

1 IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 _____
4 TAIWAN SEMICONDUCTOR
5 MANUFACTURING COMPANY, LTD.
6 AND TSMC NORTH AMERICA CORP., Case Nos.
7 IPR2014-00800
8 Petitioners, IPR2014-00802
9 IPR2014-00805
10
11 -vs-
12 ZOND, LLC,
13 Patent Owner.
14 _____

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24 VIDEOTAPED DEPOSITION of DR. UWE KORTSHAGEN
25 Minneapolis, Minnesota
December 23rd, 2014

24 Reported by:
25 Amy L. Larson, RPR
Job No. 88563

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5 Exhibit 1.....9
6 U.S. Patent 7,811,421 B2

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18 For: Toshiba

19 ALSO PRESENT: Adam Wallin, Videographer

1 DR. UWE KORTSHAGEN
2 THE VIDEOTAPED DEPOSITION OF DR. UWE KORTSHAGEN,
3 taken on this 23rd day of December, 2014, at The
4 Commons Hotel, 615 Washington Avenue, S.E.,
5 Minneapolis, Minnesota, commencing at
6 approximately 8:02 a.m.

7 P R O C E E D I N G S

8 THE VIDEOGRAPHER: We are on the
9 record. This is the videotaped deposition of
10 Dr. Uwe Kortshagen in the matter of Taiwan
11 Semiconductor Manufacturing Company Limited,
12 et al., vs. Zond, LLC, in the United States
13 Patent and Trademark Office before the
14 Patent Trial and Appeal Board, IPR2014-00800,
15 IPR2014-00802, IPR 2014-00805.

16 This deposition is being held at The
17 Commons Hotel in Minneapolis, Minnesota.
18 Today's date is December 23rd, 2014. The
19 time is approximately 8:04 a.m.

20 My name is Adam Wallin, I'm the legal
21 video specialist from TSG Reporting,
22 Incorporated, headquartered at 747 Third
23 Avenue, New York, New York. The court
24 reporter is Amy Larson in association with
25 TSG Reporting.

1 DR. UWE KORTSHAGEN
 2 Will counsel please identify themselves
 3 for the record.
 4 MS. GRANOVSKY: Maria Granovsky
 5 from Radulescu, LLP, for patent owner
 6 Zond, LLC.
 7 MR. FITZPATRICK: Anthony
 8 Fitzpatrick from Duane, Morris, LLP on behalf
 9 of Taiwan Semiconductor Manufacturing Company
 10 Limited and TSMC North America.
 11 MR. TENNANT: David Tennant from
 12 White & Case for Global Foundries Dresden
 13 Module One LLC & and Co. KG, Global Foundries
 14 Dresden Module Two LLC & Co. KG, and Global
 15 Foundries U.S., Inc.
 16 MR. MCCOMBS: David McCombs with
 17 Haynes & Boone for TSMC, TSMC North America
 18 and Fujitsu.
 19 MR. HUH: Gregory Huh with
 20 Haynes & Boone for TSMC, TSMC North America
 21 and Fujitsu.
 22 MR. RISMILLER: Brett Rismiller
 23 with White & Case, LLP, for Global Foundries.
 24 THE VIDEOGRAPHER: Will the court
 25 reporter please swear in the witness.

1 DR. UWE KORTSHAGEN
 2 on the record.
 3 EXAMINATION
 4 BY MS. GRANOVSKY:
 5 Q. Good morning, Dr. Kortshagen.
 6 A. Good morning, Dr. Granovsky.
 7 Q. You understand that you have just taken an
 8 oath to testify truthfully?
 9 A. I do.
 10 Q. And is there any reason why you cannot
 11 testify truthfully?
 12 A. There is no reason.
 13 Q. Is there any medication that you're taking
 14 that will prevent you from testifying
 15 truthfully?
 16 A. No.
 17 Q. Okay. I handed you a document previously
 18 marked as TSMC 1002, and I'll represent to
 19 you that this is from IPR Number 2014-00800.
 20 Do you recognize this document?
 21 A. I do.
 22 Q. What is it?
 23 A. It is my declaration regarding claims 1, 2,
 24 8, 10 through 13, 15 through 17, 22 through
 25 25, 27 through 30, 33, 34, 38, 39, 42, 43

1 DR. UWE KORTSHAGEN
 2 MR. FITZPATRICK: Do we have
 3 anybody on the phone?
 4 MR. BARKER: Before we start, as
 5 we took the role call -- this is Bruce
 6 Barker -- the only one I could really hear
 7 well was Dave McCombs, so I don't know where
 8 the microphone is placed, but if you could --
 9 so that I don't interrupt, before we start if
 10 you could place it closer to the witness,
 11 that would be helpful.
 12 MR. VU: Also, this is Robinson Vu
 13 with Baker, Botts for Toshiba.
 14
 15 DR. UWE KORTSHAGEN,
 16 a witness in the above-entitled action,
 17 after having been first duly sworn, was
 18 deposed and says as follows:
 19 MR. FITZPATRICK: Before we begin,
 20 I just want to state on the record that
 21 objections made to questions apply to all
 22 petitioners so that we avoid duplicate
 23 objections. We've been doing that throughout
 24 the depositions, and I believe it's
 25 understood, but I just wanted to confirm it.

