickets. Beside that, if the insects thrive around the house, lizards and other undesirable creatures will move in for the free food. By treating around the home on a regular basis, these populations will be kept in check, by using a good pump sprayer. It will be keeping lizards away. The aerosol treatment like baygon which comes with a crack and crevice tip for getting the treatment deep into voids where insects and lizards hide [2].

This Final Year Project is to develop a new design lizard trap in the market. There are three elements which use to develop the trap. Firstly is the attractive element, two method used to attract the lizards, using a small clock and the blinking LED. The insect was place at the clock needle and the circle movement shows the fly play beside the blinking LED. Secondly, the sensor element, Light Diode Resistant (LDR) is a method to detect the lizard when cross the first line. The voltage will drop to inform the lizard cross the line. Thirdly, the executor or shock element, circuit using SG3526 as pulse circuit combine with the doublers circuit to generate high voltage. Base on the three elements, this project is also to control the pollution and solve of the problem.

The operations are starting from the supply TNB 240AC convert to the 12DC voltage for the application sensor, the switching devices and also the Doppler circuit. Two square lines at the board used as an element for shock the lizard when the body or palm touches both line. Its happen because of the short circuit and fall into the bowl. The lizard can't escape because the soap water will make it palm wet and possible to climb bowl edge.

We have consider when choosing the trap structure when to place it whether it suitable or not to attract the lizard. The built up of this trap is based on the circuit to generate high voltage. The sensor is also used to detect and the kind of bait to attract the lizards. This project will be publish at the market as a solution to control the population of the lizards and developed the first trap by using high voltage to shocking the lizards.



## 1.1 Problem Statement

Currently, we use a glue or spray to kill or strand a lizard. However both solutions were not effective because it's just only a little amount to kill it. By this situation, lizard traps which using the high voltage is the way to control the lizard population and make the solution at the same time. This trap is environmental friendly without using poison which can affected the ozone and hasn't sales in market yet. Beside that, this trap is develop refer to the characteristic of lizard as a sensitive reptile. It's not easy attracts at an environment which not suitable with their behavior.

## 1.2 Project Objectives

There are three objectives of this project:

- Build a lizard censoring simple circuit that can generate a DC high voltage
- Protect the electronic components from damage cause of the short circuit of the lizard body
- Make the lizard shock and fall into the bowl when its body goes through a two line.

## 1.3 Project Scope

To achieve a project objectives, there are several scope had been outlined. This scope includes the design of layout trap and also builds electronic circuits. There are three designs had been change to get a simple circuit generate the high voltage and not complex when the design processes.

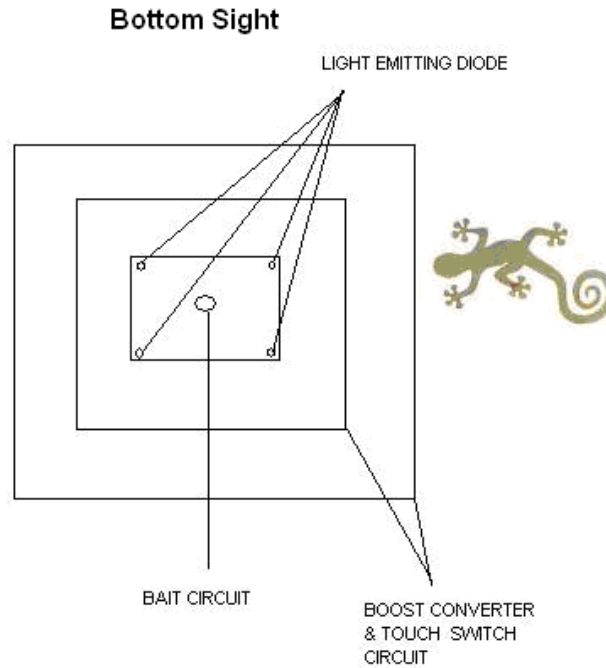
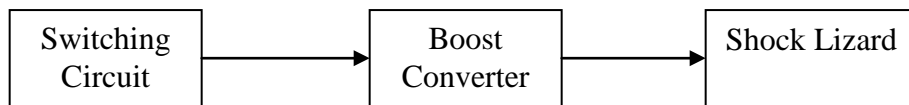


Figure 1.3.1: Layout First Design Using Boost Converter



This is the first design to generate high voltage. This design using the boost converter to get the high voltage. However, it's difficult for switching designs to control the voltage output.

