Trials@uspto.gov
571-272-7822

Paper 10
Entered: October 1, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.
and TSMC NORTH AMERICA CORPORATION,
Petitioners,

v.

ZOND, LLC,
Patent Owner.

---

Case IPR2014-00799
Patent 7,808,184 B2

---

Before KEVIN F. TURNER, DEBRA K. STEPHENS, JONI Y. CHANG, SUSAN L. C. MITCHELL, and JENNIFER M. MEYER, *Administrative Patent Judges*.

MITCHELL, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
*37 C.F.R. § 42.108*

# I. INTRODUCTION

Taiwan Semiconductor Manufacturing Company, Ltd. and TSMC North America Corporation (collectively, "TSMC") filed a Petition requesting *inter partes* review of claims 1–5 and 11–15 of U.S. Patent No. 7,808,184 B2 (Ex. 1001, "the '184 patent"). Paper 1 ("Pet."). Zond, LLC ("Zond"), filed a Preliminary Response (Paper 7, "Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides:

> THRESHOLD.—The Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Upon consideration of TSMC's Petition and Zond's Preliminary Response, we conclude that the information presented in the Petition demonstrates that there is a reasonable likelihood that TSMC would prevail in challenging claims 1–5 and 11–15 ("the challenged claims") as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, we hereby authorize an *inter partes* review to be instituted as to claims 1–5 and 11–15 of the '184 patent based on the specific grounds discussed below.

## *A. Related District Court Proceedings*

TSMC indicates that the '184 patent was asserted in *Zond, LLC v. Intel*, No.1:13-cv-11570-RGS (D. Mass.). Pet. 1. TSMC also identifies other proceedings in which Zond asserted the '184 patent. *Id*.

### *B. Related Inter Partes Reviews*

Intel Corporation ("Intel") filed a Revised Petition to institute an *inter partes* review in IPR2014-00455, challenging the same claims based on the same grounds of unpatentability as those in the instant proceeding. *Compare* IPR2014-00455, Paper 4 ("'455 Pet."), 2–60, *with* Pet. 3–58; Pet. 1 (stating challenged claims of the '184 patent "are presently the subject of a substantially identical petition for *inter partes* review" in *Intel Corp. v. Zond*, IPR2014-00455 (PTAB)). On September 3, 2014, we instituted an *inter partes* review of claims 1–5 and 11–15 of the '184 patent in IPR2014-00455 (Paper 12, "'455 Dec."), based on the ground that these claims are unpatentable as obvious over the combination of Wang and Kudryavtsev. *Id.* at 27. The trial, however, was terminated in light of the Written Settlement Agreement, made in connection with the termination of the proceeding in accordance with 35 U.S.C. § 317(b) and 37 C.F.R. § 42.74(b), between Intel and Zond. Papers 14, 15; Ex. 1025. TSMC has filed a Motion for Joinder, seeking to join the instant proceeding with *Intel Corp. v. Zond, LLC.*, Case IPR2014-00455 (PTAB) ("IPR2014-00455"). Paper 6 ("Mot."). In view of the termination of the Intel Proceeding, however, TSMC's Motion for Joinder is dismissed as moot in a separate decision.

The following Petitions for *inter partes* review also challenge the same claims based on the same grounds of unpatentability as those in IPR2014-00455 and in the instant proceeding: *Fujitsu Semiconductor Ltd. v. Zond, LLC*, Case IPR2014-00855, Paper 1; *The Gillette Co. v Zond, LLC*, Case IPR2014-00995, Paper 2; and *Advanced Micro Devices, Inc. v. Zond, LLC*, Case IPR2014-01042, Paper 1.

*C. The '184 patent*

The '184 patent relates to methods for generating strongly-ionized plasmas in a plasma generator. Ex. 1001, Abs. When creating a plasma in a chamber, a direct current ("DC") electrical discharge, which is generated between two electrodes with a feed gas, generates electrons in the feed gas, that ionize atoms to create the plasma. *Id.* at 1:16–20. For an application, such as magnetron plasma sputtering, a relatively high level of energy must be supplied, which may result in overheating the electrodes or the work piece. *Id.* at 1:21–26. Such overheating may be addressed by complex cooling mechanisms, but such cooling can cause temperature gradients in the chamber causing a non-uniform plasma process. *Id.* at 1:26–30. These temperature gradients may be reduced by pulsing the DC power, but high-power pulses may result in arcing at plasma ignition and termination. *Id.* at 1:31–36. Arcing is problematic because it can cause the release of undesirable particles in the chamber thereby contaminating the work piece. *Id.* at 1:36–37, 4:8–11.

