MODELING AND CONTROL OF DC/DC BUCK CONVERTER

USING THE AVERAGING TECHNIQUE WITH

PROPORTIONAL INTEGRAL DERIVATIVE (PID) CONTROLLER

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

Bachelor of Electrical Engineering (Honors)

UNIVERSITI TEKNOLOGI MARA (UiTM)

MOHD FARHAN SYAFIQ BIN MOHD SALIM

Faculty of Electrical Engineering

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM

SELANGOR

ACKNOWLEDGEMENT

ABSTRACT

This paper presents an Averaging technique to obtain the small signal model of Buck converter with proportional integral derivative (PID) controller. The model is used for compensator design to regulate the output voltage. The proportional integral derivative (PID) controller is employed in designing the closed-loop buck converter. The output results is compare between small signal model of Buck converter with proportional integral derivative (PID) controller and small signal model of Buck converter without proportional integral derivative (PID) controller. Their principle characteristics are illustrated using Matlab and the Simulink block diagram along with the experimental result.

TABLE OF CONTENTS

CHAPTER 2: LITERATURE REVIEW

CHAPTER 3: METHODOLOGY