No. 16-2358

In the United States Court of Appeals for the Federal Circuit

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Plaintiff-Appellee,

v.

MICRON TECHNOLOGY, INC., MICRON MEMORY JAPAN, INC.,
Defendants-Appellants,

APPLE INC., ELPIDA MEMORY, INC., ELPIDA MEMORY USA, INC.,
Defendants.

Appeal from the United States District Court for the District of Massachusetts in Case No. 1:15-cv-10374-FDS, Judge F. Dennis Saylor, IV

BRIEF OF PLAINTIFF-APPELLEE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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CERTIFICATE OF INTEREST

Counsel for Plaintiff-Appellee Massachusetts Institute of Technology certifies the following:

1. The full name of every party or amicus represented by me is:

   Massachusetts Institute of Technology

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

   N/A

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

   N/A

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

   McKool Smith, P.C.: Ramzi R. Khazen, Steven J. Pollinger, Joel L. Thollander

   Nutter, McClennen & Fish: Kenneth R. Berman

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STATEMENT OF RELATED CASES

Pursuant to FED. CIR. R. 47.5, Plaintiff-Appellee Massachusetts Institute of Technology (MIT) notes that:

(a) there have been no other appeals in this case; and

(b) aside from the present case, there are no other cases pending in this or any other court that will directly affect or be directly affected by this Court's decision in the pending appeal.

I. STATEMENT OF THE ISSUE

Whether the district court properly exercised its broad discretion in denying Micron's motion for attorneys' fees when it found, based on the evidence:

1. that MIT acted in good faith before the PTO and throughout the seven-year history of this infringement dispute with Micron and Elpida;

2. that MIT's validity positions were not unreasonable;

3. that MIT did not misconstrue the prior art in the PTO; and

4. that MIT's infringement positions were not unreasonable.

II. STATEMENT OF THE CASE

A. Preliminary Statement.

This patent-infringement dispute was marked by many close issues. The motion for fees was not among them. Indeed, Micron's evidence and arguments fell "appreciably short" of showing exceptionality under 35 U.S.C. § 285. Appx6. As the district court found, "[i]f MIT's behavior was exceptional at all, it was notable for its willingness to try to negotiate a license in good faith for seven years before filing suit." Appx7. The district court committed no error, much less an abuse of discretion, in its analysis and findings on the motion for fees.

Micron's strained efforts to show otherwise force it into some alternate universe where up is down, black is white, and good faith is bad faith. Consider a few of the actions that Micron highlights as proof of exceptionality:

1. During negotiations, Elpida identified a number of potentially relevant prior art references. Desiring to test the strength of its patent, MIT requested reexamination on all of this art. Micron suggests that this shows bad faith.

2. In the reexamination, MIT submitted an expert declaration that candidly addressed the prior art references at issue, highlighting the relevant language in each and reproducing the relevant figures in full. The three examiners noted that this declaration helped to provide "a greater understanding of the intricacies of this case." Appx400. Micron suggests that this shows bad faith.

3. When the patent emerged from reexamination and negotiations resumed, Elpida asked MIT to lower its settlement point on the grounds that Elpida was entering bankruptcy and would no longer be using the infringing methods. MIT agreed to lower its settlement point. Micron suggests that this shows bad faith.

4. After Micron sabotaged the settlement at the twelfth hour, this suit followed. Micron then petitioned for IPR, and MIT agreed to stay this case. When the PTAB issued its institution decision, MIT came to terms with troubling facts: the PTO's statistics revealed that 75% of instituted IPRs ultimately resulted in the cancellation of all claims. Given this reality, MIT made a prudential business decision to request adverse judgment. That is, rather than to pursue an investment with losing odds, MIT decided to return its focus to its primary missions of education, research, and innovation. Micron suggests that this shows bad faith.

According to Micron, in other words, MIT behaved exceptionally, and put itself at risk for fees, when it: voluntarily requested reexamination; provided an expert declaration that three examiners found helpful; agreed to lower its settlement point during negotiations; and ultimately decided to give up its patent when faced with the prospect of losing odds going forward at the PTAB. Micron's assertions make no sense. This is prudential behavior that should be encouraged, not dissuaded, and each of these actions—as the district court found—demonstrate MIT's consistent good faith throughout this dispute.

