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**Petty-Weeks**

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(54) **SEMICONDUCTOR DIE PACKAGE WITH INCREASED THERMAL CONDUCTION**

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(75) Inventor: **Sandra L. Petty-Weeks**, Newport Beach, CA (US)

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(73) Assignee: **Skyworks Solutions, Inc.**, Irvine, CA (US)

*Primary Examiner*—Long Pham  
*Assistant Examiner*—Hoa B. Trinh

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(74) *Attorney, Agent, or Firm*—Farjami & Farjami LLP

(57) **ABSTRACT**

In one exemplary embodiment, a structure comprises a substrate having a core, a top surface and a bottom surface. A substrate die pad is situated on the top surface of the substrate and is capable of receiving a die, and a heat spreader is situated on the bottom surface of the substrate. The substrate further comprises a first metal cap, at least one buried via, and a second metal cap. The first metal cap is situated below and is thermally coupled to the substrate die pad. The at least one buried via is situated below the first metal cap within the core of the substrate. The second metal cap is situated below the at least one buried via and is thermally coupled to the second metal cap.

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(52) **U.S. Cl.** ..... **257/700; 257/706; 438/106; 438/118**

(58) **Field of Search** ..... **438/106, 123, 438/118, 107; 361/720, 704; 257/700, 706, 738**

(56) **References Cited**

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**23 Claims, 6 Drawing Sheets**

