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(54) **GALLIUM NITRIDE (GAN) DEVICES WITH THROUGH-SILICON VIAS**

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(57) **ABSTRACT**

Gallium nitride (GaN) devices with through-silicon vias for integrated circuit technology are described. In an example, an integrated circuit structure includes a layer including gallium and nitrogen, the layer including gallium and nitrogen above a silicon substrate. A backside structure is below the silicon substrate and opposite the layer including gallium and nitrogen, the backside structure including conductive features and dielectric structures. The integrated circuit structure also includes a plurality of through-silicon via power bars having a staggered arrangement, individual ones of the through-silicon via power bars extending through the layer including gallium and nitrogen and through the silicon substrate to a corresponding one of the conductive features of the backside structure, and individual ones of the through-silicon via power bars having a tapered portion coupled to an essentially vertical portion.