

Modeling of Grounded CPW Line with Anomalous Skin Effect in THz Band

Yuta SAKIYAMA^{*}, Masahiro MURAGUCHI^{*}, Hiroto SAKAKI^{*},
and Kenjiro NISHIKAWA^{**}

Abstract

Recently, the terahertz (THz) frequency band has been focused and investigated for developing new applications, such as an ultra-high-speed wireless system, and so on. These new system have demanded a highly integrated and compact IC, such as CMOS ICs. Transmission loss on the ICs is the most important issue due to insufficient device performances in THz band. This paper models grounded CPW line with loss characteristics, including anomalous skin effect. The anomalous skin effect is characterized by the proposed donut-style conductor structure. The calculated loss of a grounded CPW line constructed by the donut-style conductor model is 2.5 times higher than those of previous models.

References

- [1] 2013 IEEE MTT-S IMS Workshop, WMD: Technologies for THz Integrated System, Seattle WA, June 2013.
- [2] Akira Tsuchiya and Hidetoshi Onodera, “Gradient Resistivity Method for Numerical Evaluation of Anomalous Skin Effect,” 2011 IEEE Workshop on Signal Propagation on Interconnects, pp.139–142, Nepal, May 2011.

^{*} Graduate Student, Department of Electrical and Electronics Engineering

^{**} Professor, Department of Electrical and Electronics Engineering