

# PS-5-1

**TOKYO TECH**  
Pursuing Excellence

## A Characterization Method of On-Chip Tee-Junction for Millimeter-Wave CMOS Circuit Design

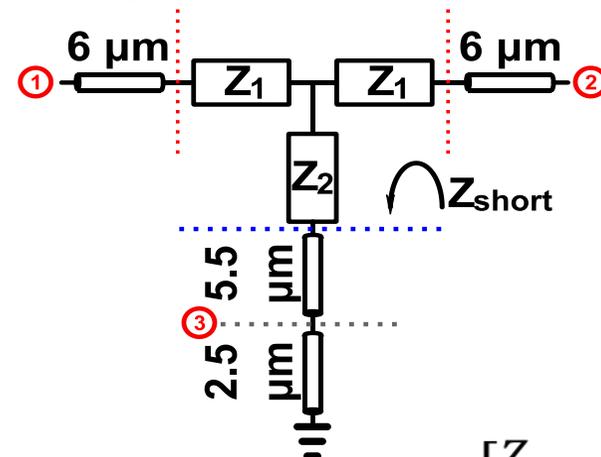
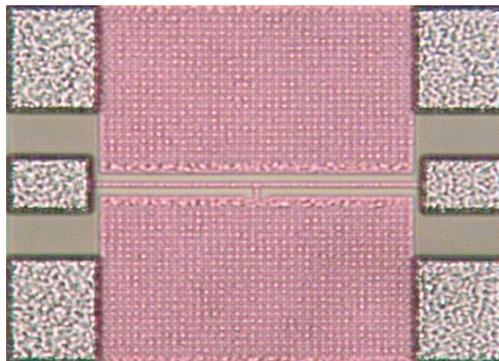
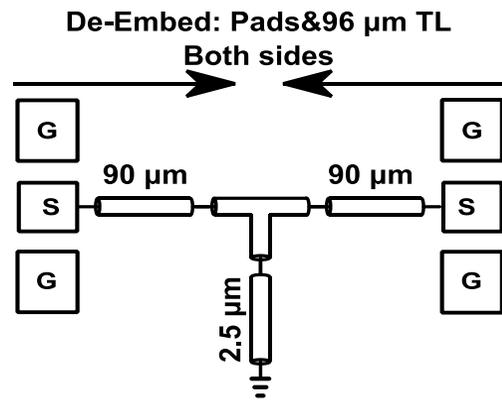
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- Millimeter-Wave CMOS circuits for low-cost, high-data-rate wireless transceivers
- Device Characterizations for design accuracy
- Characterization

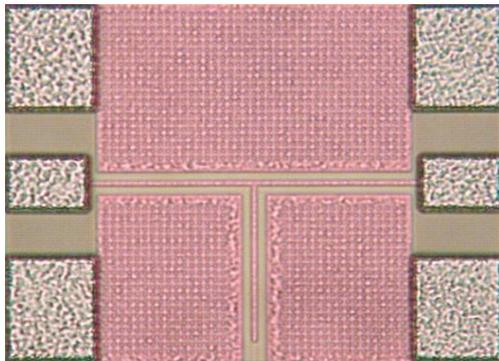
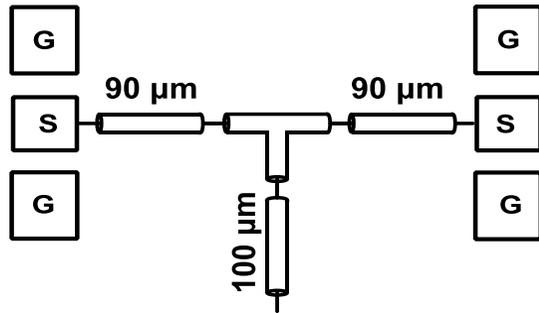
- Proposed Model



$$\text{stoz}(S_{de-embedded}) = \begin{bmatrix} Z_{11} & Z_{12} \\ Z_{12} & Z_{11} \end{bmatrix}$$

$$= \begin{bmatrix} Z_1 + Z_2 + Z_{short} & Z_2 + Z_{short} \\ Z_2 + Z_{short} & Z_1 + Z_2 + Z_{short} \end{bmatrix}$$

- Verification Structure



- Conventional Model

