

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY,
LTD.
and GLOBALFOUNDRIES U.S. INC.,
Petitioners,

v.

GODO KAISHA IP BRIDGE 1,
Patent Owner.

Case IPR2016-01249 and Case IPR2016-01264
(Patent 6,538,324 B1)

Record of Oral Hearing
Held: August 7, 2017

Before JUSTIN T. ARBES, MICHAEL J. FITZPATRICK, and
JENNIFER MEYER CHAGNON, *Administrative Patent Judges*.

Case IPR2016-01249 (Patent 6,538,324 B1)

Case IPR2016-01264 (Patent 6,538,324 B1)

APPEARANCES:

ON BEHALF OF THE PETITIONER:

Stephen E. Kabakoff, Esquire
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ON BEHALF OF PATENT OWNER:

Michael J. Fink, Esquire,
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The above-entitled matter came on for hearing on
Monday, August 7, 2017, commencing at 1:01 p.m., at the U.S.
Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

1 PROCEEDINGS

2 JUDGE FITZPATRICK: We are here and I am
3 joined by Judges Arbes and Judge Chagnon. This is
4 for two IPRs: IPR2016-01249 and IPR2016-01264. Can
5 we get an introduction from each side for any
6 attorney that will be presenting, and please do so
7 at the podium. Thank you.

8 MR. KABAKOFF: Stephen Kabakoff for
9 petitioners.

10 MR. FINK: Michael Fink for patent owner,
11 and with me is Arnold Turk.

12 JUDGE FITZPATRICK: We have 60 minutes per
13 side. There are -- there's the petition itself and
14 the grounds on which trial was instituted for both
15 cases. There's a motion to exclude on each side in
16 each case. I think they are the same. And there's
17 a motion to amend.

18 With respect to issues for which you
19 bear the burden, for those you can reserve
20 rebuttal time. We are going to start with
21 petitioner and patent owner will follow. And what
22 I meant by that is so, for example, patent owner

1 can reserve some rebuttal time even though it's
2 second. That rebuttal time will only be for
3 patent owner's motion to amend and patent owner's
4 motion to exclude. Any questions before we begin?

5 Okay Mr. Kabakoff, please proceed.

6 MR. KABAKOFF: Thank you, Your Honor. I
7 also should note that with me are lead counsel,
8 Robert Yoches and Joshua Goldberg, and my colleague
9 Shawn Chang. I'd like to reserve 30 minutes
10 rebuttal time, please.

11 The '324 patent claims a two layer
12 copper diffusion barrier. It was well known in
13 the art as a semiconductor device application.
14 The patent contributes nothing new to the art.

15 If we could turn to slide 3, please. As
16 shown in figure 2 of the '324 patent, slide 3,
17 which is also labeled prior art in the patent, a
18 single layer crystalline diffusion barrier was
19 already well known. And the crystalline
20 diffusion barrier is shaded dark blue and it's
21 above a semiconductor substrate shaded light blue.

22 And the purpose of the diffusion barrier

1 is to prevent copper from diffusing through the
2 barrier into the underlying substrate, which may
3 contain active devices such as transistors and
4 other components that would be damaged or degraded
5 if copper got into them.

6 The patent teaches the crystalline
7 single layer film had the benefit of adhering well
8 to a copper wiring film above it. But it had the
9 disadvantage that they had these grain boundaries
10 that would go through the thickness of the film
11 that acted as fast paths and allowed copper to
12 diffuse quickly into the underlying substrate,
13 which is a bad thing.

14 If we could turn to slide 4. The patent
15 also in figure 3, which is labeled prior art,
16 admits that single layer amorphous films were known.
17 And here the amorphous film is colored red. You
18 can see it has no clear paths that go straight
19 to the film. It operates as a very effective
20 barrier for copper diffusion.

21 The problem that the amorphous film has
22 is it does not adhere well to copper. So it has

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