# UNIVERSITI TEKNOLOGI MARA

# HEAT TRANSFER IN SWITCH

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for the degree of

**Bachelor of Engineering (Hons) Electronics Engineering**

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# ABSTRACT

Most of the electronic system failures are because of thermal reasons. Therefore, the possibility of accurate prediction of device temperature is crucial for its design and modeling. The purpose of this project is to study the effect of heat transfer in a switch when Beryllium Copper is used as the base material and Aluminum is used to be the connector of the switch when being supplied by 1.6 A by using same value of parameter of the switch and different value of parameter of the switch.

# APPROVAL

This thesis is submitted to Faculty of Electrical Engineering, Universiti Teknologi MARA in fulfilment of the requirement for Bachelor of Engineering (Hons) Elecronics Engineering.

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# CHAPTER 1

# INTRODUCTION

## 1.0 BACKGROUND OF STUDY

System designers often are not interested in the determination of temperature distribution in an entire structure but they require only the information on hot spot or junction temperature. Heat transfer by the conduction mode happens when heat is distributed inside a material, or starting with one material then onto the next. The energy transfer is postulated to
occur because of kinetic energy exchange by elastic and inelastic collisions of
atoms, and by electron drift. Heat vitality is constantly exchanged from an area of higher vitality to one of lower vitality. The vitality level, or temperature, of a material is identified with the vibration level of the atoms inside the substance. On the off chance that the districts are at an equivalent temperature, no heat exchange can happen. J. B. J. Fourier's Law can foresee the rate of heat exchange. The law recommends that the rate of heat exchange be relative to the zone of exchange, times the temperature slope dT/dx:

$$q \square \quad \square \quad A\frac{dT}{dx} \tag{1.1}$$

In Fourier's Law, the relation *T(x)* is the local temperature and *x* is the distance of heat flow. Despite the fact that this is a condition of proportionality , the genuine rate of heat exchange relies upon the thermal conductivity, k, which is a physical property of the heat exchange media. Heat transfer can happen by conduction through any material, regardless of whether solid, liquid, or gas. Conduction will not happen through a vacuum since that there is no material to lead through. In spite of the fact that we can direct heat through a gas or liquid, it is not normally the prevalent strategy. For the most part, as we apply heat to a liquid, the heated part of the liquid