Micron's arguments regarding the strength of the parties' substantive positions fare no better. With respect to validity, Micron suggests that it was "exceptional" for MIT to deny that a particular reference discloses two key elements found in the claims of the patents-in-suit. But that prior art reference contains no express teaching on either of these elements, and Micron's invalidity assertions are replete with misleading manipulations of the drawings and claim terms at issue. With respect to infringement, Micron suggests that it was "objectively unreasonable" for MIT to assert that Micron's accused products met the claim limitations. But Micron concedes that its accused products match the patent's preferred embodiment; Micron simply argues for a particular claim construction that would make nonsense of the remaining claim language.

The district court's findings that MIT consistently acted in good faith, and that its substantive positions were not unreasonable, are thus well supported by the record evidence. Micron's arguments to the contrary are meritless, misleading, and would nonsensically punish the very kind of prudential behavior that § 285 is designed to encourage. Given the high standard of review that is applicable here—abuse of discretion—the only arguments that have approached frivolity in this case are those that Micron has offered on appeal. The Court should affirm.

B. MIT Provides Fertile Ground for Research and Invention.

Founded in 1861, MIT is among the most respected universities and research institutions in the world. Appx653-54. MIT enrolls approximately 11,000 students and employs over 1,800 academic staff and 3,775 researchers. Appx653-54. MIT research centers have spent over $1.6 billion annually on research and development. Appx656-58. MIT is a non-profit institution, and much of this research will not provide a financial return, and is not expected to provide a financial return. Appx656-58. Nevertheless, MIT's Technology Licensing Office (the TLO) is essential to maintaining the university's robust research ecosystem. Appx660-63. The TLO helps MIT researchers pursue patent protection when appropriate, and works as an industry liaison to ensure appropriate development and commercialization of useful inventions. Appx660-63. In fiscal year 2015, for example, the TLO executed 91 patent or technology licenses and, in the process,

seeded 28 start-up companies. Appx663. MIT's TLO is not a patent speculator; it exists solely in service to MIT's core missions of education and research.

C. The '221 Patent Claims Advances in Laser Ablation of Circuit Fuses.

The '221 patent was filed on April 3, 1997, and issued on May 2, 2000. Appx21. The patent was born from research that Dr. Joseph Bernstein performed at MIT, where he obtained his Ph.D., and also at the University of Maryland, College Park, where he was a member of the faculty. Appx21; Appx665-71. The co-inventor of the '221 patent, Zhuhui Duan, was Dr. Bernstein's graduate student. Dr. Bernstein is the respected author of dozens of scientific publications, and the lead inventor on several patents. Appx665-71.

The '221 patent concerns "laser-induced cutting of metal interconnect[s]" found in integrated circuits. Appx21. As semiconductor processing approaches layer widths on the order of the atom, many circuits within a chip will fail due to technical or environmental variables. Appx913-14. To maintain chip yields, manufacturers build redundant circuits into each wafer. Appx913-14. The first set of circuits is then tested and, if it fails, it is disabled in favor of redundant counterparts. Appx913-14. Small changes in yield heavily effect profitability, so the corrective process must be executed with minimal error, and millions of circuits may need to be disabled for a given wafer. Appx913-14.

One method of disabling faulty circuitry involves the use of lasers to ablate, or sever, a connecting cut-link fuse pad. Appx28, 1:10-61. Such laser fuses are the subject of the ’221 patent. In 1997, when the ’221 patent was filed, basic laser ablation required accumulating just enough heat to irradiate the fuse pad while minimizing the duration of laser exposure. Appx28, 1:51-56. Not enough heat accumulation, and the fuse would remain intact. Too much heat accumulation, and the chip could be damaged. Appx28, 1:51-56. The prevailing wisdom was to maintain balance by minimizing the volume of the cut-link pad. Appx28-30, 1:49-2:34, 3:1-3:37, 5:59-6:12. Since less pad volume means less thermal capacity—less material to heat—minimizing volume was assumed to require less energy to ablate; promote complete ablation with less laser exposure; and reduce false connections caused by excess leftover metal resettling on the surface post-ablation. Appx28-30, 1:49-2:34, 3:1-3:37, 5:59-6:12. Engineers were also inclined to follow the conventional approach because it was consistent with general directives to minimize circuit size. Appx28, 1:64-2:49. The conventional approach was further consistent with concerns that larger fuses would act as larger conduits for transferring damaging heat to the chip. Appx28, 1:64-2:49.

