

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,
Petitioner,

v.

DSS TECHNOLOGY MANAGEMENT, INC.,
Patent Owner.

Case IPR2016-00287¹
Patent 6,784,552 B2

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

CHUNG, *Administrative Patent Judge*.

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

¹ Case IPR2016-01311 has been joined with this proceeding.

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314, Intel Corporation, Qualcomm Incorporated, Globalfoundries Inc., Globalfoundries U.S. Inc., Globalfoundries Dresden Module One LLC & Co. KG, and Globalfoundries Dresden Module Two LLC & Co. KG (collectively, “Petitioner”) challenge the patentability of claims 1–7 (the “challenged claims”) of U.S. Patent No. 6,784,552 B2 (Ex. 1001, “the ’552 patent”), owned by DSS Technology Management, Inc. (“Patent Owner”). The Board has jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). With respect to the grounds instituted in this trial, we have considered the papers submitted by the parties and the evidence cited therein. For the reasons discussed below, we determine Petitioner has shown by a preponderance of the evidence that claims 1–7 of the ’552 patent are unpatentable.

A. Procedural History

On December 8, 2015, Intel Corporation filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–7 of the ’552 patent. Patent Owner filed a Preliminary Response (Paper 7, “Prelim. Resp.”). On June 8, 2016, we instituted an *inter partes* review of claims 1–7 of the ’552 patent based on the following specific grounds (Paper 11, “Dec. on Inst.,” 28–29).

Claim(s) Challenged	Statutory Basis	Reference(s)
1, 2, and 4–7	§ 102(b)	Heath ²
3	§ 103(a)	Heath, Hawley, ³ and Chappell ⁴

After institution, Qualcomm Incorporated, Globalfoundries Inc., Globalfoundries U.S. Inc., Globalfoundries Dresden Module One LLC & Co. KG, and Globalfoundries Dresden Module Two LLC & Co. KG (collectively, “Qualcomm”) filed a petition requesting *inter partes* review of claims 1–7 of the ’552 patent on the same grounds asserted by Intel Corporation, accompanied by a timely motion seeking joinder with this proceeding. IPR2016-01311, Papers 3 (petition), 4 (motion for joinder).⁵ Patent Owner did not oppose the joinder. We instituted an *inter partes* review and joined it with the present proceeding. Papers 18, 19.

On September 7, 2016, Patent Owner filed a Patent Owner Response (Paper 20, “PO Resp.”) 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

² Ex. 1003, U.S. Patent No. 4,686,000 (Aug. 11, 1987) (“Heath”).

³ Ex. 1004, European Patent Application Publication No. 0592078 A1 (Apr. 13, 1994) (“Hawley”).

⁴ Ex. 1005, U.S. Patent No. 5,541,427 (July 30, 1996) (“Chappell”).

⁵ Because Qualcomm’s petition in IPR2016-01311 is identical in all substantive aspects to the Petition in this proceeding (*see* Paper 18, 8–9), we cite only to the Petition throughout this Final Written Decision.

a final decision is whether the Petitioner proved unpatentability by a preponderance of the evidence. PO Resp. 2. Patent Owner then stated that 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 (Paper 21, “Pet. Reply”) filed on December 7, 2016, Petitioner stated that Patent Owner has not cross-examined Petitioner’s expert, John C. Bravman, Ph.D., or provided any testimony that contradicts Dr. Bravman’s testimony, and that the challenged claims should be found unpatentable. Pet. Reply 1–2.

No hearing was held because we determined oral argument is not necessary to render a final written decision in this proceeding. *See* Paper 24, 2.

B. Related Proceedings

According to the parties, the ’552 patent is the subject of the following patent infringement cases: *DSS Tech. Mgmt., Inc. v. Intel Corp.*, Case No. 6:15-cv-130-JRG (E.D. Tex.); *DSS Tech. Mgmt., Inc. v. Samsung Elec. Co., Ltd.*, Case No. 6:15-cv-690 (E.D. Tex.); *DSS Tech. Mgmt., Inc. v. SK Hynix, Inc.*, Case No. 6:15-cv-691 (E.D. Tex.); and *DSS Tech. Mgmt., Inc. v. Qualcomm, Inc.*, Case No. 6:15-cv-692 (E.D. Tex.). Pet. 7; Paper 6, 2–3. In related proceedings before the Board, we instituted *inter partes* reviews of claims 8–12 of the ’552 patent in IPR2016-00288 and IPR2016-01314.⁶ The ’552 patent is also the subject of an instituted trial proceeding *Samsung Elec. Co., Ltd. v. DSS Tech. Mgmt., Inc.*, Case IPR2016-00782.

⁶ Case IPR2016-01314 has been joined with IPR2016-00288.

Additionally, we instituted *inter partes* reviews of claims of U.S. Patent No. 5,965,924 in *Intel Corp. v. DSS Tech. Mgmt., Inc.*, Cases IPR2016-00289, IPR2016-00290, IPR2016-01312, and IPR2016-01313.⁷

II. THE '552 PATENT

A. Described Invention

The '552 patent describes a process of semiconductor device fabrication and a structure of a semiconductor device having “substantially rectangular” lateral insulating spacers adjacent to gate electrodes. Ex. 1001, Abstract. The '552 patent defines the term “substantially rectangular” to mean that “a side of the spacer has an angle relative to the substrate surface of more than 85°.” *Id.* at col. 8, ll. 40–42.

Figure 4(D) of the '552 patent is reproduced below.

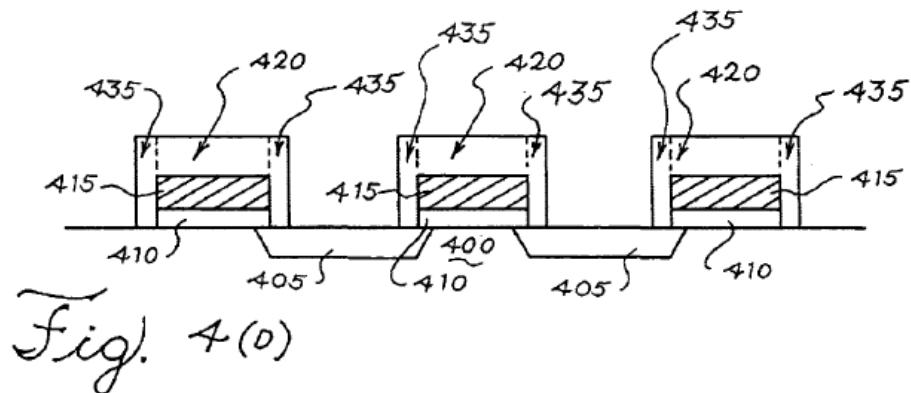


Figure 4(D) illustrates a cross-sectional view of a series of gates 415 (also called conducting layers or polysilicon layers) completely encapsulated in insulating material 420, e.g., TEOS (tetraethyl orthosilicate glass), where

⁷ Cases IPR2016-01312 and IPR2016-01313 have been joined with IPR2016-00290 and IPR2016-00289, respectively.

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