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EXAMINER

MIYOSHI, JESSE Y

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* CHRISTIAN PACHA, THOMAS SCHULZ, and  
KLAUS VON ARNIM

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Appeal 2015-006407  
Application 12/888,528  
Technology Center 2800

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Before TERRY J. OWENS, JEFFREY R. SNAY, and BRIAN D. RANGE,  
*Administrative Patent Judges.*

RANGE, *Administrative Patent Judge.*

DECISION ON APPEAL

SUMMARY

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1, 2, 7, 9–17, and 22. We have jurisdiction. 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> According to the Appellants, the real party in interest is Infineon Technologies AG. Appeal Br. 3.

## STATEMENT OF THE CASE

Appellants describe the invention as relating to an analog silicon on insulator (SOI) semiconductor circuit having multi-gate field effect transistors and an associated method for temperature detection. Spec. 1:13–17. Claim 1, reproduced below with emphases added to certain key recitations, is illustrative of the claimed subject matter:

1. A semiconductor circuit arrangement comprising:

a semiconductor substrate;

a first insulating layer, which is formed on the semiconductor substrate; and

an active semiconductor region, formed on the first insulating layer and laterally delimited and surrounded on all sides by a second insulating layer;

wherein the active semiconductor region consists of a first and a second doping zone of a first conduction type, an undoped channel zone defined by the first and second doping zones, **and a diode doping zone of a second conduction type**, which is opposite to the first conduction type, wherein the first and second doping zones are formed as far as the surface of the first insulating layer, and wherein there is formed at the surface of the channel zone at least one gate dielectric and thereon a control electrode for the realization of a field effect transistor, the entire gate dielectric arranged directly between the control electrode and the surface of the channel zone;

wherein the diode doping zone is furthermore formed as far as the surface of the first insulating layer, wherein the diode doping zone and one of the first or second doping zones together form a measuring diode via a side area of the diode doping zone with the first or second doping zone of the field effect transistor and wherein the diode doping zone is delimited by the second insulating layer at its further side areas;

**wherein, at the surface of the active semiconductor region, a blocking layer is formed in the region of the diode side area and a metal-semiconductor compound layer is**

**formed in the remaining region not covered by the gate dielectric and the blocking layer;**

wherein the blocking layer has a first surface parallel to the semiconductor substrate and a second surface opposite to the first surface of the blocking layer;

wherein the metal-semiconductor compound layer has a first surface parallel to the semiconductor substrate and a second surface opposite to the first surface of the metal-semiconductor compound layer; and

wherein the first surface of the blocking layer is aligned with the first surface of the metal-semiconductor compound layer, and the second surface of the blocking layer is aligned with the second surface of the metal-semiconductor compound layer.

Appeal Br.<sup>2</sup> 17 (Claims Appendix)

#### REFERENCES

The Examiner relies upon the prior art below in rejecting the claims on appeal:

Quigley et al. (hereinafter "Quigley")	US 5,708,288	Jan. 13, 1998
Long	US 6,423,604 B1	July 23, 2002
Chau et al. (hereinafter "Chau")	US 6,653,700 B2	Nov. 25, 2003
Yamada et al. (hereinafter "Yamada")	US 6,835,981 B2	Dec. 28, 2004
Beer et al. (hereinafter "Beer")	US 2001/0026576 A1	Oct. 4, 2001

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<sup>2</sup> In this decision, we refer to the Final Office Action mailed January 10, 2014 ("Final Act."), the Appeal Brief filed July 14, 2014 ("Appeal Br."), and the Examiner's Answer mailed September 12, 2014 ("Ans.").

## REJECTIONS

The Examiner maintains the following rejections on appeal:

Rejection 1. Claims 1, 2, 7, 9, and 10 under 35 U.S.C. § 103 as unpatentable over Yamada in view of Long, Chau, and Quigley. Final Act. 2.

Rejection 2. Claims 11–14 under 35 U.S.C. § 103 as unpatentable over Yamada in view of Chau, Long, Beer, and Quigley. *Id.* at 7.

