

CHAPTER 6

APPLICATIONS AND CONCLUSIONS.

6.1 Introduction

The basic idea and the concept of a switching regulator have been described in the research. Mathematical analysis and sub-systems have also been presented. For a construction is concerned, some components such as, high voltage switching transistors, high current fast recovery diodes, high grade ferrite core are not easily obtainable due to these components are not common used because it will take quite a long time to purchase these components from abroad, and their prices are very expensive. Fortunately, these components which can be obtained in the local market possess similar characteristics and properties to those of design components and the quality is reasonable.

A prototype of this switching regulator has been built and shown in Fig 6.1. This switching regulator unit has the regulated low voltage with the high power switching current about 10 amperes. In this, a current limited setting is also provided.

6.2 Advantages of this regulator power supply.

The switching regulator dc power supply is easily operated. A remarkable property of the regulator system of this power supply is that its feedback mechanism is just as well suited to provide a constant output voltage.

Some highlight of the switching regulator dc power supply

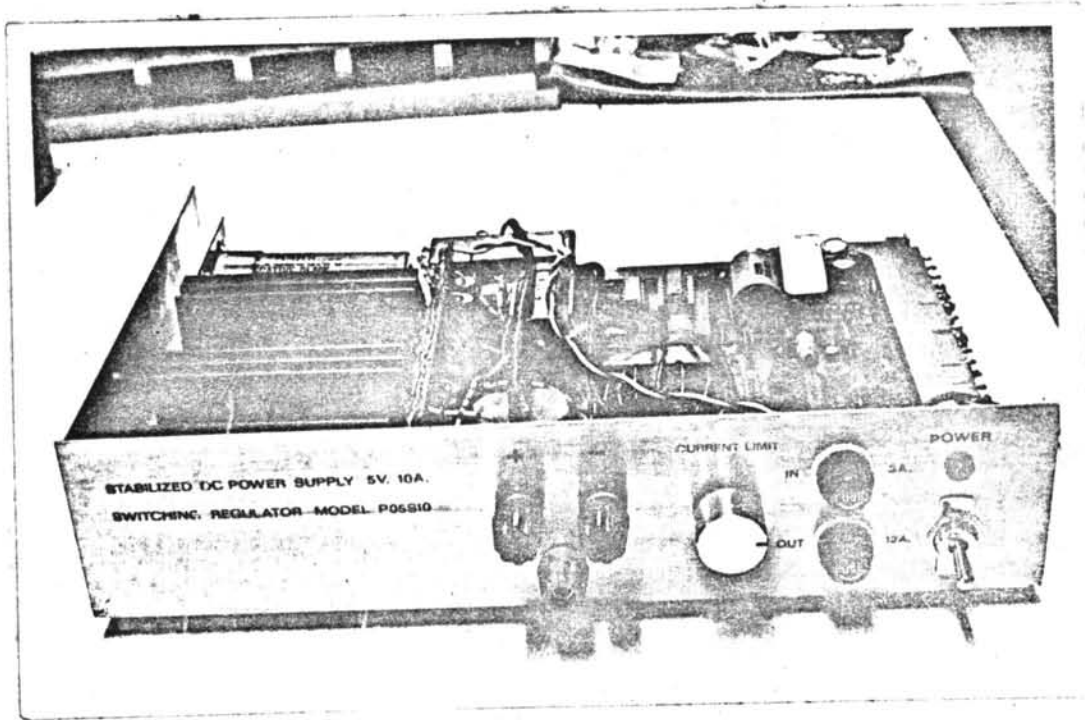
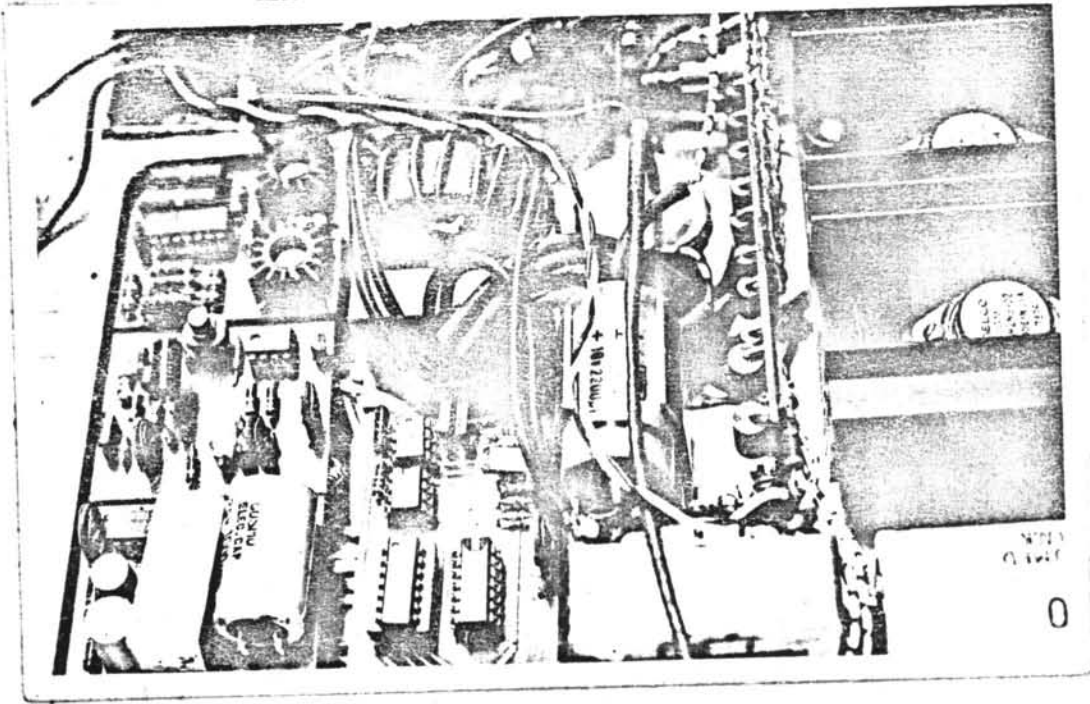


