

Abstract Submitted
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Thermal Studies of Operating AlGa_N/Ga_N/SiC Based High Electron Mobility Transistors TODD HOLDEN, ZHIXUN MA, Physics Department and New York State Center for Advanced Technology in Photonics Applications, Brooklyn College of CUNY, Brooklyn, NY 11210, R. SANDHU, B. HEYING, I. SMORCHKOVA, M. WOJTOWICZ, Northrop Grumman Space Technology, One Space Park, Redondo Beach CA, 90278 — AlGa_N/Ga_N structures grown on SiC substrates can be used to create high power, high electron mobility transistors by exploiting the peizo-electric effect. These materials are highly desirable for their high thermal conductivity, high bandgap, and slow degradation. We have performed Raman and AFM- based thermal measurements on operating and non-operating devices in order to study thermal defects. In addition to measuring temperatures at a sub-micron scale, we find that even structures with excellent electronic and optical properties display sub-micron sized thermal defects, resulting in lowered thermal conductivity for the structures. Finite element analysis was used to better understand the thermal flows and experimental results.

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