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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 43218-P001US

In re Application of:

RAO, G.R. MOHAN

Serial No. 10/934,915

Filed: 3 SEPTEMBER 2004

For: **SEMICONDUCTOR DEVICES
WITH GRADED DOPANT REGIONS**

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Examiner: **TO BE ASSIGNED**

Art Unit: **TO BE ASSIGNED**

PRELIMINARY AMENDMENT

MAIL STOP: AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Please enter the following amendments and consider the following remarks prior to examining the subject application.

CERTIFICATE OF MAILING

I hereby certify that this paper or fee is being deposited with the United States Postal Service as First Class Mail with sufficient postage under 37 C.F.R. § 1.8 on the date indicated below and is addressed to Mail Stop: Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Date of Deposit: 2 February 2006

By: *Philip W. Gahr Jr.*

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IN THE CLAIMS:

The following is a complete listing of the claims. Please amend the claims as follows:

1. (Original) A semiconductor device with graded dopant concentration in the active region, to aid carrier movement from emitter to collector.
2. (Original) A semiconductor device with graded dopant concentration in the active region, to aid carrier movement from source to drain.
3. (Original) A semiconductor device with graded dopant concentration in the well regions, to aid carrier movement away from the active surface regions, towards the substrate.
4. (Original) A semiconductor device with graded dopant concentration in the substrate region to aid carrier movement away from the active surface regions, deeper towards the substrate.
5. (Original) A semiconductor device with at least one graded dopant concentration of donor or acceptor, to aid or impede carrier movement in selected regions in the monolithic die.
6. (Original) A semiconductor device with at least one each of dopant concentration of both donor and acceptor, to optimize the operating performance of the device.
7. (Original) A semiconductor device with at least one graded dopant concentration fabricated with ion implantation, to provide an aiding or retarding electric field locally in a monolithic integrated circuit.

8. (Original) A semiconductor device with at least one graded dopant concentration in an epitaxial layer.
9. (Original) A semiconductor device where one layer of dopant from one wafer, is transferred to another wafer having either same polarity or different polarity dopant through wafer bonding or similar processes.
10. (New) A semiconductor device with graded dopant concentration where the graded concentration further enhances the efficiency of a photovoltaic cell or photovoltaic module for energy conversion.

The Applicant submits that the foregoing amendment adds no new matter to the application. In addition, the Applicant submits that the amendment proposed herein will not cause any undue burden on the Office.

CONCLUSION

Claims 1-9 were pending in the subject application. Claim 10, which is an independent claim, is hereby added.

One new independent claim is hereby added. Therefore, enclosed herewith is a check in the amount of \$100.00 to cover the fee for an additional independent claim in excess of three.

Respectfully submitted,

February 2, 2006

Date

G.R. Mohan Rao

G.R. Mohan Rao



Attorney Docket No. 43218-P001US
Customer No. 000061400

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For: **SEMICONDUCTOR DEVICES
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Confirmation No. 4749

Group Art Unit: 2811

Examiner: **G. Munson**

ELECTION UNDER 35 U.S.C. § 121

Mail Stop Amendment
Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the restriction requirement set forth in the Office Action mailed March 28, 2006, having a one month shortened statutory period for response, wherein the Examiner required restriction between the following groups:

- Group I - Figure 4; claim 1;
- Group II - Figure 5(a); claims 3, 6;
- Group III - Figure 5(b); claim 4; and
- Group IV - Claim 10.

Applicant elects Group IV, claim 10, for initial prosecution on the merits. Applicant also reserves the right to file one or more Divisional Applications for the non-elected inventions which the Examiner has indicated are patentably distinct.

Applicant believes that a one month extension of time is required and, contemporaneously herewith, has petitioned the Commissioner under 37 C.F.R. 1.136 for such an extension. However, a further conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for further extension of time.

Respectfully submitted,

Date: 5/22/2006


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<u>Certificate of Mailing</u>	
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on <u>5-22-06</u> .	
<u>Jackie L. Jenkins</u>	
Printed Name	
<u>Jackie L. Jenkins</u>	
Signature	



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/934,915

09/03/2004

G.R. Mohan Rao

43218-P001US

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61400 7590 06/13/2006

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EXAMINER

MUNSON, GENE M

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/13/2006

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

Office Action Summary	Application No. <u>101934,915</u>	Applicant(s) <u>G. RAO</u>	
	Examiner <u>G. MUNSON</u>	Art Unit <u>2811</u>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREEMONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ 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.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-4, 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5, 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/03/04, 5/26/06</u> | 6) ☐ Other: _____ |

Art Unit: 2811

Claims 1-4 and 6-9 are withdrawn from consideration as being for non-elected species, the election having been made *without* traverse in the response, filed 26 May 2006.

Applicants are requested to cancel the non-elected claims as part of a complete response to this office action. Note that cancellation of the non-elected claims would not preclude the later filing of a divisional application on the non-elected invention (35 USC 120, 121).

Claim 10 is rejected under 35 U.S.C. 112, first paragraph. The "photovoltaic cell" and "photovoltaic module" do not appear clearly described in the specification as originally filed. The claim is new matter.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph. The "monolithic die" does not have a clear antecedent.

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 –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5 and 10 are rejected under 35 U.S.C. 102 as unpatentable as shown by Gibbons.

See Figures 6(a), 6(b).

No claim is allowed.

G. Munson
(571) 272-1659

6/08/06



GENE M. MUNSON
EXAMINER
GROUP ART UNIT 2801