



SOLAR POWER BANK

**ZULFADLI BIN OTHMAN THANI
ALI IMAN BIN SHAMSUDIN**

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA**

MARCH 2015

ACKNOWLEDGEMENT

First of all, we would like to say thank you to our supervisor Miss Mastura Omar that always been there for us to do this final year project 1 and 2. Without her we cannot proceed or done anything to finish this project. She gave us so many useful advices and to make our project become better.

Next, to our parent and friends that always support us and giving idea to make this project complete and spend some of their money to buy some of the components that are needed to make this project. Thank you for the finance and support from behind.

Moreover, we would like to thank to our friends that give us some advices and correct our project if there is any mistake that we don't realize. It helps a lot in completing this project.

Other than that, we also want to thanks to Miss Mastura who is one of electrical engineering lecturer that lends us some of the equipments that we didn't afford to buy. She also gives us some useful advices in completing this project.

Lastly, we would like to say all praise to god because without him we can't even write this project and think to make this project accomplish.

ABSTRACT

The solar power charger is designed to help people nowadays whom always have problems with their gadget's battery that always drain quickly. So, this solar power charger may help them to overcome this problem. Other than that, we designed this solar power charger is designed because when people are travelling to a location that they didn't know when they will arrive, and their battery had drained out and there are no power source to connect to their charger to charge their mobile phone's battery. So with the existing of this project, it will overcome the problem that will be faced by the people who face the same problem. The project is based on the demand of the people that their gadget is frequently running out of the battery whenever they use it vigorously and especially when they are travelling or doing some activities in the woods. This solar power charger is easy to use and user friendly. It is because people only need to connect the suitable USB cable to the solar power charger and connect to the device. As long as there is sunlight, this solar power charger can work and charge the device. The solar module with 12 volts and 1 watt as the input and it will gives 5 volts for the output. 5 volts is enough to charge many devices because devices usually don't need much volts to be charged.

LIST OF FIGURES

Figure 2.1.3.1 Flow Chart of Project.....	7
Figure 2.1.4.1: Flow Chart of Solar Power Bank.....	9
Figure 2.1.5.1: Block Diagram of Circuit.....	11
Figure 2.1.6.1: System Diagram of Circuit.....	12
Figure 2.2.1: Setup of Project.....	13
Figure 3.1.1 Circuit Diagram.....	17
Figure 3.1.2 Circuit Diagram 2.....	18
Figure 3.2.1.1 Additional Circuit.....	20
Figure 3.2.2.1 Additional Circuit Diagram.....	21
Figure 4.1.1: Simulation Diagram.....	23
Figure 4.2.1 Setup of Hardware (OFF).....	25
Figure 4.2.2 Setup of Hardware (ON).....	26
Figure 4.2.2.1 Project Hardware Construction.....	28
Figure 4.2.2.2 Project Casing.....	29

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	I
ABSTRACT	II
LIST OF FIGURES	III
LIST OF ABBREVIATIONS.....	IV
CHAPTER 1 INTRODUCTION.....	1
1.1 Background of Study	1
1.2 Problem Statement.....	2
1.3 Objectives of Research	3
1.4 Scope of Study	4
CHAPTER 2 MATERIALS AND METHODS	5
2.1 Methodology	5
2.1.1 Solar Panel.....	5
2.1.2 Solar Power Bank.....	6
2.1.3 Design Flow Chart	7
2.1.4 System Operation.....	9
2.1.5 System Block Diagram.....	11
2.1.6 System Diagram.....	12
2.2 Experimental Setup	13
2.3 Equipment and Component	15
CHAPTER 3 CIRCUIT DESIGN AND OPERATIONS.....	17
3.1 Schematic Diagram	17
3.2 Circuit Operations.....	19
3.3.1 Circuit Improvement.....	20
3.3.2 Additional Circuit Setup.....	21
CHAPTER 4 RESULT AND DISCUSSION	23
4.1 Software Simulation Result	23
4.2 Hardware Implementation Result	25
4.2.1 Project Discussion.....	27
4.2.2 Project Hardware.....	28