Rejection 3. Claims 15–17 and 22 under 35 U.S.C. § 103 as unpatentable over Yamada in view of Chau, Long, and Quigley. *Id.* at 11.

## ANALYSIS

We review the appealed rejections for error based upon the issues identified by Appellants and in light of the arguments and evidence produced thereon. *Cf. Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“it has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections”)). After having considered the evidence presented in this Appeal and each of Appellants’ contentions, we are not persuaded that Appellants identify reversible error, and we affirm the Examiner’s § 103 rejections for the reasons expressed in the Final Office Action and the Answer. We add the following primarily for emphasis.

Rejection 1. The Examiner rejects claims 1, 2, 7, 9, and 10 as obvious over Yamada in view of Long, Chau, and Quigley. Final Act. 2. Appellants do not separately argue claims 2, 7, 9, or 10. We therefore limit our

discussion to claim 1. Claims 2, 7, 9, and 10 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv) (2013).

The Examiner finds Yamada, Long, Chau, and Quigley collectively teach each element of claim 1. Final Act. 2–5 (providing citations to the cited references). The Examiner also provides a factual basis as to why it would have been obvious to combine each of Long, Chau, and Quigley with Yamada. *Id.*; *see also* Ans. 2–4. A preponderance of the evidence supports the Examiner’s findings and obviousness conclusions.

Appellants argue, as the Examiner admits, that Yamada fails to disclose claim 1’s recited “diode doping zone.” Appeal Br. 8 (citing Final Act. 3 (“Yamada is silent as to . . . a diode doping zone of a second conduction type . . .”). Appellants further argue that Long discloses two diode doping zones rather than one and that combining Yamada and Long would therefore not result in a semiconductor region that “*consists of a first and a second doping zone, a channel zone, and a diode doping zone that are laterally delimited by an insulating layer.*” Appeal Br. 9. We agree, however, with the Examiner’s determination that it would have been obvious to incorporate just one doped region of Long into the teachings of Yamada. Ans. 3. This determination is well supported by the Examiner’s finding that Long teaches that use of one such region is sufficient in measuring the MOSFET temperature. *Id.*; *see also* Final Act 4; Long 3:3–11, 4:3–6, Fig. 4. The Examiner also provides adequate factual findings to support that the diode doping zone of the Long/Yamada combination would have been laterally delimited by the insulating layer of Yamada. Ans. 6; Final Act. 4. Appellants do not persuasively dispute the Examiner’s factual findings underlying these determinations.

Appellants also argue that Quigley discloses the use of two sidewall spacers so that the combination of Yamada and Quigley would not result in claim 1's recited "a metal-semiconductor compound layer is formed in the remaining region not covered by the gate dielectric and the blocking layer." Appeal Br. 10 (emphasis removed). The Examiner's combination, however, does not bodily incorporate the spacers, and such bodily incorporation is not required. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . ."). The Examiner's findings adequately support combining Quigley's teachings into the Yamada/Long combination (*see* Ans. 9–10, Final Act. 5–6), and Appellants do not persuasively dispute the factual findings underlying the Examiner's determination concerning the combination of Yamada/Long with Quigley. Rather, Appellants' argument focuses on Quigley combined with Yamada alone. Appeal Br. 9–10.

Because Appellants fail to identify reversible error, we sustain the Examiner's rejection of claims 1, 2, 7, 9, and 10.

Rejections 2 and 3. Appellants separately address the Examiner's rejection of claims 11–14 (Appeal Br. 10–12) and claims 15–17 and 22 (Appeal Br. 12–15). Appellants substantially repeat the arguments addressed above, and, for the reasons explained above, those arguments fail to identify reversible error. We thus sustain the Examiner's rejection of claims 11–14 and rejection of claims 15–17 and 22.

Appeal 2015-006407  
Application 12/888,528

DECISION

For the above reasons, we affirm the Examiner's rejection of claims 1, 2, 7, 9–17, and 22.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED