THE FULL-BRIDGE CONVERTER SWITCH MODE POWER SUPPLIES

This project is presented in partial fulfillment for the award of the
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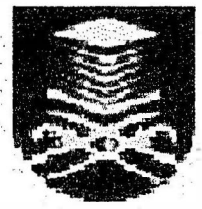

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Abstract

The present paper involves the simulations, design, and build a full-bridge converter switch mode power supplies. The circuit is operated at 24v and the current is 3 ampere. This SMPS uses high frequency switching, Insulated gated Bipolar transistor (IGBTs). Simulations were done on the proposed circuit to establish its performance using PSpice. Actual experiment set-up were done with feedback control implemented using an integrated chip SG 3524.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

The power supply unit is an essential circuit block in practically all electronic equipment-computer, instruments or some other signal processing equipment. Such equipment generally works from the AC power mains. The power supply unit is the power interface between the AC mains and the rest of the functional circuits of the equipment usually need power at one or more fixed DC voltages, which have to be maintained within close limit to ensure reliable working of the equipment. The power supply unit has to meet certain terminal specifications, such as the output voltage or voltages, the permissible limits of output voltage variation (regulation) when the load current or AC mains voltage vary, ripple voltage component, automatic current limiting under fault or overload conditions etc. as long as the specified terminal condition are met, the electrical design of the power supply unit is, by and large, independent of the design of the rest of the equipment.

The class of the power supply systems most widely used in electronic equipment use the switching technique, and are know as switch mode power supply (SMPS). They are also called switching power supplies or switching regulator. The alternative to an SMPS is a "linear regulator". These are good for low power applications but are uneconomical and inefficient when the power requirement is high.

Linear Regulator versus Switching Regulator. The high internal power dissipation and poor efficiency may be acceptable trade-offs for the good performance of the linear regulator, when the power requirements are small. But at higher power levels, these limitations become almost prohibitive. The choice then always falls on the switching type of regulator.