

Transferred Electron Devices Based on GaN

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Transferred–Electron–Devices (TEDs) have been developed using GaAs and InP materials and are considered as the most suitable component for RF power sources. III-V Nitrides have been recognized as the most promising approach for the realization of electronic devices for high-power/high-temperature applications and several groups have presented over the last few years very promising characteristics on Field-Effect-Transistors using this material system.

Based on the above considerations it is attractive to explore the use of III-V Nitrides in TEDs. Theoretical and experimental studies addressing these issues have been conducted for this purpose and will be reported. The dependence of power and frequency on device design and bias was studied. Special device patterns and MMICs have been developed for experimental validation. GaN-based TED layers were grown by MOCVD and the necessary processing for such diodes will be discussed.

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