

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2023/0231040 A1 Yu et al.

Jul. 20, 2023 (43) **Pub. Date:**

(54) BIPOLAR TRANSISTOR STRUCTURE WITH EMITTER/COLLECTOR CONTACT TO DOPED SEMICONDUCTOR WELL AND RELATED METHODS

(71) Applicant: GlobalFoundries U.S. Inc., Malta, NY

(72)Inventors: Hong Yu, Clifton Park, NY (US); Vibhor Jain, Clifton Park, NY (US)

(21)Appl. No.: 17/578,011

(22) Filed: Jan. 18, 2022

Publication Classification

(51) Int. Cl. H01L 29/735 H01L 29/417

(2006.01)(2006.01)

H01L 29/66 (2006.01)(2006.01)

H01L 29/08 (52) U.S. Cl.

CPC H01L 29/735 (2013.01); H01L 29/41708 (2013.01); H01L 29/6625 (2013.01); H01L 29/0808 (2013.01); H01L 29/0821 (2013.01)

(57)**ABSTRACT**

Embodiments of the disclosure provide a lateral bipolar transistor structure with an emitter/collector (E/C) contact to a doped semiconductor well and related methods. A bipolar transistor structure according to the disclosure may include a doped semiconductor well over a semiconductor substrate. An insulative region is on the doped semiconductor well. A base layer is on the insulative region, and an emitter/ collector (E/C) layer on the insulative region and adjacent a first sidewall of the base layer. An E/C contact to the doped semiconductor well includes a lower portion adjacent the insulative region and an upper portion adjacent and electrically coupled to the E/C layer.

