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(54) **INTEGRATED CIRCUIT PACKAGE AND METHOD**

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ABSTRACT

A semiconductor device includes a first semiconductor package comprising: a first interconnect structure on a first semiconductor substrate; through substrate vias electrically coupled to the first interconnect structure extending through the first semiconductor substrate; and a second semiconductor package directly bonded to the first semiconductor package, the second semiconductor package comprising a second semiconductor substrate and a second interconnect structure on the second semiconductor substrate. The semiconductor device further includes a silicon layer on a surface of the second semiconductor package that is opposite to the first semiconductor package; and a heat dissipation structure attached to the silicon layer.

