

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

INTEL CORPORATION  
and  
QUALCOMM INCORPORATED, GLOBALFOUNDRIES INC.,  
GLOBALFOUNDRIES U.S. INC., GLOBALFOUNDRIES DRESDEN  
MODULE ONE LLC & CO. KG, GLOBALFOUNDRIES  
DRESDEN MODULE TWO LLC & CO. KG,  
Petitioners

v.

DSS TECHNOLOGY MANAGEMENT, INC.,  
Patent Owner

---

Case IPR2016-00290<sup>1</sup>  
Patent 5,965,924

---

Before BRYAN F. MOORE, BRIAN J. McNAMARA, and  
MINN CHUNG, *Administrative Patent Judges*.

McNAMARA, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and*  
*37 C.F.R. § 42.73*

---

<sup>1</sup> Case IPR2016-01312 has been joined with this proceeding.

## BACKGROUND

On June 8, 2016 we instituted an *inter partes* review of claims 7–12, 15, and 17 of U. S. Patent No. 5,965,924 (“the ’924 Patent”) based on a Petition filed by Intel Corporation. Paper 10 (“Dec. to Inst.”). DSS Technology Management, Inc. (“Patent Owner”) waived its right to file a Preliminary Response. On August 29, 2016 we instituted *inter partes* review of the same claims on the same grounds based on a substantially identical petition filed by Qualcomm Incorporated, Globalfoundries Inc., Globalfoundries U.S. Inc., Globalfoundries Dresden Module One LLC & Co. KG, Globalfoundries Dresden Module Two LLC & Co. KG, in IPR2016-01312. We then joined IPR2016-00290 and IPR2016-01312. Papers 17, 18. In this joined proceeding, we refer to Intel Corporation, Qualcomm Incorporated, Globalfoundries Inc., Globalfoundries U.S. Inc., Globalfoundries Dresden Module One LLC & Co. KG, Globalfoundries Dresden Module Two LLC & Co. KG, collectively as “Petitioner.”

On September 7, 2016, Patent Owner filed a Patent Owner Response that contained no citations to evidence and no argument, other than noting that in contrast to the standard applied in reaching a decision to institute (i.e., a reasonable likelihood Petitioner will prevail on its challenge to patentability of a claim), the standard for reaching a final decision is whether the Petitioner proved unpatentability by a preponderance of the evidence. PO Resp. 2. Patent Owner then stated it “defers to the Board to make this determination based on its impartial analysis of the prior art and Petitioners’ arguments.” *Id.*

In its Reply filed on December 7, 2016, Petitioner stated that Patent Owner has provided no testimony or any other evidence that contradicts or

rebutts the testimony of Petitioner's expert, Dr. John Bravman, and that the challenged claims should be found unpatentable (Paper 21, "Pet. Reply").

We did not conduct an oral hearing in this case.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. §318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

Having reviewed the papers submitted by the parties and the supporting evidence, we conclude that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable.

#### THE '924 PATENT (Ex. 1001)

The '924 Patent relates to semiconductor fabrication in general, and in particular concerns a metal plug local interconnect that is formed in the same process of forming metal plugs that are already designed as sub-metal plugged contacts. Ex. 1001, col. 1, ll. 9–11. The '924 Patent discloses that in semiconductor fabrication, it is often necessary to make a local interconnect between a gate polysilicon layer to N+ or P+ diffusion regions. *Id.* at col. 1, ll. 16–17. According to the '924 Patent, conventionally such local interconnects were fabricated using buried contacts, as shown in Figures 1A and 1B of the '924 Patent (*id.* at col. 1, l. 25–col. 2, l. 11) or with a metallic local interconnect strap to shunt from a gate polysilicon to a diffusion region, as illustrated in Figures 2A and 2B of the '924 Patent (*id.* at col. 2, l. 12–41).

The '924 Patent discloses a semiconductor structure in which a diffusion region is formed in a silicon substrate and a polysilicon gate is formed on the top surface of the silicon substrate adjacent to, but not

contacting, the diffusion region. Ex. 1001, col. 3, ll. 1–6, 14–18. A layer of insulating material is then deposited on top of the polysilicon gate and the diffusion region. *Id.* at col. 3, ll. 6–7, 19–20. A via opening is formed in the insulating material to expose a portion of the polysilicon gate and a portion of the diffusion region. *Id.* at col. 3, ll. 7–8, 20–22. An electrically conducting material is deposited to at least partially fill the via opening to provide an electrical connection between the polysilicon gate and the diffusion region. *Id.* at col. 3, ll. 8–11, 23–27.

#### ILLUSTRATIVE CLAIM

7. A method of forming a local interconnect in a semiconductor structure, comprising the step of:

depositing an electrically conducting material in a via exposing at least a portion of a gate, a sidewall spacer adjacent to said gate and a portion of a diffusion region such that said electrically conducting material contacts and provides electrical communication between said gate and said diffusion region, said semiconductor structure comprising said diffusion region in a silicon substrate, said gate being on said substrate juxtaposed to but not contacting said diffusion region, said sidewall spacer being disposed above said diffusion region, said via being in an insulating material on said gate.

#### GROUNDINGS OF INSTITUTION

In our Decision to Institute, we instituted trial on the following challenges to patentability:

Claims 7–9, 15, and 17 as anticipated under 35 U.S.C. § 102(e) by Sakamoto;<sup>2</sup> and

Claims 10–12 as obvious under 35 U.S.C. § 103(a) over the combination of Sakamoto and Cederbaum.<sup>3</sup>

## CLAIM CONSTRUCTION

In our Decision to Institute, we applied the ordinary and customary meaning to the terms not construed. We applied the broadest reasonable interpretation to the following term that required construction. Noting a claim construction dispute in co-pending district court litigation, Petitioner proposed that we construe the “diffusion region formed in said substrate” to mean “conductive terminal region, such as a source or drain, that contains dopants implanted in the silicon substrate.” Pet. 24. As discussed in the Decision to Institute, we determined that the subject matter of the claims concerns a local interconnect between a gate and a diffusion region and that there was no need to further construe “the diffusion region formed in said substrate” for purposes of this decision. Dec. to Inst. 5–6. Based on the complete record now before us, we discern no reason to change the constructions.

## ANALYSIS OF PRIOR ART CHALLENGES

### *Introduction*

As previously discussed, Patent Owner has provided no evidence or argument in response to claim challenges advanced in the Petition. Patent

---

<sup>2</sup> U.S. Patent No. 5,475,240 issued Dec. 12, 1995, Ex. 1003 (“Sakamoto”).

<sup>3</sup> U.S. Patent No. 5,100,817 issued Mar. 31, 1992, Ex. 1004 (“Cederbaum”).

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.