US 20240213362A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0213362 A1**

Piedra et al. (43) **Pub. Date: Jun. 27, 2024**

(54) **ENHANCEMENT MODE GALLIUM NITRIDE TRANSISTOR**

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(21) Appl. No.: **18/069,802**

(22) Filed: **Dec. 21, 2022**

Publication Classification

(51) **Int. Cl.**

H01L 29/778	(2006.01)
H01L 29/20	(2006.01)
H01L 29/205	(2006.01)
H01L 29/66	(2006.01)

(52) **U.S. Cl.**

CPC ***H01L 29/7787*** (2013.01); ***H01L 29/2003*** (2013.01); ***H01L 29/205*** (2013.01); ***H01L 29/66462*** (2013.01)

(57) **ABSTRACT**

Techniques to fabricate an enhancement mode HEMT device where the normally off characteristic is implemented through the backside of the device by epitaxially growing a semiconductor layer, such as aluminum nitride (AlN) or aluminum gallium nitride (AlGaN), to deplete a two-dimensional electron gas (2DEG) channel. This buried semiconductor layer, e.g., a buried AlN or AlGaN layer, advantageously maintains a high transconductance and is more amenable to gate scaling then other enhancement mode techniques.