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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/900,047 07/24/97 YEN

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EXAMINER

B2M1/0224

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ART UNIT

PAPER NUMBER

2503


DATE MAILED:

02/24/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

INTEL 1110

Office Action Summary	Application No. 08/900,047	Applicant(s) Yen	
	Examiner Valencia Martin Wallace	Group Art Unit 2503	

☒ Responsive to communication(s) filed on Jan 9, 1998

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 2-6 and 8-17 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 2-6 and 8-17 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 4-6 and 10-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4-6 and 10-12 recite the limitation "said electrically conducting plug". There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claims 3-6 and 9-14, 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Chappell et al. (U.S. Patent No. 5,541,427).

Chappell et al. disclose a semiconductor structure and a method of forming a local interconnect in a semiconductor structure, comprising:

a silicon substrate (10) having a top surface;

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a diffusion region (43) formed in said substrate adjacent to said top surface;
a polysilicon gate (18) formed on the top surface of said substrate juxtaposed to but not contacting said diffusion region;
a sidewall spacer (28) adjacent to said polysilicon gate and disposed above said diffusion region;
an insulator layer (36) substantially covering said polysilicon gate and said diffusion region; and
a conducting plug (44a) at least partially filling a via in said insulation layer that exposes said sidewall spacer in the absence of said conducting plug, said conducting plug providing direct electrical communication between said polysilicon gate and said diffusion region. Note Chappell et al. Figure 8.

In re claims 3 and 9, said insulator layer is formed of a material such as silicon oxide (see Chappell et al. column 4, lines 23 and 24).

In re claims 4-6 and 10-12, said conducting plug is a metal plug formed of a refractory material such as tungsten (see Chappell et al. column 4, lines 66 and 67).

In re claim 16, said polysilicon gate and said diffusion region are exposed in said via in the absence of said conducting plug (see Chappell et al. Figure 5).

Therefore, Chappell et al. meet and anticipate the claims.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chappell et al. in view of Jones, Jr. (U.S. Patent No. 5,313,089), of record.

The disclosure of Chappell et al. as discussed above. However, Chappell et al. fail to disclose forming the conductive plug with both a refractory metal layer and a layer of glue.

Therefore, to provide the device of Chappell et al. with a conductive plug comprised of an outer glue layer and a plug of a refractory metal as taught by Jones, Jr. would have been obvious to one of ordinary skill in this art because Jones, Jr. specifically teaches the process of forming a semiconductor device similar in structure and function to that of Chappell et al. having a conductive plug (32) within a dielectric layer (30) wherein said plug has a layer of glue and a plug of tungsten, as well known and commonly used in conductive plug technology (see Jones, Jr. column 3, lines 64-68 and column 4, lines 1-17). Note Jones, Jr. Figure 2.

Also, it is obvious that the diffusion regions of Chappell et al. would be of N or P type conductivity because Chappell et al. specify that the regions are. Further, Jones, Jr. specify that the diffusion regions (16, 18) are heavily doped with an impurity (see Jones, Jr. column 3, lines 23-24).

Response to Amendment

The declaration filed on January 9, 1998 under 37 CFR 1.131 is sufficient to overcome the Sugiyama et al. (U.S. Patent No. 5,600,170) reference.

Response to Arguments

Applicant's arguments with respect to claims 2-6 and 8-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference to Fazan et al. (U.S. Patent No. 5,052,351) is cited to show a semiconductor device similar in structure to that of the present invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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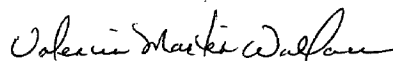
will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Valencia Martin Wallace whose telephone number is (703) 308-4119. The examiner can normally be reached on Monday - Thursday from 8:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mahshid Saadat, can be reached on (703) 308-4915. The fax phone number for this Group is (703) 308-7723.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Martin Wallace
February 17, 1998


Valencia Martin Wallace
Primary Examiner
Group 2500

Notice of References Cited			Application No. 08/900,047		Applicant(s) Yen	
			Examiner Valencia Martin Wallace		Group Art Unit 2503	
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U.S. PATENT DOCUMENTS						
	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	
A	5,053,351	10/1/91	Fazan et al.	437	52	
B	5,541,427	7/30/96	Chappell et al.	257	306	
C						
D						
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FOREIGN PATENT DOCUMENTS						
	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
N						
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NON-PATENT DOCUMENTS	
	DOCUMENT (Including Author, Title, Source, and Pertinent Pages)
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