1 DR. UWE KORTSHAGEN
 2 and 46 through 48 of Patent 7,811,421.
 3 Q. Okay.
 4 (Whereupon, Exhibit 1 was
 5 marked for identification.)
 6 BY MS. GRANOVSKY:
 7 Q. And the court reporter just handed you a
 8 document marked Exhibit 1. Do you recognize
 9 this document?
 10 A. I do.
 11 Q. What is it?
 12 A. It is the Patent 7,811,421.
 13 Q. Okay. And you have reviewed this document
 14 before?
 15 A. I have reviewed this document, yes.
 16 Q. Okay. And before we begin, actually, what
 17 have you done to prepare for this deposition?
 18 A. For this deposition I prepared over the
 19 weekend, and I -- I think I spent maybe half
 20 an hour to an hour yesterday evening looking
 21 at some documents again. That is pretty much
 22 what I've done.
 23 Q. Did you speak to counsel yesterday as well or
 24 did you just look at the documents?
 25 A. We did have -- got together for breakfast

1 DR. UWE KORTSHAGEN

2 this morning. We did have some discussions
3 about the deposition today.

4 Q. Okay. So if you turn in your declaration to
5 page 11.

6 A. Yes.

7 Q. To the section that says, quote, "Overview of
8 the '421 patent."

9 A. Yes.

10 Q. It says that, "The claims of the '421 patent
11 are directed to using a single voltage pulse
12 to generate a so-called weakly ionized plasma
13 and then a strongly ionized plasma in a
14 manner that avoids arcing"; is that correct?

15 A. That is correct.

16 Q. What is your understanding of a single
17 voltage pulse?

18 A. My understanding of a single voltage pulse is
19 a pulse that can have a certain waveform, for
20 instance, going from a lower voltage to a
21 higher voltage and then decreasing to a lower
22 level again.

23 Q. And is it your understanding that that single
24 voltage pulse has to generate both a weakly
25 ionized plasma and then a strongly ionized

1 DR. UWE KORTSHAGEN

2 plasma from the weakly ionized plasma,
3 according to this invention?

4 MR. FITZPATRICK: Object to the
5 form of the question.

6 THE WITNESS: So this is in
7 paragraph 29, a summary statement which was
8 made. I'm not sure that this statement is
9 applicable to each of the individual claims
10 that I expect we will be discussing. So from
11 that point of view, I would not overinterpret
12 this summary statement, but would prefer, if
13 we want to discuss the action of the voltage
14 pulse creating weakly and strongly ionized
15 plasma, and whether this is a single pulse,
16 if we discuss that with respect to particular
17 claims.

18 Q. And we will do that, but --

19 A. Yeah.

20 Q. -- my question is, in general, if -- if a
21 statement says a single pulse to generate a
22 weakly ionized plasma and then a strongly
23 ionized plasma, do you expect the same pulse
24 to have to do both?

25 MR. FITZPATRICK: Object to the

1 DR. UWE KORTSHAGEN

2 form.

3 THE WITNESS: Yeah. I mean, if
4 I -- I consider a pulse to be a pulse which
5 goes from a low -- let's say a low level of
6 voltage to a high level of voltage, and this
7 pulse maintains a weakly ionized plasma at
8 the low level of voltage and then creates a
9 strongly ionized plasma at the high level of
10 voltage, I would say this is the same pulse
11 doing this.

12 BY MS. GRANOVSKY:

13 Q. What is your interpretation of creating a
14 weakly ionized plasma?

15 MR. FITZPATRICK: Object to the
16 form.

17 THE WITNESS: Creating a weakly
18 ionized plasma? So if we talk about the
19 creation of a plasma, I would assume that we
20 talk about the mechanism, which is typically
21 referred to as ignition of the plasma where
22 you go from a state where you do not have a
23 plasma present to a state where you now have
24 a plasma present.

25 MS. GRANOVSKY: Okay.

1 DR. UWE KORTSHAGEN

2 BY MS. GRANOVSKY:

3 Q. Let's turn to claim 1 of the '421 patent.

4 A. Yes.

5 Q. Subpart B of the claim --

6 A. Yes.

7 Q. -- reads, "A power supply that generates a
8 voltage pulse between the anode and the
9 cathode assembly that creates a weakly
10 ionized plasma and then a strongly ionized
11 plasma from the weakly ionized plasma without
12 an occurrence of arcing between the anode and
13 the cathode assembly, an amplitude, a
14 duration and a rise time of the voltage pulse
15 being chosen to increase a density of ions in
16 the strongly ionized plasma"; is that
17 correct?

