

Supplementary Information

Enhancement of Heat Dissipation in β -Ga₂O₃ Schottky Diodes through Cu-filled Thermal Vias: Experimental and Simulation Investigations

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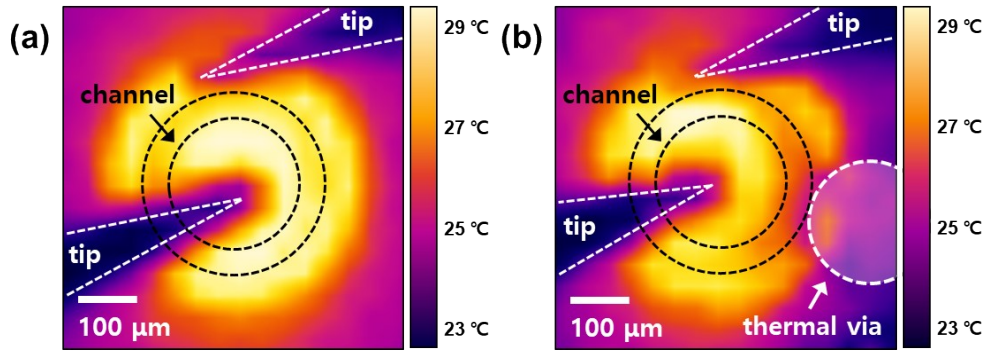


Figure S1. Infrared camera images of β -Ga₂O₃ Schottky diodes (a) without and (b) with thermal via after application of a 1.2 W/mm³ power.

Without thermal via, the temperature uniformly increased by approximately 4 °C from room temperature in all areas of the ring-shaped channel (yellow, ~29 °C). When a thermal via was used, there was a difference in temperature change in the channel area depending on the distance from the thermal via. In the channel region farthest from the thermal via (~280 μm), the same temperature was observed as that attained without the thermal via (yellow, ~29 °C). In the channel area located next to the thermal via, the temperature increase was relatively lower (red, ~26 °C). This difference may be because the heat was released at a faster rate to the outer parts of the device in regions close to the thermal via.

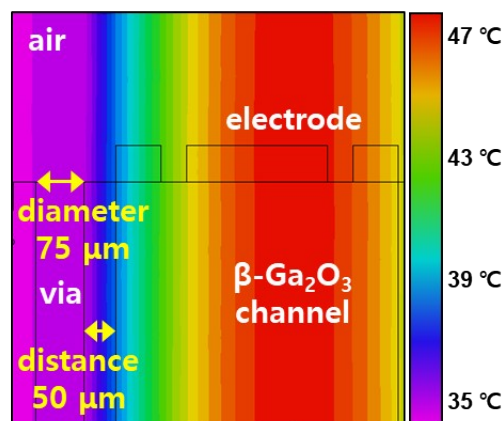


Figure S2. Simulated image of β -Ga₂O₃ Schottky diode with taper-free thermal via after application of a power of 5.7 W/mm³.