

**EXHIBIT B**

**SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT**



(12) **United States Patent**  
**Lee et al.**

(10) **Patent No.:** **US 7,256,486 B2**  
 (45) **Date of Patent:** **Aug. 14, 2007**

(54) **PACKAGING DEVICE FOR SEMICONDUCTOR DIE, SEMICONDUCTOR DEVICE INCORPORATING SAME AND METHOD OF MAKING SAME**

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(73) Assignee: **Avago Technologies ECBU IP (Singapore) Pte. Ltd.**, Singapore (SG)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/608,605**

(22) Filed: **Jun. 27, 2003**

(65) **Prior Publication Data**  
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(51) **Int. Cl.**  
**H01L 29/22** (2006.01)  
 (52) **U.S. Cl.** ..... **257/690; 257/784; 257/690**  
 (58) **Field of Classification Search** ..... **257/690, 257/784, 700, 689, 774, 783, 99, 100; 361/707, 361/718, 719, 706, 717, 720**  
 See application file for complete search history.

(56) **References Cited**  
 U.S. PATENT DOCUMENTS  
 2,907,925 A 10/1959 Parsons  
 5,006,673 A 4/1991 Freyman et al.  
 5,177,593 A \* 1/1993 Abe ..... 257/98  
 5,298,687 A 3/1994 Rapoport et al.  
 5,440,075 A 8/1995 Kawakita et al.  
 5,640,048 A \* 6/1997 Selna ..... 257/738  
 5,670,797 A 9/1997 Okazaki  
 5,986,885 A \* 11/1999 Wyland ..... 361/704  
 6,084,295 A \* 7/2000 Horiuchi et al. .... 257/690

6,191,477 B1 \* 2/2001 Hashemi ..... 257/706  
 6,268,654 B1 \* 7/2001 Glenn et al. .... 257/704  
 6,362,525 B1 3/2002 Rahim  
 6,383,835 B1 5/2002 Hata et al.  
 6,620,720 B1 \* 9/2003 Moyer et al. .... 438/612  
 6,707,247 B2 3/2004 Murano  
 6,828,510 B1 12/2004 Asai et al.  
 7,098,593 B2 \* 8/2006 Teng ..... 313/581  
 2002/0139990 A1 \* 10/2002 Suehiro et al. .... 257/99

(Continued)

**OTHER PUBLICATIONS**

Syd R. Wilson, Clarence J. Tracy, and John L. Freeman, Jr., "Handbook of Multilevel Metallization for Integrated Circuits," Noyes Publ., Westwood, New Jersey (1993), pp. 868-872.\*

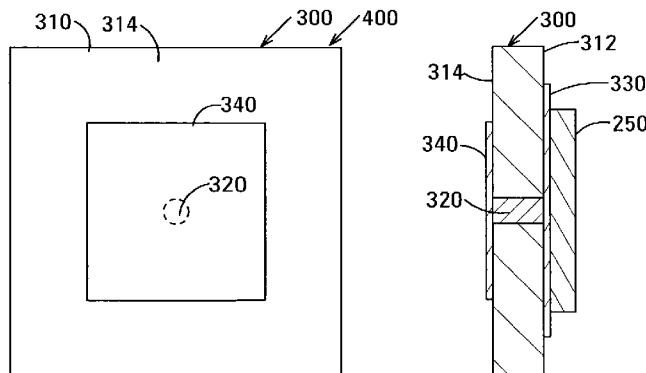
(Continued)

*Primary Examiner*—Sara Crane

(57) **ABSTRACT**

The packaging device includes a substrate, a mounting pad, a connecting pad and an interconnecting element. The substrate is substantially planar and has opposed major surfaces. The mounting pad is conductive and is located on one of the major surfaces. The connecting pad is conductive and is located on the other of the major surfaces. The conductive interconnecting element extends through the substrate and electrically interconnects the mounting pad and the connecting pad. The packaging device has a volume that is only a few times that of the semiconductor die and can be fabricated from materials that can withstand high-temperature die attach processes. The packaging device can be configured as the only packaging device used in the semiconductor device or as a submount for a semiconductor die that requires a high-temperature die attach process.

