

“WATER-COOLING SYSTEM FOR AMPLIFIER”

**ERWAN ZAMMI BIN ELIAS
(2000411976)**

**NOOR AZMAN BIN AHMAD
(2000411720)**

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA**

TABLE OF CONTENT	PAGE
Acknowledgement	i
Abstract	ii
 CHAPTER	
1. INTRODUCTION	
1.1 Introduction	1
1.2 Scope of work	2
1.3 Objective of the project	2
 2. THE CIRCUIT DESIGN AND OPERATION	
2.1 Circuit design	3
2.1.1 Schematic diagram	3
2.1.2 Component list and data	5
 3. CIRCUIT DISCRIPTION	
3.1 Circuit diagram	13
3.2 Amplifier	13
3.3 Tone control	13
3.4 Audio-level LED Display	14
 4. HARDWARE CONSTRUCTION	
4.1 Hardware construction procedure	15
4.1.2 Etching	15

ACKNOWLEDGEMENT

We were thankful to Allah because blessing us from early till the end while we were doing this project.

I would thank my supervisor, Miss Noor Azila Bt. Hj. Ismail for her kindness, support and concern about our project- 'Water-cooling System for Amplifier'.

I would also like to express my thanks to our parent for their time and effort in completing and successions this project.

To our friends that not acceptable in our appreciation, thanks for your advices and cooperation.

Lastly, thanks to all of member that support to make this project successful.

ABSTRACT

Integrated Circuit (IC) is a component that is combination of gates. IC is very sensitive to heat. When high temperature is apply to IC, the efficiency of the IC will be getting low and at last the IC will be damage. That's why in many conditions, IC have to be install with heat sink. But heat sink is not enough to release all heat from the IC. It's because heat sink just decrease a little bit and maintain the heat at the certain temperature. So, the IC still have heat at the certain temperature.

After make a research, we built up one project to settle this problem – “Water-Cooling System for Amplifier”. We use amplifier only for the application of our cooler system. It is because amplifier is the easiest example. If we flow water through the heat sink at IC, the result we get is the whole heat from the IC will released. It's because water is a very good conductor for heat. The water will absorb all heat and take it away. So, when this process is repeated again and again, the IC will always in cool. As a safety, below the heat sink there is a water detector circuit in case of leakage. If leakage happens, this circuit will shut down the centrifugal pump and “bipping” the buzzer. Then a 12v fan will turn on automatically to substitute the water-cooling system.

CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION

The main reason of making this project is to decrease the temperature of any kind of electronic circuit that used Integrated Circuit (IC). As usually when an IC operated in any electronic circuit, it will reach maximum heat temperature. Even if heat temperature of IC cooled down by 'heat sink' but there is no totally heat sink out.

As our project completed, there is no more problem occur when water has been supplied through 'heat sink'. Then water will flow out by small plastic tube. This process will continuously till the circuit is shut off. For protection of our circuit, we have provided water detector circuit that will cut off the voltage supply to water pump motor. Automatically water will stop flow and for enhanced this circuit will be support by a small 12V fan. In our explanation for further details about the processes happen in this circuit we will divide into five chapters.

Our first explanation is about components that we use in this project. This will give the detailed about list of component, specification, characteristic and how it will operates in this circuit.

Next, we also explain about the circuit description. This will discuss about how the circuit operates when voltage been supplied. Further more, there are some calculations about the circuit operation. In this chapter, we also include circuit diagram that will show detailed about this circuit.

In third chapter, there is more explanation about hardware processes. There are many step of making this project function as desired. At first, we will explain about process making Printed Circuit Board (PCB). Then about soldering the component and plug in the circuit in a hand made casing.