

# Electromagnetic Pulse Coupling to Transmission Lines on Silicon Substrate

黃萬賓、邱政男

E-mail: 9303428@mail.dyu.edu.tw

## ABSTRACT

The purpose of this thesis is to examine the effects of electromagnetic pulse coupling to the transmission lines on silicon substrate. The theory of the field coupling to the transmission lines on silicon substrate is derived. Based on the theory, the transfer function in frequency domain is obtained. The transient response in time domain is then evaluated by using the inverse Fourier transformation of the multiplication of the transfer function and the electromagnetic pulse in frequency domain. Numerical results of the transient response are shown and discussed. In particular, the effects owing to the rising and falling time of the electromagnetic pulse, the configuration of the transmission lines, and the load impedance, are studied in detail.

Keywords : EMP ; EMI ; EMS

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