

**Reliability challenges for GaN-based FETs**

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GaN-based field effect transistors (FETs) are being developed for microwave and power electronic applications. Presently there are two main aspects that are being considered in the device reliability field: (i) for ultra-high power microwave electronic applications GaN integration with diamond for optimal heat sinking which poses reliability challenges in the integration of dissimilar materials such as related the coefficient in thermal expansion (CTE), and (ii) for power electronic applications the most optimal use of carbon doping of GaN as insulating buffer, as this can result in large dynamic R-on effects, which requires a detailed understanding of the underlying device physics to mitigate potential negative effects of trap states introduced. The latest results in this field will be discussed.