Fig.6.1 The switching regulator
dc power supply 5V, 10A

may be summarized as follows :

- (a) High efficiency, > 70 %
- (b) Compactness, for example in this design the regulator size only 2 10 6 and weight 2 Kg .
- (c) Components used less than 150 pieces (use an integrated circuits)
- (d) Cost of this power supply per watt is lower than the series regulator power supply when the power output more than 300watts.

6.3 Applications

In general, a switching regulator dc power supply is not commonly well-known. At present this type of power supply is being used in computer systems.

Some applications are listed below for an easy reference.

- (a) General purpose power supply, with a high power, high current regulated power supply used in the battery charger.
- (b) Use in some manufacturing processes such as welding, coating etc.
- (c) Use in the process control element for the industry,
- (d) Use as a power supply for all TTL logic gates.

6.4 Conclusions.

It is seen that the over-all performance of this prototype switching regulator shows a remarkable design. All circuits which have been designed consist of low cost components so that the total cost of this power supply is reasonable. The recovery time and the regulation

of this power supply have been tested with a satisfactory results. In addition, the output voltage of this power supply can be adjust to any voltages from zero upto the limit of the secondary voltage of the transformer. This research has been proved the new concept about switching regulator dc power supply.

6.5 Some suggestions for future research

For further research study, it may be recommened to developpe the switching regulator by combining a linear and switching regulator power supply in a single unit in order to overcome some difficulties in both switching and linear regulators. The main advantages of the technique are therefore the elemination of the main transformer and bulky 100 Hz smoothing components and a considerable reduction in internal power dissipation allowing smaller heatsinke to be used.

Such a power supply will have good in transient response, ripple, and noise, ease of output voltage adjustment, small size and weight.