

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Taiwan Semiconductor Manufacturing Company, Ltd.

Petitioner

v.

Godo Kaisha IP Bridge 1

Patent Owner

Patent No. 6,197,696  
Filing Date: March 23, 1999  
Issue Date: March 6, 2001

Title: METHOD FOR FORMING INTERCONNECTION STRUCTURE

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*Inter Partes* Review No. IPR2016-01376

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**DECLARATION OF DR. BRUCE W. SMITH, PH.D.  
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF UNITED  
STATES PATENT NO. 6,197,696**

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I, Dr. Bruce W. Smith, Ph.D., declare as follows:

## **I. Introduction**

1. My name is Dr. Bruce W. Smith. I have been asked to submit this declaration on behalf of Taiwan Semiconductor Manufacturing Company, Ltd. (“TSMC” or “Petitioner”) in connection with a petition for *inter partes* review of U.S. Patent No. 6,197,696 (“the ’696 patent”).

2. I have been retained as a technical expert by TSMC to study and provide my opinions on the technology in and the validity of claims 13 and 15 in the ’696 patent (“the Challenged Claims”). I have also been asked to provide my opinions as to whether certain related applications provide support for the Challenged Claims and whether a certain prior art reference is supported by the disclosures of its provisional application.

## **II. Summary of Opinions**

3. Based on my experience, knowledge of the art at the relevant time, analysis of prior art references, and the broadest reasonable interpretation of the claims in light of the specification, it is my opinion that the Challenged Claims of the ’696 patent are obvious over the prior art references discussed below.

4. Based on my experience, knowledge of the art at the relevant time, and the broadest reasonable interpretation of the claims in light of the specification,

it is further my opinion that the Challenged Claims do not have support in Japanese application JP 10-079371, to which the '696 patent claims the benefit of priority.

5. Based on my experience, knowledge of the art at the relevant time, and the broadest reasonable interpretation of the claims in light of the specification, it is further my opinion that at least claim 28 of the *Grill* reference (U.S. Patent No. 6,140,226) is supported by U.S. Provisional Patent Application No. 60-071,628, to which the *Grill* reference claims the benefit of priority.

### **III. Background and Qualifications**

#### **A. Background**

6. I have over 30 years of research, academic, industry, and consulting engineering experience in IC (integrated circuit) processing, semiconductor device materials, microelectronics, and microlithography. I have expertise in semiconductor IC processes and fabrication, microlithography, and deposition and etch processes.

7. I am a professor of Microelectronic Engineering and the Director of the Ph.D. program in Microsystems Engineering at the Rochester Institute of Technology (RIT).

8. I am a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the International Society for Optical Engineering (SPIE), and a Fellow of the Optical Society of America (OSA). I have received numerous

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