According to the '184 patent, a pulsed power supply may include circuitry that minimizes or eliminates the probability of arcing in the chamber by limiting the plasma discharge current to a certain level and dropping the generated voltage for a certain period of time if the limit is exceeded. *Id.* at 4:6–15. Figure 2, reproduced below, shows measured data of discharge voltage as a function of discharge current for admitted prior-art, low-current plasma 152, and high-current plasma 154 created by the claimed methods using the pulsed power supply. *Id.* at 1:58–60.

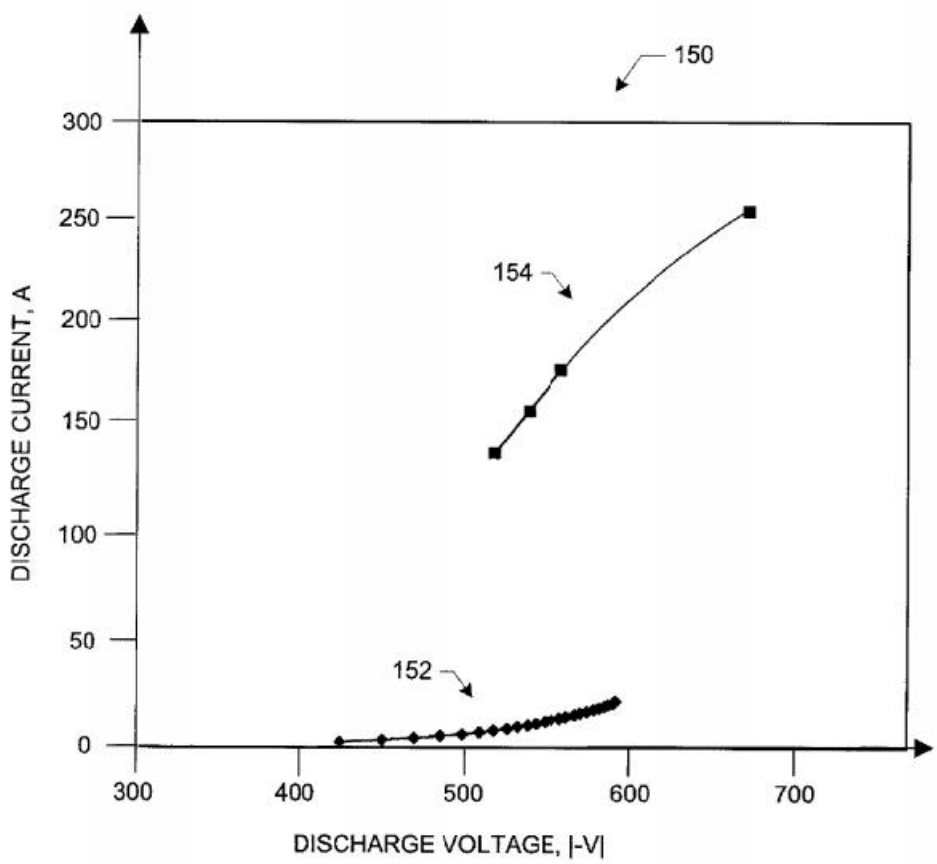


FIG. 2

Figure 2 shows current-voltage characteristic 154 that represents actual data for plasma generated by the pulsed power supply in the plasma sputtering system depicted in Figure 1 (not reproduced here). *Id.* at 5:28–30. The current-voltage characteristic 154 is in a high-current regime that generates a relatively high plasma density (greater than $10^{12}$–$10^{13}$ $cm^{-3}$). *Id.* at 5:40–43. The pulsed power supply generates waveforms that create and sustain the high-density plasma with current-voltage characteristics in the high-current regime. *Id.* at 5:55–59. The '184 patent explicitly defines the term "high-current regime" as "the range of plasma discharge currents that are greater than about 0.5 $A/cm^2$ for typical sputtering voltages of between

DOCKET ALARM

# 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.