

GaN Electronics for Microwave Power Applications

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AlGaIn/GaN modulation doped structures are very attractive for microwave power applications. High mobility two dimensional electron gas mobilities of over $1500 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$ @ 300K have been measured with associated charge density of over $8 \times 10^{12} \text{ cm}^{-2}$. This has resulted in devices with lum gate length with g_m of over 250 ms/mm and breakdown voltage of 220V. Sub-micron gate length devices have demonstrated f_T of over 50GHz and f_{max} of 92GHz. Power density of over 1.6W/mm has been measured @ 4GHz from devices with lum gate length. These results indicate the tremendous potential of the AlGaIn/GaN MODFET for microwave power.