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Title:Terahertz micromachined on-wafer probes: Repeatability and reliability

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Abstract:An improved micromachined on-wafer probe covering frequencies 500-750 GHz is demonstrated in this paper to address sub-millimeter-wave integrated-circuit testing. Measurements of a prototype WR-1.5 micromachined on-wafer probe exhibit a return loss better than 12 dB and a mean insertion loss of 6.5 dB from 500 to 750 GHz. The repeatability of on-wafer measurements with the micromachined probe is investigated. Monte Carlo simulations are used to identify the dominant error source of on-wafer measurement and to estimate the measurement accuracy. The dominant error source is positioning error, which results in phase uncertainty. Reliability tests show the probe is robust and can sustain over 20000 contacts. © 1963-2012 IEEE.

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