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ミリ波帯パッケージへの液晶ポリマーの適用

小倉　洋*，高橋　和晃*，田中　真治**，福武　素直***

High Frequency Characteristics of Liquid Crystal Polymer for a Millimeter-Wave Package

Hiroshi OGURA*, Kazuaki TAKAHASHI*, Shinji TANAKA** and Sunao FUKUTAKE***

*松下電器産業株式会社先端技術研究所（〒214-8501　神奈川県川崎市多摩区東三田3-10-1）
**松下ソリューションテクノロジー株式会社テクノサポートビジネスユニット（〒530-0001　大阪府大阪市北区梅田1-3-1）
***ジャパンゴアテックス株式会社ポリマーサイエンスセンター（〒709-2123　岡山県御津郡御津町河内1102-4）
*Advanced Technology Research Laboratories, Matsushita Electric Industrial Co., Ltd. (3-10-1 Higashimita, Tama-ku, Kawasaki-shi, Kanagawa 214-8501)
**Techno Support Business Unit, Matsushita Solution Technology Co., Ltd. (1-3-1 Umeda, Kita-ku, Osaka-shi, Osaka 530-0001)
***Polymer Science Center, Japan Gore-Tex Inc. (1102-4 Kouchi, Mitsu-cho, Mitsu-gun, Okayama 709-2123)

Abstract

The high frequency characteristics of liquid crystal polymer (LCP) have been investigated using a microstrip line (MSL) on a silicon (Si) substrate to verify the possibility of the application of the material in millimeter-wave packaging. A LCP film was fabricated using a direct-bonding technique on Si substrate. Measured characteristics of insertion loss are compared between a LCP film and a SiO_2 film. The loss of the LCP-MSL is approximately 1/2 of that of the SiO_2-MSL. Moreover, a GaAs low noise amplifier (LNA) microwave monolithic integrated circuit (MMIC) was fabricated using a flip-chip bonding technique on a LCP substrate to demonstrate an application for a millimeter-wave package. The measured output gain of the LNA package is over 11dB. The millimeter-wave LCP package is a promising technology in realizing low cost millimeter-wave radio equipment.

Key Words: *Millimeter-Wave, LCP, Package, High Frequency, Flip-Chip*