

## 100nm GaN on Si Technology for 5G Applications

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### Abstract

5G has reignited a race amongst competing semiconductor technologies for inclusion in next-generation amplifiers, among which gallium nitride (GaN) is a major contender due its high power and temperature handling capabilities. In this workshop, we will address the prospects of GaN for new radio 5G (NR-5G) by tackling the full range of devices to systems opportunities and challenges. This begins with a comparison of the leading GaN MMIC technologies that are distinguished by the substrate of choice, namely GaN-on-Si and GaN-on-SiC. Trade-offs in material and device performance, as well as cost, will be addressed, as well as examples of current and upcoming MMIC designs for the market. Due to the high power of GaN MMIC modules and its relatively young age, reliability and packaging are critical. We will therefore present approaches to satisfy both the RF and thermal performance demands of GaN, alongside examples of hybrid GaN PAs.