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Filed on behalf of Qualcomm and GlobalFoundries

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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 IPR2016-01313

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 5,965,924
CHALLENGING CLAIMS 1-6, 13, 14 and 16
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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1. Claim 4: “a semiconductor structure according to claim 1, wherein said electrically conducting plug is a metal plug” / Claim 5: “a semiconductor structure according to claim 1, wherein said electrically conducting plug is a refractory metal plug.” / Claim 6: “a semiconductor structure according to claim 1, wherein said electrically conducting plug is formed of a material selected from the group consisting of titanium, tantalum, molybdenum and tungsten”	49
2. Claim 13: A semiconductor structure according to claim 1, wherein said conducting plug comprises an outer glue layer and a plug material therein ...	55
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Petitioner respectfully requests *Inter Partes* Review of claims 1-6, 13, 14 and 16 of U.S. Patent No. 5,965,924 (the “’924 patent”) (Ex. 1001) pursuant to 35 U.S.C. §§ 311-19 and 37 C.F.R. § 42.1 *et seq.* The above-listed claims of the ’924 patent are presently the subject of a substantially identical petition for inter partes review styled *Intel Corporation v. DSS Technology Management, Inc.*, which was filed December 8, 2015 and assigned Case No. IPR2016-00289. Petitioner will seek joinder with that inter partes review under 35 U.S.C. § 315(c), 37 C.F.R. §§ 42.22 and 42.122(b).

I. INTRODUCTION

The ’924 patent claims a purportedly novel structure for transistors in semiconductors. But in fact, the claimed structure merely duplicates a well-known technique disclosed by Osamu Sakamoto and others nearly three years before the alleged invention.

The ’924 patent is directed to certain aspects of the structure and fabrication of transistors used in semiconductor and integrated circuit products such as microprocessors and memory. Transistors act as microscopic switches that turn on and off at extraordinarily high rates to enable aggregations of transistors (and other components) to process data. Transistors are made up of various structures including “contacts” that provide electrically conductive pathways into and out of certain structures within a transistor, and which thereby are used to connect

transistors together. Declaration of Dr. Richard Blanchard (“Decl.”) ¶ 26 (Ex. 1002).

The ’924 patent is concerned with electrically connecting different transistor parts to each other in a particular way. Transistors typically have three terminals through which electrical signals may pass: a “source,” a “drain,” and a “gate.” The ’924 patent is concerned with connecting the gate of one transistor to, for example, the source or drain of a neighboring transistor. Decl. ¶ 27 (Ex. 1002).

As the specification of the ’924 patent admits, there were many well-known ways of making electrical connections between different transistor parts. As shown in Figure 2B (below), for instance, one of the admitted prior art ways of connecting the components of two transistors was by using two electrical connections called “plugs”—one connected to the gate of one transistor, and the other connected to the source or drain of the other—and then connecting those plugs together. As shown in Figure 3B (below), the purported invention of the ’924 patent was to replace the two plugs with one plug. Decl. ¶ 28 (Ex. 1002).¹

¹ All emphasis and annotations are added unless otherwise indicated.

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