The propose of this paper is to examine the effect of electromagnetic coupling to the transmission line on PCB and silicon substrate. Considering a quasi-TEM wave along a MTL (Multiconductor Transmission Line) consisting and solving the equation in frequency domain. By reference, we can take per unit length parameters $RLGC$. Then, we can find crosstalk on transmission line. Base on this model, the results are obtained and discussed.

Keywords: CMOS IC, quasi-TEM, MTL

Table of Contents

1. Chapter 1: Introduction
   1.1 Research Motivation
   1.2 Literature Review
   1.3 Paper Outline

2. Chapter 2: Theoretical Model of Multi-conductor Transmission Line
   2.1 Introduction
   2.2 Multi-conductor Transmission Line Equation
   2.3 Transmission Line Equation in Frequency Domain
   2.4 High-frequency Parameters Matrix
   2.5 Terminal Conditions

3. Chapter 3: Calculation of Per Unit Length Parameters for PCB Board and Silicon Substrate
   3.1 Introduction
   3.2 Crosstalk Effect
   3.2.1 Crosstalk Interference Analysis
   3.2.2 Crosstalk引起的雜訊
   3.3 PCB Board Per Unit Length Parameters
   3.4 Silicon Substrate Per Unit Length Parameters

4. Chapter 4: Results and Discussion
   4.1 Introduction
   4.2 PCB Structure Crosstalk Investigation
   4.3 Silicon Substrate Structure Crosstalk Investigation

5. Chapter 5: Conclusion

References