

Accepted Manuscript

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PII: S0749-6036(18)31544-1

DOI: [10.1016/j.spmi.2018.09.007](https://doi.org/10.1016/j.spmi.2018.09.007)

Reference: YSPMI 5880

To appear in: *Superlattices and Microstructures*

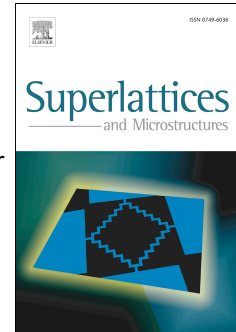
Received Date: 26 July 2018

Revised Date: 1 September 2018

Accepted Date: 6 September 2018

Please cite this article as: L. Li, J. Chen, X. Gu, X. Li, T. Pu, J.-P. Ao, Temperature sensor using thermally stable TiN anode GaN Schottky barrier diode for high power device applications, *Superlattices and Microstructures* (2018), doi: 10.1016/j.spmi.2018.09.007.

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Temperature sensor using thermally stable TiN anode GaN Schottky barrier diode for high power device applications

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Abstract

The temperature dependence of the characteristics of GaN Schottky barrier diodes fabricated with TiN and Ni anodes were evaluated in the temperature range from 25 to 175 °C. The Schottky barrier height (ideality factor) increases (decreases) with increasing temperature for both kinds of diodes owing to the barrier height being nonhomogeneous. The GaN diode with TiN anode presents better interface quality and thermal stability is adopted for temperature sensing application. It demonstrated that the sensitivity of the TiN diode is approximately 1 mV/K and varies only slightly for all current levels.

Keywords: gallium nitride, Schottky barrier diode, titanium nitride, temperature sensor.

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