Abstracts

Millimeter-Wave On-Wafer Waveform and Network Measurements Using Active Probes

R.Y. Yu, M. Reddy, J. Pusl, S.T. Allen, M. Case and M.J.W. Rodwell. "Millimeter-Wave On-Wafer Waveform and Network Measurements Using Active Probes." 1995 Transactions on Microwave Theory and Techniques 43.4 (Apr. 1995, Part I [T-MTT]): 721-729.

We have fabricated active probes for on-wafer wave-form and network measurements. The probes incorporate GaAs nonlinear transmission line (NLTL) based network analyzer (NWA) integrated circuits and low-loss quartz coplanar-waveguide probe tips. The active probes show step response falltimes of 2.7 ps when excited by a 0.7-ps falltime input. Using these active probes, we demonstrate both waveform measurements with 2.7-ps risetime and network measurements to 200 GHz. We discuss the probe tip and NWA IC design, the hybrid assembly and mechanical design, and system design considerations. On-wafer waveform and S-parameter measurements of monolithic millimeter-wave integrated circuits are demonstrated.

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