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(19) **United States**(12) **Patent Application Publication****Park et al.**(10) **Pub. No.: US 2023/0230893 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **SEMICONDUCTOR DEVICE AND METHOD OF STABILIZING HEAT SPREADER ON SEMICONDUCTOR PACKAGE**(52) **U.S. Cl.**CPC ..... *H01L 23/367* (2013.01); *H01L 21/50* (2013.01)(71) Applicant: **STATS ChipPAC Pte. Ltd.**, Singapore (SG)

(57)

**ABSTRACT**(72) Inventors: **SooJung Park**, Kyunggi-do (KR);  
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A semiconductor device has an electrical component and heat sink disposed over the electrical component. A portion of the heat sink extends at least partially down a side surface of the electrical component to prevent lateral movement of the heat sink with respect to the semiconductor die. Alternatively, a portion of the heat sink extends at least partially below a surface of the electrical component. The heat sink can have an angled side, extension, or indentation to stabilize the heat sink on the electrical component to prevent rotation or otherwise shifting position that would impart movement in the lateral direction and possibly contact adjacent components or create defects on the PCB. The portion of the heat sink extending at least partially down does so on at least two side surfaces of the electrical component. The electrical component can be a flipchip semiconductor die.

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