**6 Claims, 8 Drawing Sheets**



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U.S. PATENT DOCUMENTS

2002/0179335 A1 12/2002 Curcio et al.  
2003/0017645 A1 1/2003 Kabayashi et al.  
2003/0020126 A1 1/2003 Sakamoto et al.  
2003/0040138 A1 2/2003 Kobayashi et al.  
2003/0168256 A1 9/2003 Chien

OTHER PUBLICATIONS

Electronic Packaging and Production, "Innovative PCB Reinforcement," (Feb. 1997), p. 1.\*  
Johannes Adam, "New Correlations Between Electrical Current and Temperature Rise in PCB Traces," Proc. 20<sup>th</sup> IEEE Semi-Therm Symp., (Mar. 2004), pp. 1-8.\*

\* cited by examiner

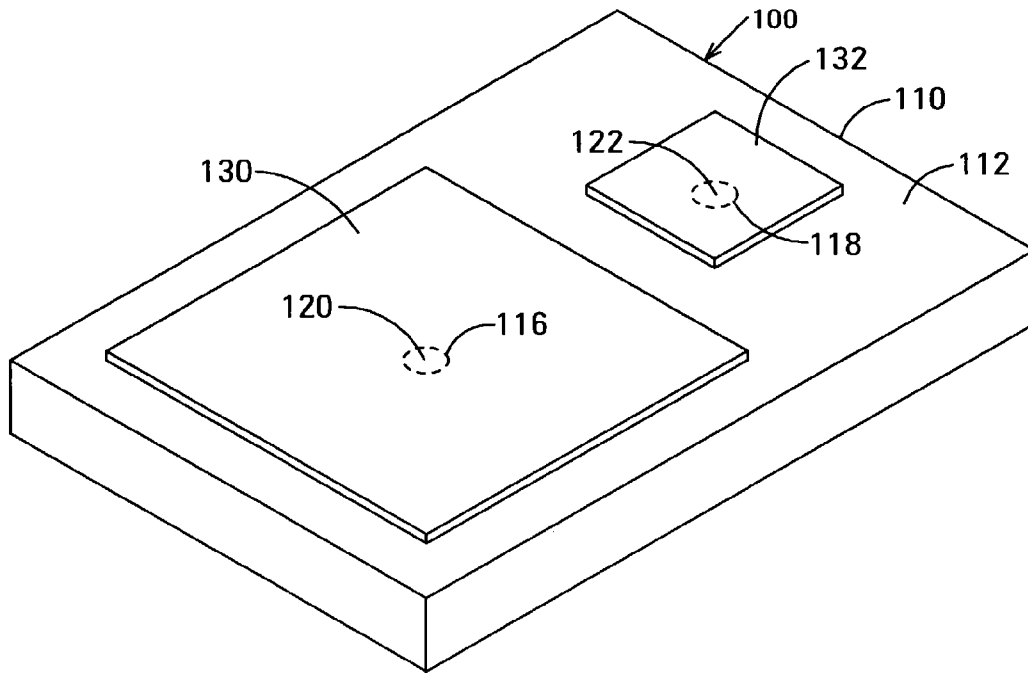


FIG. 1A

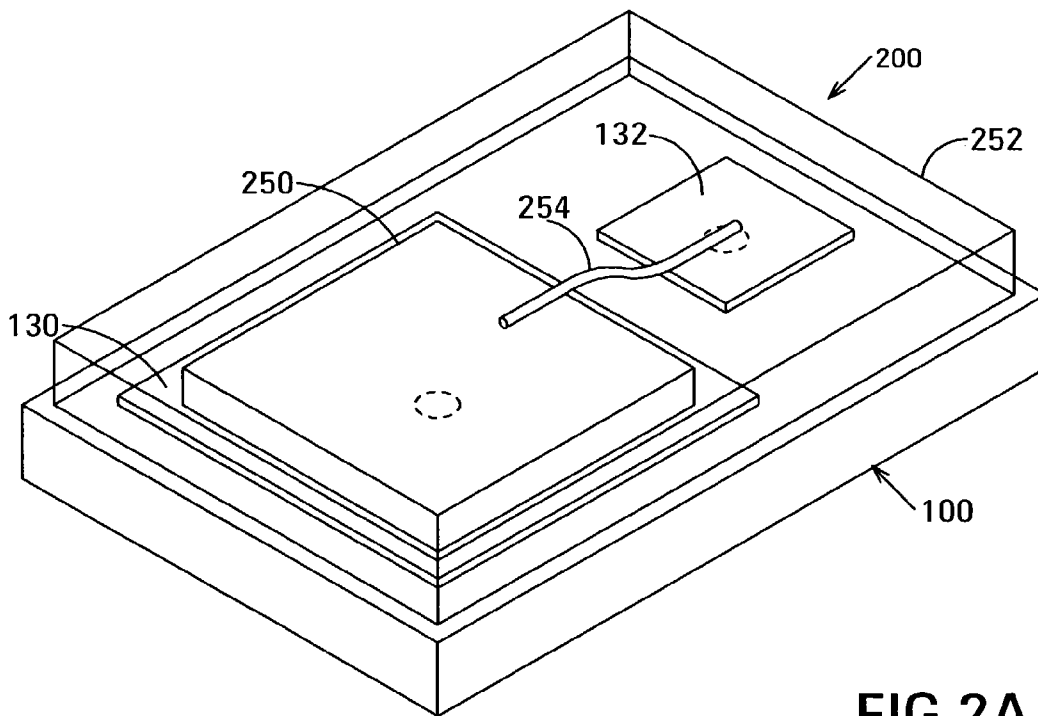


FIG. 2A

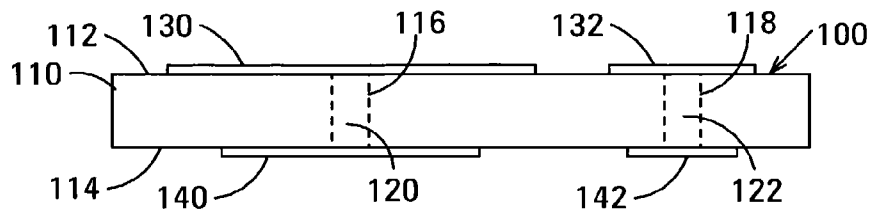


FIG. 1B

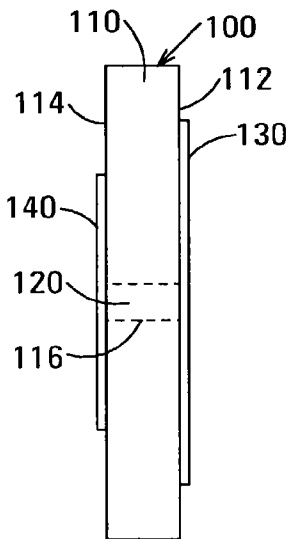


FIG. 1C

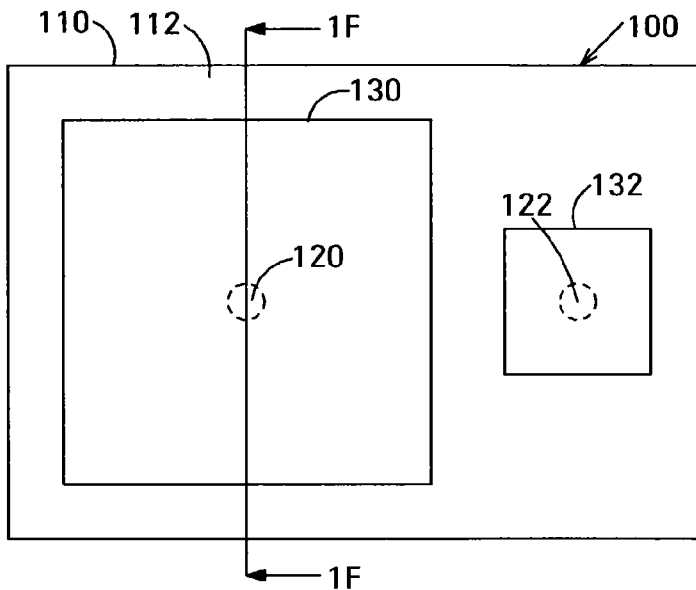


FIG. 1D

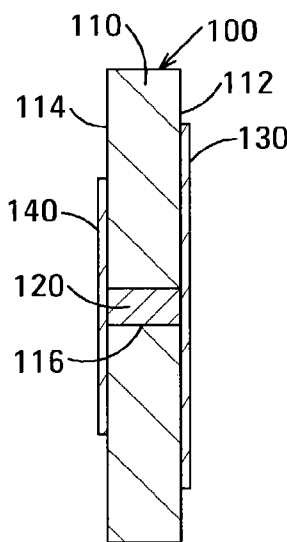


FIG. 1F

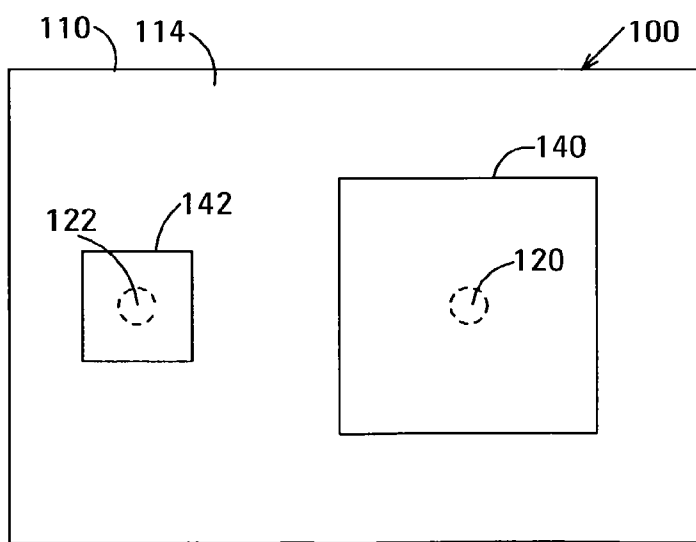


FIG. 1E

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