

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

THE BIPOLAR TRANSISTOR AS A SEMICONDUCTOR SWITCH

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JUNE 2000

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 3145
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1.1 INTRODUCTION:

The application of semiconductor devices in the electric power field has been steadily increasing, and a study of power electronics is now a feature of most electrical and electronic engineering courses.

The power semiconductor devices, such as the diode, thyristor, triac, and power transistor, are used in power applications as switching devices.

The development of theory and application relies heavily on waveforms and transient responses, which distinguishes the subject of power electronics from many other engineering studies.

In the second chapter is where we study the equipment and materials and get a decision which are the proper to use in this project.

Is very important to study the characteristics of the transistors and the characteristics of the diodes that are going to be used.

Then we have to study the junction transistor as a switch and compare it with some other devices such as MOSFET, thyristor, IGBT.

Finally in this chapter we study some applications of the transistor as the DC chopper and AC voltage regulator to be sure what materials we need and what we should expect on the final results of the experiments.

In the third chapter we make the graphics, we tell how we make each part of this construction, and talk about the materials we finally choose to use in the project. We also talk in details for what are the important things we should know and care about each part of this construction.

Chapter four is the chapter where we have the final results, is the chapter of the experiment results.

To take these results we have to connect the construction as a DC chopper and then with the help of the oscilloscope we take the results which will help us to investigate the operation of the DC chopper.

In order to improve the output of the DC chopper we add some devices, each time we add a device in the construction, we take the appropriate graphs in order to show the improvement. All these results and graphs are in chapter four.

Finally in chapter five we talk about the results of the project, our conclusions and observations for the operation of the DC chopper.

CONTENTS:

	pages
CHAPTER 1: INTRODUCTION AND SUMMARY	1-2
1.1 Introduction	2
CHAPTER 2: THE JUNCTION TRANSISTOR AS A SWITCH	3-13
2.1 The junction transistor as a switch	4
2.2 Construction of the transistor	4
2.3 Operation of the transistor	4
2.4 The input static characteristics.....	5
2.5 The output static characteristics	5
2.6 The transfer characteristic of the transistor	6
2.7.1 The transistor as a switch	6-7
2.7.2 The switch in power electronic circuits	8
2.8.1 Diodes: The rectifier diode	8
2.8.2 The fast recovery diode (schottky diode)	8-9
2.9 Comparison of semiconductor switching devices	9-10
2.10 Some applications of the bipolar transistor	11
2.10.1 DC – DC Converter	11-12
2.10.2 AC Chopper Voltage regulator	13
CHAPTER 3: DESCRIPTION OF THE CONSTRUCTION OF A SEMICONDUCTOR SWITCH USING TRANSISTOR	14-19
3.1 Transistor BUP 35	15
3.2 Transistor 2N3055	16
3.3 Fast diodes	17
3.4 Bridge rectifier	18
3.5 Resistances	19
CHAPTER 4: EXPERIMENTS	20-25
CHAPTER 5: CONCLUSIONS AND OBSERVATIONS	26-27
5.1 Conclusions and Observations	27
APPENDICES	
APPENDIX 1: Equipment and materials used	
APPENDIX 2: Data for the transistor and bridge	
APPENDIX 3: The real view of the project	
APPENDIX 4: A view in H.T.I.'s laboratory	
APPENDIX 5: Laboratory's constructions	