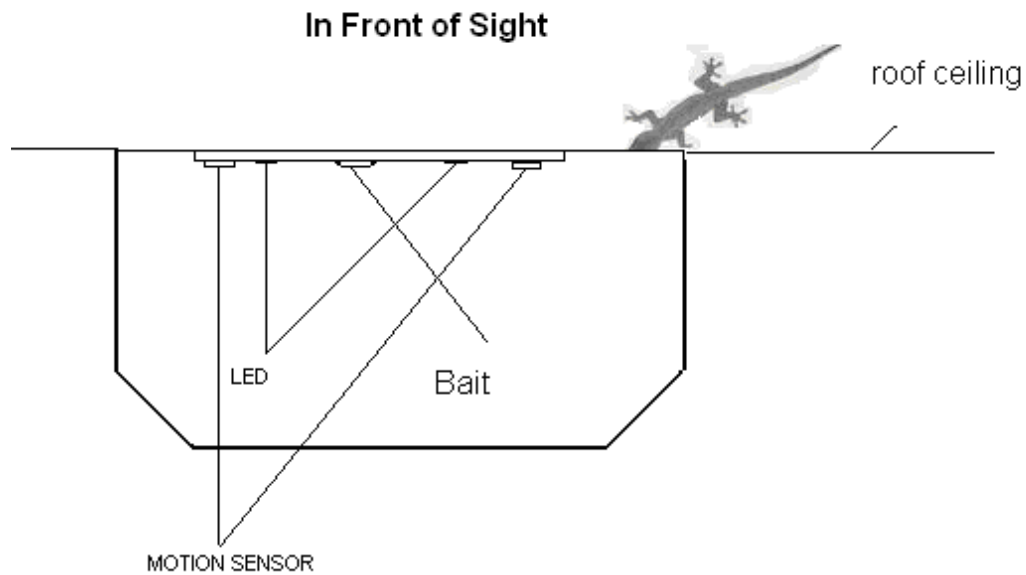
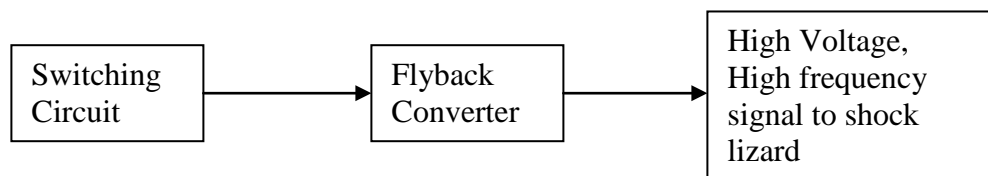


Figure 1.3.2: Second Design of Circuit Using Fly back



Second design is using of fly back circuit. This converter combined with LDR sensor. The lizards will be shocking when it's across of the both line. This converter needs otocoupler to protect the MOSFET from the feedback high voltage and also difficult in simulation.

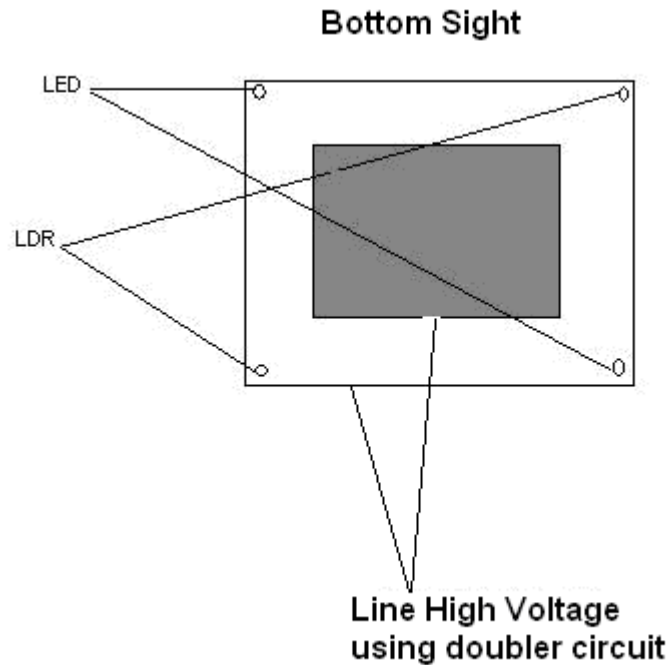
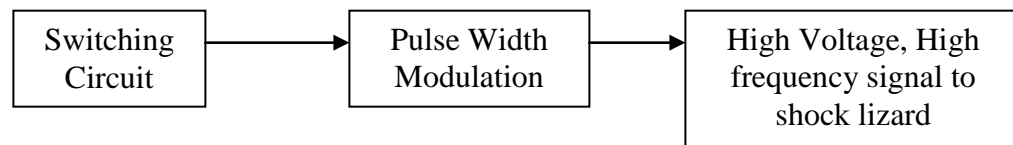


Figure 1.3.3: Second Design Using Doublers Circuit



Finally, the designs are using Sg3526. It's has a high performance pulse width modulator integrated circuit intended for fixed frequency switching regulators and other power control applications. By using this IC it will achieve the objective to build a simple circuit for generate high voltage

#### 1.4 Project Outlines

This project, describes flows and steps to build up the lizard trap. This report contains five sections: introduction, literature review, methodology, result, discussion and conclusion.