Against this backdrop, Dr. Bernstein and Mr. Duan studied micro-fracture formation at the moment of laser impact. They discovered that, when heat is allowed to flow freely from a cut-link pad outward to the adjoining electrically

conductive lines, and where the lines jump to a substantially higher thermal resistance per unit length (TRPUL) at contact points between the pad and the lines, microscopic stress points form at the interface between those points. Appx30, 5:17-50, 6:57-7:50. The initial stress points expand to promote a cleaner severance than in conventional fuses. This is aided by a sharp temperature differential that forms between the pad and the lines. And this creates a "boundary" where fracturing can occur that—unexpectedly—actually protects the lines. Appx30, 5:17-50, 6:57-7:50. Dr. Bernstein and Mr. Duan further found that "[i]ncreasing the width of the cut-link also improves the fracture mechanics during ablation. The fracture initiates and grows as a result of thermal stress at the interface of the cut-link and the surrounding material. The thermal stress, in turn, is a function of the energy density at the surface of the pad." Appx30, 6:57-67.[1]

These insights, which defied the prevailing wisdom, are reflected in the claims of the '221 patent. Claim 3 is representative, and while it has been at the center of the disputes in this case, its text cannot be found in Micron's brief:

[1] Specifically, the inventors posited that energy density along the perimeter (P) of the cut-link surface could be expressed by the function Ep=k*S/P, where k is a constant, S is the surface area, and P is the perimeter. Appx31, 7:1-21. Stress increases with energy, and the cracks grow. S grows at a quadratic rate, while P grows linearly. Appx31, 7:1-21. As the pad's width increases, the ratio grows, and relative energy density increases at the pad's edges. Appx31, 7:1-21. In comparison, the contemporary laser art analysis was blunt, focusing on net energy or thermal absorption compared to total thermal capacity of the fuse, rather than the mechanics of the fracture itself. Appx537-38, ¶¶ 3, 4, 12.

> 3. A method for cutting a link between interconnected circuits comprising the following steps: directing a laser upon an electrically-conductive cut-link pad conductively bonded between a first electrically-conductive line and a second electrically-conductive line on a substrate, the cut-link pad having substantially less ***thermal resistance per unit length*** than each of the first and second lines, wherein the width of the cut-link pad is ***at least ten percent greater*** than the width of each of the first and second electrically-conductive lines; and maintaining the laser upon the cut-link pad until the laser infuses sufficient energy into the cut-link pad to break the conductive link across the cut-link pad between the pair of electrically-conductive lines, wherein the electrically-conductive cut-link pad has an inner surface facing the substrate and an opposing outer surface facing away from the substrate, the first and second electrically-conductive lines ***extending from the inner surface into*** the substrate.

Appx36 (emphasis added).

Three claim elements are emphasized. First, the cut-link pad has substantially less TRPUL than the first and second lines to which the pad is bonded on the substrate. App36. As the specification teaches, "[t]ransfer of heat away from the cut-link is minimized by creating a comparatively-lower thermal resistance per unit length within the pad than without." Appx30, 5:13-15. Second, the width of the cut-link pad is at least 10% greater than the width of the first and second lines. Appx36. Again, the specification explains that "[b]enefit is provided in an interconnect where the cut-link pad is just 10 percent greater than the width of each of the lines." Appx28, 2:8-12, 40-42. Third, the first and second lines bonded to the pad on the substrate extend into the substrate. Appx36. As Figures 10 and 11 show, and the specification explains, the electrically-conductive lines connect vertically,

"extending downward from the surface 52 of the pad 20 away from the laser and into the substrate." Appx31, 8:20-42; Appx26. This gives additional protection to the lines since less of their surface area is exposed, while they continue to provide a conductive link with circuitry at lower layers of the chip. Appx31, 8:20-42.

D. MIT Learns of Infringement by Elpida and Begins to Negotiate in 2008.

In 2008, TLO discovered that Elpida, a Japanese manufacturer of DRAM memory, had switched from conventional laser fuses to the high-differential fuses claimed in the '221 patent—and as a result, Elpida was realizing the gains in yield that Dr. Bernstein and Mr. Duan had demonstrated. Appx71-91; Appx263. MIT notified Elpida and provided the manufacturer with electron microscope photographs and analysis of the laser fuses found in Elpida's memory modules. Appx71-91. Over the next two years, MIT and Elpida met on several occasions and exchanged correspondence that included detailed claim charts and damages analysis based on comparable DRAM licenses. Appx249-65; Appx416-53.

