



(54) **HETEROGENEOUS INTEGRATION  
STRUCTURE WITH VOLTAGE  
REGULATION**

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(57) **ABSTRACT**

Heterogeneous integration semiconductor packages with voltage regulation are described. A semiconductor device can include a chip including a memory device and a plurality of through-silicon-vias (TSVs). The semiconductor device can further include a processor arranged on top of the chip. The processor can be configured to communicate with the memory device via a plurality of interconnects. The semiconductor device can further include at least one voltage regulator arranged on top of the chip. The at least one voltage regulator can be configured to regulate power being provided from the plurality of TSVs to the processor.

