Abstracts

A wideband millimeter-wave front-end for automotive radar

J.G.E. Mayock, C.M. Snowden, L.P. Ligthart and P.J.F. Swart. "A wideband millimeter-wave front-end for automotive radar." 1999 MTT-S International Microwave Symposium Digest 99.4 (1999 Vol. IV [MWSYM]): 1501-1504 vol.4.

A high performance millimeter-wave front-end for automotive radar is presented. A dual cavity, varactor tuned GaAs Gunn oscillator, with 2 GHz electronic tuning range and over 12 dBm of output power at 76.5 GHz is reported. The oscillator also provides over 20 dBm of output power at 38.25 GHz at a separate port. Injection locking the oscillator using a lower power, 38 GHz signal at this port has been demonstrated. The results are compared to a less complex bias-tuned Gunn oscillator design. A single-balanced Schottky diode based mixer on microstrip is also presented with 11 dB conversion loss in the band of interest. High performance ridge waveguide based microstrip to waveguide transitions to connect the oscillator and mixer have been realised. Two back-to-back transitions exhibit a return loss of better than 22 dB and an insertion loss of 1.5 dB in the 2 GHz band of interest.

❑ Return to main document.