Elpida never disputed the relevant structure of its fuses as shown by the electron microscope photographs. Nor did Elpida dispute the advancements in chip yield based on the accused features. And remarkably, over seven years of correspondence with MIT, Elpida presented only a single noninfringement argument: that the electrically-conductive lines in its products do not extend horizontally across the surface of the substrate, but instead extend into the

substrate. That is, Elpida argued that there was no infringement because the lines in its products extend "into," and not "on," the substrate. Of course that argument—the same that Micron offers here—ignores that the claims of the '221 patent *expressly cover* electrically-conductive lines that extend "into the substrate." Appx36 (claim 3); Appx410-15; Appx424-39. And that feature is further described as an embodiment and depicted in Figures 10 and 11. Appx26; Appx31, 8:20-42. Elpida's noninfringement position was thus, in effect, that its products did not infringe because they matched a preferred embodiment of the '221 patent.

This was not lost on Elpida: it acknowledged that its noninfringement position required a construction of the term "on" that rendered the claim nonsensical and excluded the intended embodiment. Appx461; Appx176; *see also* Appx416-23; Appx432; Appx992-96. Given that Elpida's position was in conflict with the most basic rules of claim construction, MIT reasonably assumed that its own infringement position was strong. But rather than filing suit, it simply rebutted Elpida's non-infringement argument in detail. Appx416-23.

In May 2009, a full year into the parties' negotiations, Elpida presented MIT with a list of potentially relevant prior art, including a Japanese patent application to Koyou ("Koyou"). Appx237-41. Koyou was not the principal reference—in Elpida's 63-page PowerPoint presentation, Koyou is first cited on page 59. Appx179-237. Elpida's assessment of Koyou was also perfunctory and superficial.

Koyou was simply offered, with a few conclusory bullet points, as an obviousness reference with some possible application as anticipatory prior art. Appx241. Elpida provided no specific explanation as to how it believed Koyou was invalidating; Elpida simply posited that Koyou teaches a fuse with increased thermal conductivity and reproduced two of Koyou's figures. Appx237-40. Despite being left to guess at Elpida's position, MIT independently analyzed Koyou and the other references cited by Elpida, and provided reasons these references did not invalidate the claims of the '221 patent. Appx416-23.

In June 2010, Elpida called off negotiations with MIT. Appx267. Believing that it had strong positions on both infringement and validity, MIT was presented with a choice: bring an infringement suit against Elpida in which MIT's claims would be subject to an advantageous presumption of validity and a "clear and convincing" standard for proof of invalidity; or take Elpida's purportedly invalidating references back to the PTO, where the claims would have no such protection from invalidation, and request reexamination of the '221 patent. MIT responsibly chose the latter course of action. Appx269-336.

E. MIT Requests Reexamination on Elpida's References, Including Koyou.

In March 2011, MIT, voluntarily and at its own expense, requested reexamination of the '221 patent based upon the prior art references that had been identified by Elpida. Appx269-336. Such *ex parte* reexamination creates no legal

estoppel against patent challengers. It does not prevent a patent challenger from asserting invalidity in court or in another post grant review at the PTAB, *even on the same art*, as happened here. In short, there was very little upside for MIT to seek reexamination and a substantial downside risk of invalidation at a lower threshold than in court. MIT had no reason to take this step other than to put the '221 patent through a full stress test, to confirm its own confidence in the '221 patent and make sure it had strong defenses before possibly needing to file suit.

MIT thus had every incentive to be fully forthright in the reexamination, and MIT was fully forthright in the reexamination. At 68 pages in length and largely single-spaced, the reexamination request was dense with information. Appx269-336. Notably, in summarizing the aspects of Koyou that Elpida contended raised a substantial new question of patentability, MIT went far beyond the few conclusory assertions Elpida had advanced during the parties' negotiations. *Compare* Appx284-89, Appx312-17, *and* Appx326-28 *with* Appx237-41.

