

Reliability Study of Ir-Sputtered GaN Power Amplifier MMIC Under High-Level RF Input Drive at Elevated Temperatures

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Abstract

This study explores the use of a novel gate technology to design and implement a reliable power amplifier (PA) for millimeter-wave emerging applications. The PA, developed with 0.15- μm GaN-on-SiC HEMT technology, achieves a small-signal gain of larger than 13.5 dB and a maximum output power of greater than 26 dBm at 38 GHz. To evaluate the robustness, the PA was exposed to high-level RF stress at 200°C. After 10 hours at a 22 dBm input level, it showed minimal performance degradation. Compared to a PA with a platinum gate, the iridium gate technology demonstrated significantly better durability, indicating its strong potential for reliable millimeter-wave applications.

Keywords - *Ir-sputtered, GaN, reliability*