

Study on Slow-Wave Characteristics of Fishbone-Type Transmission Line Employing Comb-Type Ground Plane on Polyether Sulfone Substrate for Application to Miniaturized Flexible RF circuit

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Recently, PES (polyether sulfone) has drawn attention for application to transparent flexible electronic devices. In this work, the fishbone-type transmission line employing comb-type ground plane (FTLCGP) was fabricated on PES substrate for application to flexible RF circuit, and its RF characteristics were thoroughly investigated. Figure 1 shows the FTLCGP fabricated on PES substrate and its measured RF characteristics. The FTLCGP shows propagation constant and effective permittivity much higher than conventional coplanar waveguide on PES substrate due to its slow-wave characteristic, which resulted in a short-wavelength characteristic of the FTLCGP. As shown in Fig.1, the FTLCGP shows wavelength much shorter than the conventional coplanar waveguide on PES substrate. Concretely, the wavelength of the FTLCGP on PES substrate is 1.91 mm at 50 GHz, which is 48.5 % of the conventional coplanar waveguide on PES substrate. Above results indicate that the FTLCGP on PES substrate is suitable for application to miniaturized flexible RF circuits due to its slow-wave characteristic.

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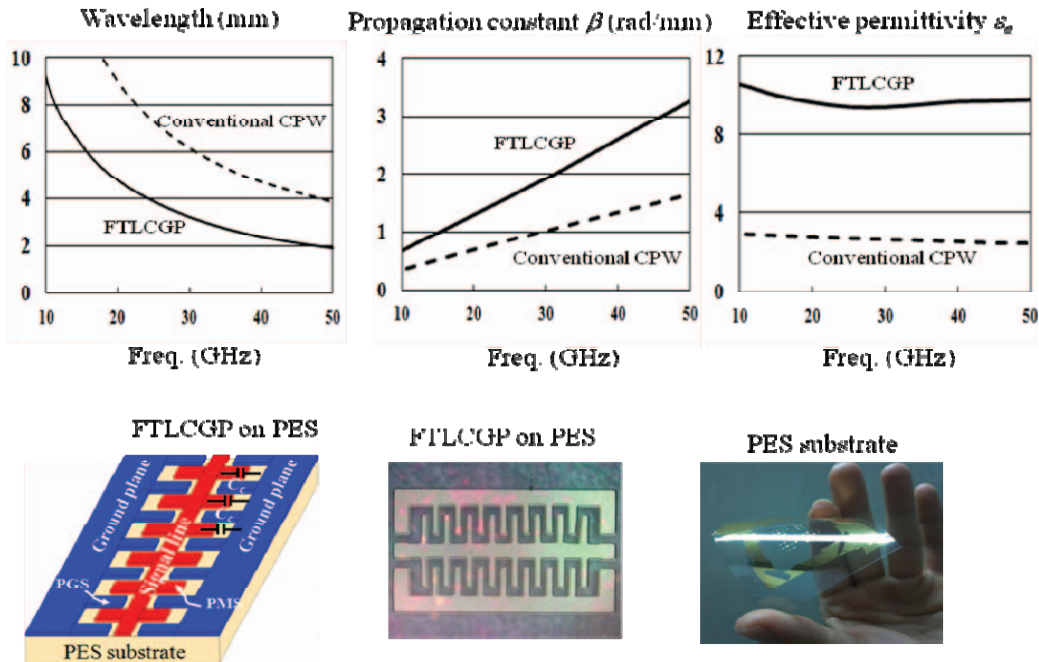


Fig. 1. The FTLCGP fabricated on PES substrate and its measured RF characteristics.