Reexamination is furthermore a lengthy, expensive, and rigorous process that goes well beyond initial examination. There are three assigned examiners: two Primary Examiners and a Supervisory Patent Reexamination Specialist. Appx404. The three examiners are selected from the Central Examination Unit (CRU), an elite unit to which only a few top examiners are promoted. Appx404. A high percentage of CRU examiners hold advanced technical degrees, and they are

assigned to cases based on their technical expertise. Appx747-48. The three examiners are not subject to quotas but are judged on the quality and thoroughness of their work; they review each other's work, resolve any disagreements, and come to a consensus before decisions are rendered. Appx747-48.

The lead examiner for the reexamination of the '221 patent was John S. Heyman, a PTO veteran who has examined over 2,300 patents—including patents assigned to Micron. Appx404; Appx763-68. All three examiners assigned to the reexamination had extensive relevant experience with patents covering integrated circuits and chip design and architecture. Appx763-68; Appx770-75. After reviewing MIT's extensive reexamination request, these engaged and skilled examiners agreed to initiate reexamination of the '221 patent on the grounds proffered by MIT, including the Koyou reference. Appx777-94.

F. Dr. Bernstein Explains Why Koyou Is Not Invalidating.

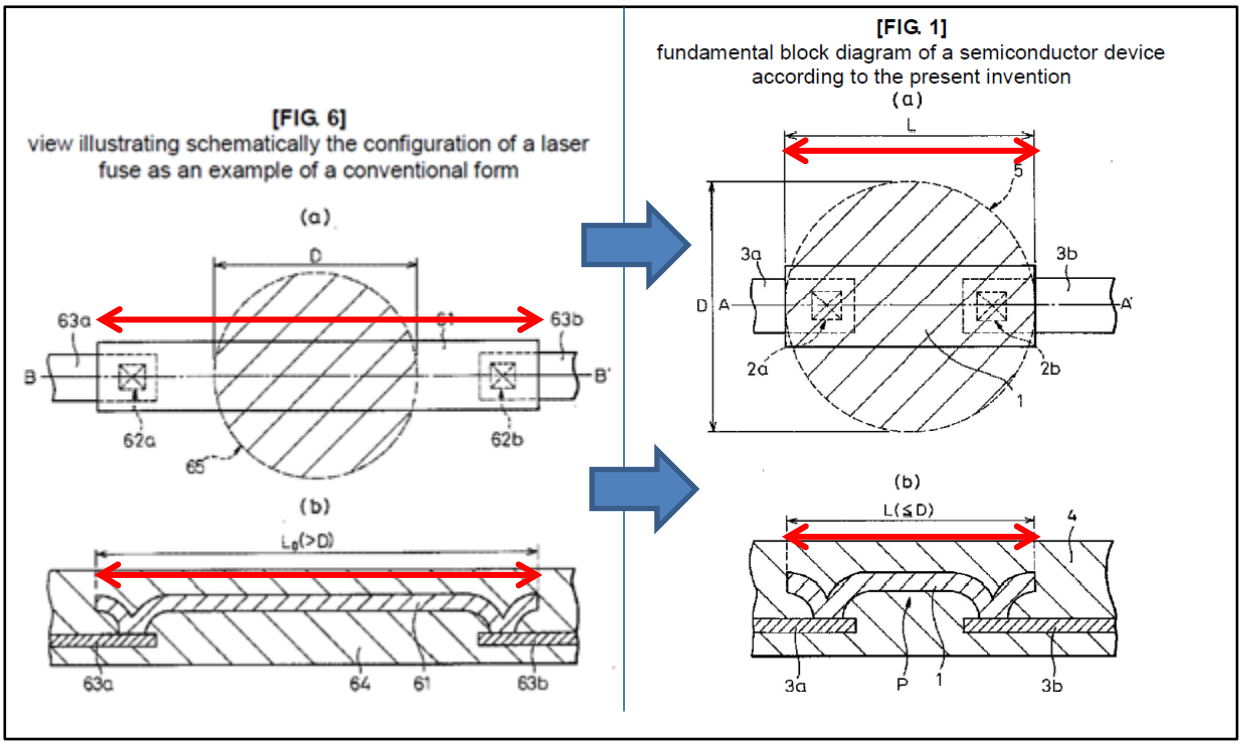
To support the patentability of the '221 patent claims in the reexamination, MIT submitted a response to the examiners' initial order coupled with a declaration from Dr. Bernstein. That declaration explained, from Dr. Bernstein's point of view, how one of skill in the art would view and understand the prior art references at issue, including Koyou. Appx338-62. With respect to Koyou in particular, Dr. Bernstein concluded that a person of skill in the art would not view Koyou as disclosing two critical elements found in the '221 patent claims: (1) a

cut-link pad having a width that is at least ten percent greater than the width of the electrically-conductive lines; and (2) a cut-link pad having substantially less TRPUL than the bonded electrically-conductive lines. Appx340-48.

