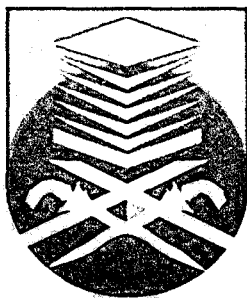


**ELIMINATION OF ELECTROLYTIC CAPACITOR IN AC-DC
LIGHT EMITTING DIODE (LED) DRIVER**

Thesis is presented in partial fulfilment for the award of the
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ABSTRACT

Advance in Light Emitting Diode (LED) lighting system has created a wider application in an effort to improve the conventional lighting system. High demand from customers, including long-lasting, high brightness and reliability system for residential area, heavy industry and even hard and dangerous zone can be solved by replacing the existing lighting system with current LED technology. Nevertheless, while LEDs have almost all other advantages compared to other lighting systems, the existence of electrolytic capacitor in LED driver cause the lifetime of the driver lasted averagely five years while LEDs can stand up to 10 years. This report discuss on the method used to eliminate electrolytic capacitors by replacing the existing driver with flyback converter to produces constant current. In order to obtain a smooth dc output, film capacitor is adopted instead of electrolytic capacitor as a smoothing capacitor. The circuit is designed for 240V ac input and it proposed to the 80W LED which requires 0.7A as the constant output current. The propose topology, detailed design, operation principle of the main circuit and results obtained are presented in this report

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

By referring to Utusan Malaysia dated 7 November 2012, it reported that Malaysian government is together in supporting United Nations in recognizing national achievement in creating lighting system that save energy and does not contribute to pollution. In order to show it support, Malaysia government has decided to ban the use of incandescent bulb. This regulation will be fully effective in two years times [1]. This is in line with the objective of the National Green Technology Policy which was appointed by Ministry of Energy, Green Technology and Water. The objective is to reduce the energy usage and at the same time increase economic growth [2].

The traditional lighting system including incandescent bulbs and fluorescent lamps is using two different mechanisms for converting electrical energy in order to generate light. However, these two types of system currently do not give the best solution in lighting system compared to LEDs. The traditional lighting system, incandescent bulbs give the lowest luminous efficiency because it converts almost ninety percent of electricity into heat energy while the rest is used to light it up [3]. Fluorescent lamps produce light by converting electrical energy into kinetic energy of moving electrons. The moving electrons collide among themselves thus generate radiation [3]. However, the mercury in this lighting system is dangerous to both human and environment eventhough fluorescent lamps offer a low cost system with high luminous efficiency [3].