UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD,
Petitioner,

v.

GODO KAISHA IP BRIDGE 1,
Patent Owner.

Case IPR2017-01843[1]
Patent 7,893,501

DECLARATION OF ALEXANDER D. GLEW

[1] Case IPR2017-01844 has been consolidated with this proceeding. *See* Paper 10 at 3.

IP Bridge Exhibit 2208
TSMC v. Godo Kaisha IP Bridge 1
IPR2017-01843

TABLE OF CONTENTS

I. PERSONAL AND PROFESSIONAL BACKGROUND 1

II. MATERIALS REVIEWED AND CONSIDERED 4

III. MY UNDERSTANDING OF PATENT LAW 5

A. Obviousness 7

IV. THE '501 PATENT 8

A. The Protruding Gate Electrode 18

B. The Protruding Gate Electrode Reduces Parasitic Capacitance Between the Gate Electrode and the Source/Drain Contacts 21

C. The Claims Were Narrowed to Distinguish Gate Electrodes that Do Not Protrude 26

V. THE CHALLENGED CLAIMS 27

VI. LEVEL OF ORDINARY SKILL IN THE ART 28

VII. CLAIM INTERPRETATION 29

A. "a silicon nitride film" 29

1. The Plain Meaning of "Film" is a Thin Coating/Covering 29

2. The '501-Patent Describes a Silicon Nitride Film As a Thin Coating of One Or More Layers Of Silicon Nitride 30

3. Petitioner's Narrow Interpretation Of "Silicon Nitride Film" Is Incorrect 33

a. The Claimed Silicon Nitride Film is Not Limited to a Single Structure Formed Via the Same Process 33

b. Silicon Nitride Films Disclosed In the Specification Can Perform More than One Function 37

4. Under BRI, Nothing Precludes a Film From Serving As a Sidewall 40

VIII. THE CHALLENGED CLAIMS WOULD NOT HAVE BEEN OBVIOUS OVER MISRA IN VIEW OF TSAI 46

A. Overview of the Grounds 48

1. Overview of Misra 48

2. Overview of Tsai....50
3. Petitioner's Incorrect Assertion Regarding How The Protruding Gate Electrode is Met. 51
B. All of the Grounds Fail Because Under the BRI of "Film" A Part of Misra/Tsai's Silicon Nitride Film Fully Covers The Side Surfaces of the Gate Electrode 52
1. Under the BRI, the Claimed Silicon Nitride "Film" Includes Contiguous Silicon Nitride Layers That Together Coat the Side Surfaces Of The Gate Electrode 52
2. When "Film" Is Given Its BRI, the Silicon Nitride Film of Misra/Tsai Includes Silicon Nitride Spacers 23 and Layer 20 54
a. Misra's Layers 20 and 23 Are Contiguous And Form A Film Of Silicon Nitride 55
b. Dr. Shanfield's Deposition Testimony That Misra's Silicon Nitride Layers 20, 23 Are Not Contiguous is Incorrect....60
c. When the Entire Silicon Nitride Film in Misra/Tsai Is Considered, The Combination Does Not Meet the Protruding Gate Limitation Required By All Challenged Claims....67
3. Misra is Not "Nearly Identical" to Figure 1 of the '501-Patent....69
4. Petitioner's Proposed Interpretation of the Protruding Gate Limitation is Inconsistent With the Claims, Specification and Prosecution History....72
a. Petitioner's Overly Broad Interpretation Reads On Embodiments In The Specification The Claims Are Clearly Not Directed To 72
b. Petitioner's Interpretation Is Inconsistent With the Prosecution History 80
C. Even If Misra/Tsai's Silicon Nitride Layers 20,23 Are Considered to be Distinct Films, Misra/Tsai Still Does Not Satisfy the Limitations Claim 1....87

1. Ignoring The Silicon Nitride Film Closest To The Gate Electrode In Determining Whether The Protruding Gate Electrode Is Met Ignores The Plain Language Of The Claims And Is Not Consistent With The Specification 88

2. Ignoring The Silicon Nitride Film Closest To The Gate Electrode In Determining Whether The Protruding Gate Electrode Is Met Ignores The Plain Language Of The Claims And Is Inconsistent With The Prosecution History 94

3. The Gate Electrode in Misra/Tsai Does Not Protrude from Silicon Nitride Spacers 23 97

D. Petitioner Has Failed To Show That Any Of Dependent Claims 4,7,9-11,14,16-19, and 23-25 Would Have Been Obvious Over Misra and Tsai 97

E. Claims 6 and 21 are not Rendered Obvious by Misra, Tsai, and Oda 98

F. Claims 12-13 are not Rendered Obvious by Misra, Tsai, and Hokazono 98

IX. CONCLUSIONS 98

X. SIGNATURE 98

I, Alexander D. Glew, declare:

1. I have been retained by Wolf, Greenfield & Sacks, P.C., counsel for Patent Owner Godo Kaisha IP Bridge 1 ("IP Bridge"), to submit this declaration in connection with the *Inter Partes* Review of claims 1, 4-7, 9-13, 15-19, 21, and 23-25 of U.S. Patent No. 7,893,501 ("the '501 patent"). I am being compensated for my time at a rate of $515.00 per hour, plus actual expenses. My compensation is not dependent in any way upon the outcome of the Petition.

I. PERSONAL AND PROFESSIONAL BACKGROUND

2. My curriculum vitae is provided as Exhibit 2229 to this proceeding.

3. I earned a B.S. degree in Mechanical Engineering from the University of California, Berkeley in 1985, a M.S. degree in Mechanical Engineering from the University of California, Berkeley in 1987, a M.S. degree in Materials Science and Engineering from Stanford University in 1995, and a Ph.D. in Materials Science and Engineering from Stanford University in 2003.

4. I am the Founder and President of Glew Engineering Consulting, Inc., based in Mountain View, California. I have been President of Glew Engineering Consulting, Inc. since I started the company in 1997. In my role as President, I have provided consulting services to clients in the field of semiconductor manufacturing and materials, as well as to clients in other fields. I have reviewed and analyzed new semiconductor technologies and products and provided advice

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.