

# EXHIBIT C

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

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(45) **Date of Patent:** **Jul. 28, 2009**

(54) **ALUMINUM PAD POWER BUS AND SIGNAL ROUTING FOR INTEGRATED CIRCUIT DEVICES UTILIZING COPPER TECHNOLOGY INTERCONNECT STRUCTURES**

(75) Inventors: **Seung H. Kang**, Macungie, PA (US); **Roland P. Krebs**, Allentown, PA (US); **Kurt George Steiner**, Fogelsville, PA (US); **Michael C. Ayukawa**, Zionsville, PA (US); **Sailesh Mansinh Merchant**, Breinigsville, PA (US)

(73) Assignee: **Agere Systems Inc.**, Allentown, PA (US)

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(60) **Related U.S. Application Data**  
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(51) **Int. Cl.** *H01L 23/52* (2006.01)  
(52) **U.S. Cl.** ..... **257/691**; 257/668; 257/701; 257/750; 257/765; 257/E21.591  
(58) **Field of Classification Search** ..... 257/750-752, 257/758-759, 760-762, 773, 668, 691, 701, 257/765  
See application file for complete search history.

(56) **References Cited**  
U.S. PATENT DOCUMENTS

4,060,828 A 11/1977 Satonaka  
4,840,923 A 6/1989 Flagello et al.

5,148,263 A	9/1992	Hamai	
5,436,412 A *	7/1995	Ahmad et al. ....	174/265
5,719,448 A	2/1998	Ichikawa	
6,018,187 A *	1/2000	Theil et al. ....	257/458
6,107,185 A *	8/2000	Lukanc .....	438/631
6,204,165 B1	3/2001	Ghoshal	
6,225,207 B1	5/2001	Parikh	
6,229,221 B1 *	5/2001	Kloen et al. ....	257/784
6,232,662 B1 *	5/2001	Saran .....	257/750
6,261,944 B1	7/2001	Mehta et al.	
6,331,482 B1 *	12/2001	Honeycutt et al. ....	438/642
6,348,731 B1 *	2/2002	Ashley et al. ....	257/751
6,348,732 B1 *	2/2002	Lopatin et al. ....	257/751
6,376,353 B1 *	4/2002	Zhou et al. ....	438/612
6,410,435 B1 *	6/2002	Ryan .....	438/687
6,448,650 B1 *	9/2002	Saran et al. ....	257/758
6,451,681 B1 *	9/2002	Greer .....	438/601
6,455,943 B1 *	9/2002	Sheu et al. ....	257/758
6,555,459 B1 *	4/2003	Tokushige et al. ....	438/612
6,614,091 B1 *	9/2003	Downey et al. ....	257/499
6,649,993 B2 *	11/2003	Theil .....	257/458
6,713,381 B2 *	3/2004	Barr et al. ....	438/622
6,717,270 B1 *	4/2004	Downey et al. ....	257/758
6,740,985 B1 *	5/2004	Zhao .....	257/784
6,798,073 B2 *	9/2004	Lin et al. ....	257/778
6,930,379 B2 *	8/2005	Seshan .....	257/691
6,979,896 B2 *	12/2005	Seshan .....	257/691

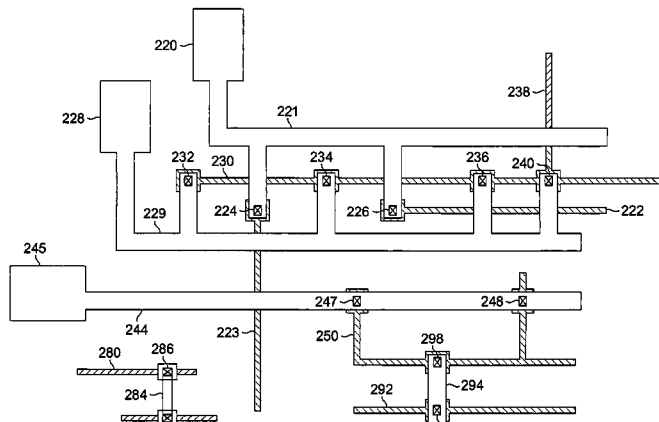
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Primary Examiner—Wai-Sing Louie

(57) **ABSTRACT**

An integrated circuit device structure and a process for fabricating the structure wherein the power bus interconnect structure is formed in the aluminum pad or contact layer. An interconnect structure for interconnecting underlying levels of interconnect can also be formed in the aluminum pad layer.

