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GLOBALFOUNDRIES U.S., INC., GLOBALFOUNDRIES DRESDEN
MODULE ONE LLC & CO. KG, GLOBALFOUNDRIES DRESDEN
MODULE TWO LLC & CO. KG, and
THE GILLETTE COMPANY,
Petitioners,

v.

Zond, LLC.
U.S. Patent No. 7,147,759¹
IPR Case No. IPR2014-01083

PETITIONER'S DEMONSTRATIVE EXHIBITS FOR ORAL ARGUMENT

¹ Case No. IPR2014-00988 has been joined with this proceeding.

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The '759 Patent:

GlobalFoundries U.S. Inc., GlobalFoundries Dresden Module One LLC & Co. K
GlobalFoundries Dresden Module Two LLC & Co. KG, The Gillette Company, FU
Semiconductor Limited, Fujitsu Semiconductor America, Inc., Advanced Micro Device
Renesas Electronics Corporation, Renesas Electronics America, Inc. Toshiba America E
Components, Inc., Toshiba America Inc., Toshiba America Information Systems, Inc., and
Corporation

v. Zond, LLC

IPR2014-00781 and IPR2014-00782

GlobalFoundries U.S. Inc., GlobalFoundries Dresden Module One LLC & Co.
GlobalFoundries Dresden Module Two LLC & Co. KG, and The Gillette Comp
v. Zond, LLC

IPR2014-01083, IPR2014-01086 and IPR2014-01087

Overview

- Overview of '759 Patent
- Grounds Instituted
- Overview of Prior Art
- Summary of Disputes with Respect to Independent Claims
 - Claim Constructions
 - Response to Patent Owner's Arguments
- Summary of Disputes and Responses Related to Dependent

The '759 Patent



US007147759B2

(12) **United States Patent**
Chistyakov

(10) **Patent No.:** US 7,147,759 B2
(45) **Date of Patent:** *Dec. 12, 2006

(54) **HIGH-POWER PULSED MAGNETRON SPUTTERING**

(75) **Inventor:** Roman Chistyakov, Andover, MA (US)

(73) **Assignee:** Zond, Inc., Mansfield, MA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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C23C 14/35 (2006.01)

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(58) **Field of Classification Search** 204/192.12, 204/192.13, 298.03, 298.06, 298.08, 298.14, 204/298.19, 298.26
See application file for complete search history.

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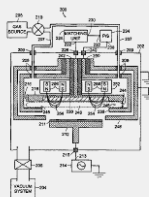
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(57) **ABSTRACT**

Magnetically enhanced sputtering methods and apparatus are described. A magnetically enhanced sputtering source according to the present invention includes an anode and a cathode assembly having a target that is positioned adjacent to the anode. An ionization source generates a weakly-ionized plasma proximate to the anode and the cathode assembly. A magnet is positioned to generate a magnetic field proximate to the weakly-ionized plasma. The magnetic field substantially traps electrons in the weakly-ionized plasma proximate to the sputtering target. A power supply produces an electric field in a gap between the anode and the cathode assembly. The electric field generates excited atoms in the weakly ionized plasma and generates secondary electrons from the sputtering target. The secondary electrons ionize the excited atoms, thereby creating a strongly-ionized plasma having ions that impact a surface of the sputtering target to generate sputtering flux.

50 Claims, 18 Drawing Sheets



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(45) **Date of Patent:** *Dec. 12, 2006

(54) **HIGH-POWER PULSED MAGNETRON SPUTTERING**

The '759 Patent

Anode (238)

Cathode Assembly (216)

Pulsed Power Supply (234)

Magnets (256)

Plasma (246)

Feed Gas Source (208)

Substrate (211)

Bias Power Supply (214)

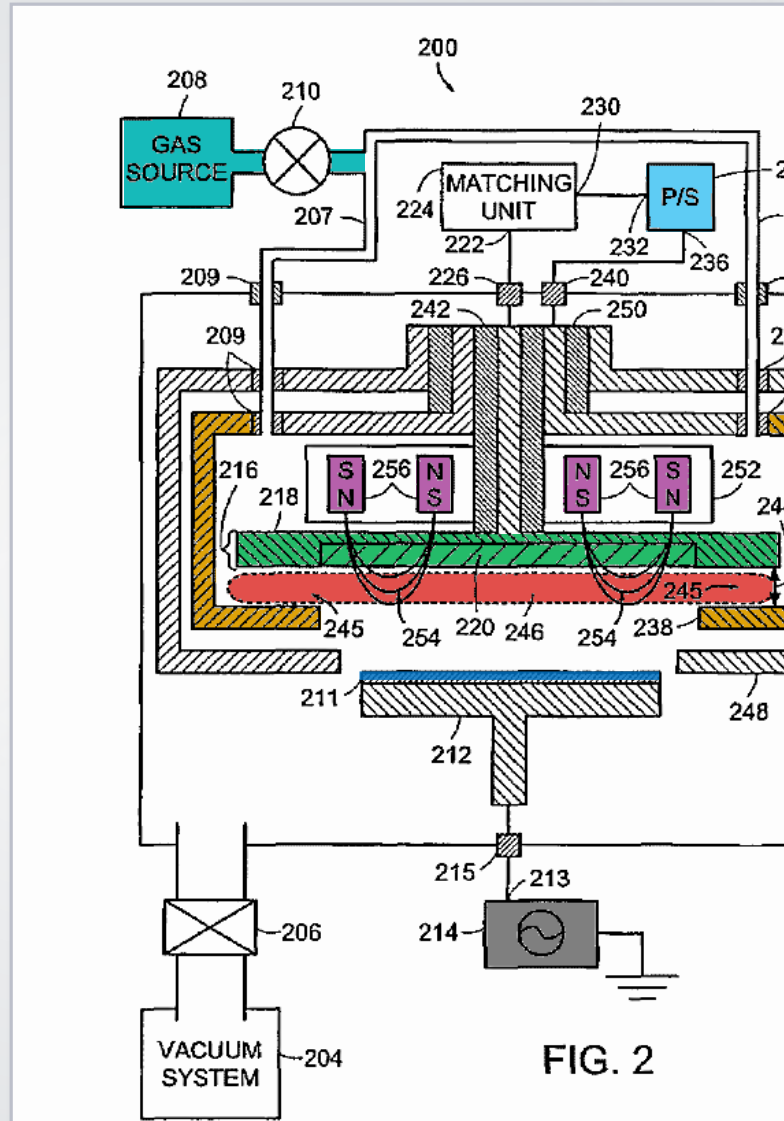


FIG. 2

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