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(54) Title: HIGH BANDWIDTH MEMORY SYSTEMS AND DEVICES

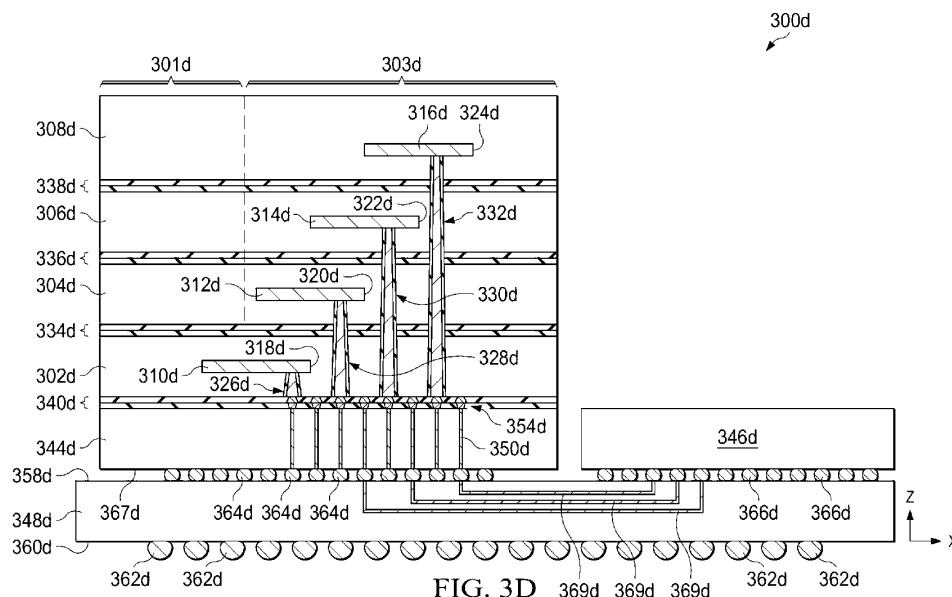


FIG. 3D

(57) Abstract: The present disclosure relates methods, devices, systems, and techniques for high bandwidth memory (HBM). An example semiconductor device includes a first layer, a second layer, a first die between the first layer and the second layer, and a second die stacked together along a first direction. Each of the first die and the second die has a conductive layer. The first die and the second die are bonded through the second layer. The semiconductor device further includes a first contact structure coupled to the conductive layer of the first die and a second contact structure coupled to the conductive layer of the second die. The first contact structure extends along the first direction and contacts the conductive layer of the first die without extending through the second layer. The second contact structure extends through the second layer along the first direction without extending through the second die.

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