Chapter 1 discussed about the major characteristic of lizard and the consideration when choosing a circuit. There are advantages when choosing a circuit and the most important is to build a simple circuit. This chapter also shows up the project planning.

Chapter 2 describes about the flow of the project step by step and the main component for the part. It also explains about the operations and the functions of the item used for the circuit.

Chapter 3, describes about the result and simulation based on the OrCAD and doing a testing on the circuit. This chapter also explains the result of the pin of integrated circuit by the wave and how the steps take the result.

Chapter 4, it's an experiment about the result that had been shown in the chapters three. The problem statement during the project and the action should be taken to solve the problem.

Chapter 5 explains about the recommendations and the conclusions of the lizard trap project.

## 1.5 Project Planning

Project Planning													
List major activities involved in the proposed project. Indicate duration of each activity to the related month(s).													
Project Activities	2008							2009					
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mac.	Apr.	May	June
Briefing of PSM 1	X	X											
Discussion with lecture about project		X	X	X	X								
Searching information about project		X	X	X	X								
Prepare the draft proposal			X										
Literature study			X	X	X								
Find the suitable circuit			X	X	X								
Prepare the presentation for proposal				X	X								
Prepare the project report for PSM 1				X	X	X							
Construct and test the circuit					X	X	X	X	X	X			
Construct the basic program language					X	X	X	X	X	X			
Simulation and correction the program											X		
Preparation for seminar of PSM 2											X	X	
Seminar of PSM 2												X	
Writing thesis (FYP)								X	X	X	X	X	

The Gantt chart shows the planning of the major activities in FYP 1 and 2.FYP1, complete the research of the suitable circuit, study and design the simulation on OrCAD, presentation and build the circuit. In FYP 2. it's contains of the simulation, state the design that suitable with the objectives and build the hardware.

## 1.6 Literature of The Lizard Trap in The Market

The information's from the internet contains the method of the trap lizard and the solutions for reduces the population of the lizard.

Controlling lizards is easy but to keep lizard populations down, simply keep insect populations down, by treating the foundation and landscape around the buildings, it will keep insect populations in check. There are products at the market that usually customer used like cypermethrin to control of outdoor roaches, ants and crickets. If these insects thrive around the house, lizards and other undesirable creatures will move in for the free food.

These populations will be kept in check by treating around home on a regular basis. Pump Sprayer for doing the work and by keeping these insects in check the lizard will be keeping away, also use an aerosol treatment like Baygon which comes with a crack and crevice tip for getting the treatment deep into voids where insects and lizards hide also the using a net lizard. This fine mesh plastic is annoying to lizards when it try to chew through it. The plastic will get in their teeth and though it won't present any hazard to them, it will prevent them from being able to properly chew. This annoyance is more than enough to get them to forage elsewhere. The netting is easy to apply and install and lasting for a long time [3].

The treatment will kill off unwanted insects which serve as food and the treatment will also irritate lizards. So, it will not live in treated areas. Using the Aerosol will be setting out some Lizard Traps at home. We can also use a Glue Trap which has insect odor in the glue because the lizards are insect eating. Roach scented lizard glue traps placed out along baseboards, under furniture, on countertops or any place of the lizard effective at catching and holding most common nuisance lizards [4].

### **1.6.1 Fly back Circuit**

The first design final year project 1 focused on Fly back circuit before changing a simple circuit using Sg3526. Comparing of the simulation and the practical, this project can't achieve the target because of the rating of component can't generate the voltage that suitable for shocking. It is safety for a user when using a fly back.

The definition of a transformer is a couple of energy from one winding to another winding. A fly back transformer does not act as a true transformer. A flyback transformer first stores energy received from the input power supply (charging portion of a cycle) and then transfer's energy (discharge portion of a cycle) to the output, usually

a storage capacitor with a load connected across its terminals. An application in which a complete discharge is followed by a short period of inactivity (known as idle time) is defined to be operating in a discontinuous mode. An application in which a partial discharge is followed by charging is defined to be operating in the continuous modes [5].

One of the factors in a fly back design is converter power supply of the transformer. Although it called a transformer, it is not actually a true transformer, but more an energy storage device. During the period of time, when the primary switch is on energy is stored in the air gap of the core. During the off time of the primary switch, this energy is transferred to the outputs. Current flows in either the primary or secondary winding, but not both at the same time. Therefore it can be thought of more as an inductor with secondary windings added [6].

### 1.6.2 Ridsect Aerosol Spray



Figure 1.6.2.1: Ridsect Lizard Repellent

Ridsect lizard repellent is the method of control the lizards. It's also effective for many pests. It works great for just about anything a lizard eats. Spraying lizards directly won't kill them but since they hate this material so much they will move away from the placed that had been sprayed. a tiny thin layer of nanotech powder was sprayed out and coated the surfaces, when lizard come to this surfaces, the powder shall stick onto lizard's feet that make their suction cup on their feet not able to work well to grab