

158

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Title:Micromachined probes for submillimeter-wave on-wafer measurements - Part I: Mechanical design and characterization

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Abstract:The mechanical design and characterization of a micromachined on-wafer probe scalable to submillimeter-wave frequencies is presented. The design consists of a silicon micromachined probe with a ground-signal-ground configuration on a 15 μm thick silicon substrate. This micromachined chip is housed in a metal waveguide block that provides mechanical support for the probe and enables coupling to a waveguide flange. Load-cell measurements of the probe show a DC contact resistance below 0.07Ω with an applied force of 1 mN. A companion paper presents the electromagnetic design and calibrated on-wafer measurements at 500 to 750 GHz.

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