**7 Claims, 9 Drawing Sheets**



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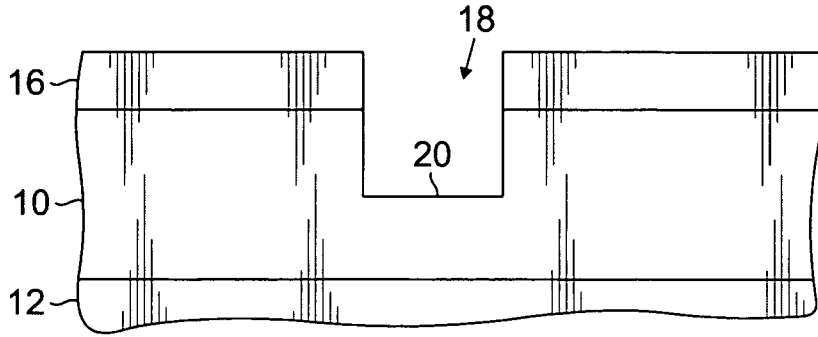
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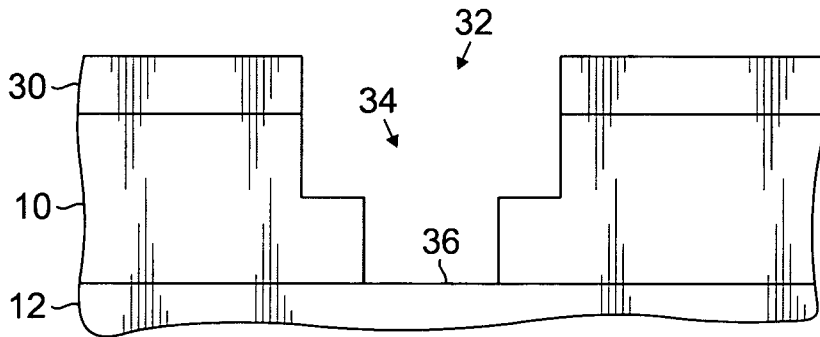
U.S. PATENT DOCUMENTS

2001/0036716	A1 *	11/2001	Chittipeddi et al. ....	438/584	2002/0109232	A1	8/2002	Lin et al.	
2002/0038903	A1 *	4/2002	Tsau .....	257/532	2003/0218259	A1 *	11/2003	Chesire et al. ....	257/786
2002/0068441	A1	6/2002	Lin						

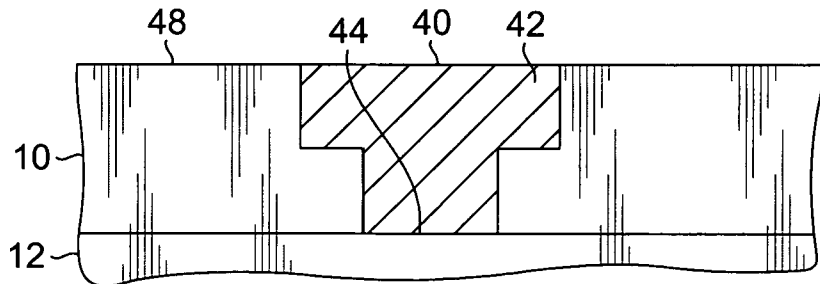
\* cited by examiner



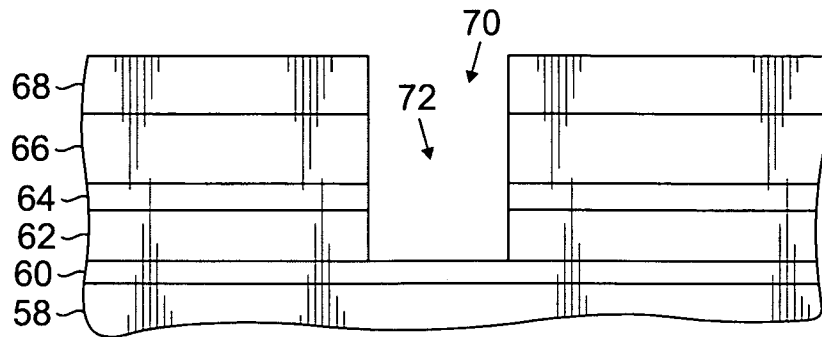
**FIG. 1A**  
**(PRIOR ART)**



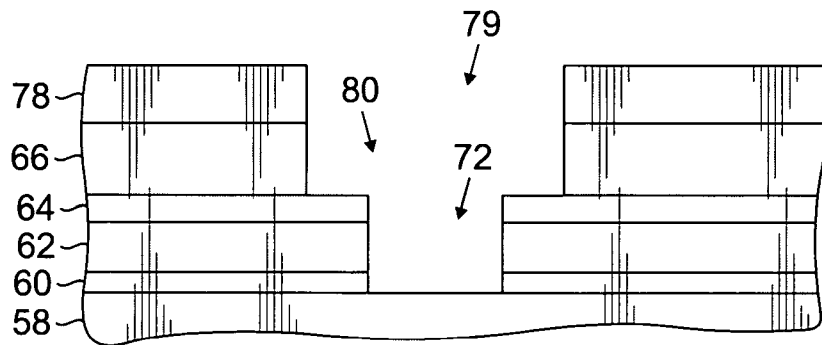
**FIG. 1B**  
**(PRIOR ART)**



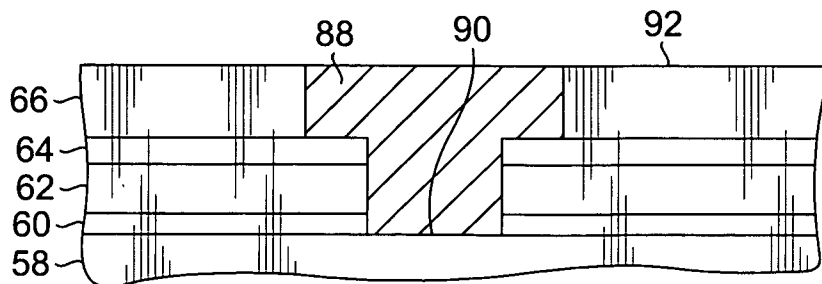
**FIG. 1C**  
**(PRIOR ART)**



**FIG. 2A**  
**(PRIOR ART)**



**FIG. 2B**  
**(PRIOR ART)**



**FIG. 2C**  
**(PRIOR ART)**

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