18 A. That is correct, yes.

19 Q. Is it your understanding that this claim
20 limitation requires the same voltage pulse to
21 create both a weakly ionized plasma and then
22 a strongly ionized plasma from the weakly
23 ionized plasma?

24 A. Yeah, it is my understanding that this claim
25 limitation talks about a voltage pulse which

1 DR. UWE KORTSHAGEN
 2 creates a weakly ionized plasma and then
 3 creates -- so following the creation of a
 4 weakly ionized plasma, then creates a
 5 strongly ionized plasma from the weakly
 6 ionized plasma, yes.
 7 Q. And it is the same pulse that creates both,
 8 right?
 9 A. That is what the claim language seems to
 10 imply, yes.
 11 Q. Okay. Is it your understanding that this
 12 claim element requires that both the creation
 13 of a weakly ionized plasma and then a
 14 strongly ionized plasma from the weakly
 15 ionized plasma occurs without arcing?
 16 MR. FITZPATRICK: I object to the
 17 form of the question.
 18 THE WITNESS: Could you repeat the
 19 question, please?
 20 MS. GRANOVSKY: Sure.
 21 BY MS. GRANOVSKY:
 22 Q. Is it your understanding that this claim
 23 element requires that both the creation of a
 24 weakly ionized plasma and then a strongly
 25 ionized plasma from the weakly ionized

1 DR. UWE KORTSHAGEN
 2 plasma and the end?
 3 A. Is there a comma? No.
 4 Q. Is there a comma -- strike that.
 5 Is it possible to interpret the claim as
 6 referring to both -- as without the --
 7 without an occurrence of arcing referring to
 8 both the creation of the weakly ionized
 9 plasma and then a strongly ionized plasma
 10 from the weakly ionized plasma?
 11 MR. FITZPATRICK: Object to form.
 12 THE WITNESS: Is it possible to
 13 interpret it like this? I -- I think we're
 14 getting into the realm of legal
 15 interpretation, which is not my strength. I
 16 think I was asked to be here for my technical
 17 expertise.
 18 But from my -- my plain reading of the
 19 claim language and from my understanding,
 20 when a pulse plasma is the highest
 21 probability of arcing occurs, namely, during
 22 the creation of the strongly ionized plasma,
 23 from my plain reading of the language it
 24 would be that the -- without occurrence of an
 25 arc or without occurrence of arcing, applies

1 DR. UWE KORTSHAGEN
 2 plasma occurs without arcing?
 3 A. Aha.
 4 MR. FITZPATRICK: Same objection.
 5 THE WITNESS: So you said that
 6 both the weakly ionized plasma -- the
 7 creation of the weakly ionized plasma and the
 8 strongly ionized plasma from the weakly
 9 ionized plasma occurs without arcing?
 10 MS. GRANOVSKY: Yes.
 11 THE WITNESS: You used the word
 12 both. I see. So if I read the claim
 13 language, it seems to imply that the without
 14 occurrence of arcing refers to the creation
 15 of the strongly ionized plasma from the
 16 weakly ionized plasma, because it says -- it
 17 talks about a voltage pulse that creates a
 18 weakly ionized plasma, and it says, "And
 19 then," so following that creation of the
 20 weakly ionized plasma it creates a strongly
 21 ionized plasma from the weakly ionized plasma
 22 without an occurrence of arcing.
 23 MS. GRANOVSKY: Okay.
 24 BY MS. GRANOVSKY:
 25 Q. Is there a comma between weakly ionized

1 DR. UWE KORTSHAGEN
 2 to the creation of the strongly ionized
 3 plasma.
 4 MS. GRANOVSKY: I was actually
 5 looking for your plain English
 6 interpretation, so not the legal definition,
 7 so that's fine.
 8 THE WITNESS: Well, I think I gave
 9 you my plain English interpretation by
 10 pointing out that the claim talks about the
 11 creation of a weakly ionized plasma as one
 12 step, and then as the second step, the
 13 creation of a strongly ionized plasma from a
 14 weakly ionized plasma without occurrence of
 15 arcing. That was my plain English reading of
 16 what is described here.
 17 Q. As we discussed before, there is no comma
 18 between weakly ionized plasma and then a
 19 strongly ionized plasma; is that correct?
 20 MR. FITZPATRICK: Objection; asked
 21 and answered, form.
 22 THE WITNESS: There is indeed no
 23 comma, I agree.
 24 MS. GRANOVSKY: Okay.
 25 BY MS. GRANOVSKY:

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