

Quenched-Domain Mode Oscillation in Waveguide Circuits

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An experimental study of pulsed transferred-electron oscillators operating in waveguide circuits is reported. Quenched-domain mode operation is shown to be present for short (less than 20- μm) supercritically doped GaAs samples operating at X-band frequencies (8.2-12.4 GHz) and for bias-voltage values up to six times threshold value. Analysis of the waveguide circuit shows that the chip sees a parallel resonant circuit, and theoretical computations with a sinusoidal voltage waveform are shown to be reasonably accurate. The load admittance presented to the chip is experimentally evaluated.

 [Return to main document.](#)