(1) Ten percent greater width. The '221 patent taught and claimed that the fuse volume of the cut-link pad should be *increased*. Appx36. Koyou taught the opposite. Appx537-38, ¶¶ 3-12. Just like the conventional art, Koyou taught that the fuse volume of the cut-link pad should be *decreased*:

> With the configuration of the semiconductor device according to the present invention, the fuse member 1 is configured so as to be, at a maximum, a size equal to the irradiation spot diameter D of the laser beam 5, *making it possible to minimize the thermal capacity by minimizing the volume of the fuse member 1*.

Appx538, ¶ 12 (emphasis added). Indeed, Koyou's fundamental teaching was to advance the conventional volume-reducing strategy by *shortening the length* of conventional, *longer* fuses:

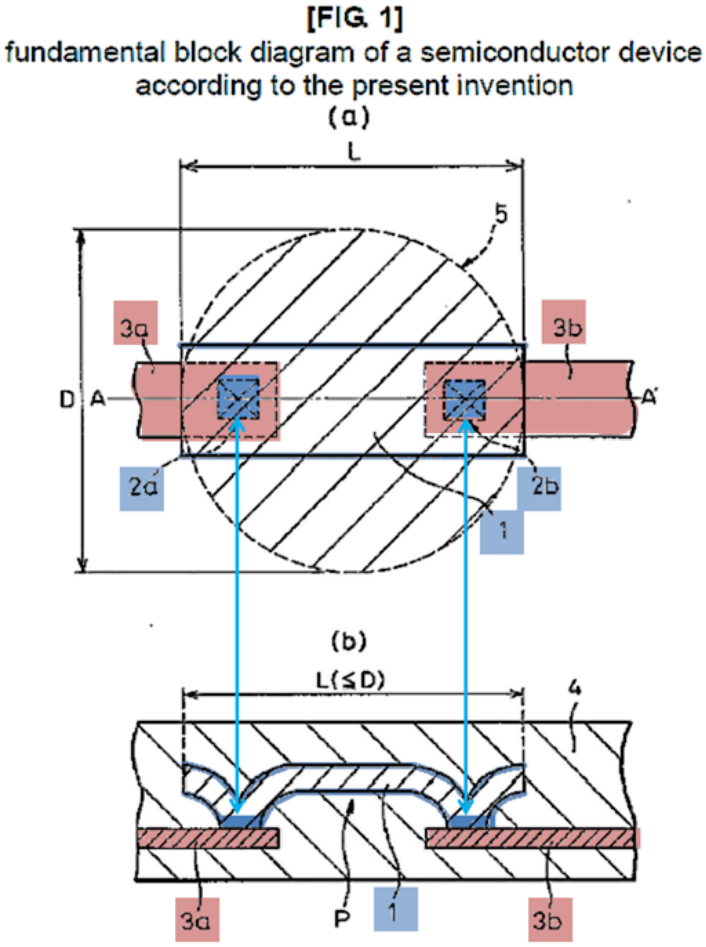


Appx540-41 (Figs. 1, 6) (annotation added). Koyou never expressly addresses the width of the cut-link pad, and never teaches a cut-link pad that is ten percent wider than the lines to which it is bonded. And again, increasing the width and volume of the cut-link pad would run contrary to Koyou's fundamental purpose of "minimiz[ing] thermal capacity by minimizing the volume of the fuse." Appx538, ¶ 12. Dr. Bernstein pointed this out to the examiners. Appx352-55.

With respect to the Koyou reference, Elpida's PowerPoint presentation had highlighted, without explanation, Figure 1 and Figure 3. Appx237-40. Dr. Bernstein addressed both of these Figures in his declaration. Appx341-43.

Figure 1 depicts the same continuous-contact embodiment from two different angles: top and side. Appx540. As Koyou explains, "FIG. 1 illustrates the

fundamental configuration of a semiconductor device according to the present invention, where (a) is a plan view ... and (b) is a sectional view along the section of A-A' in (a)." Appx538, ¶ 9. In Koyou, the corresponding portions of Figure 1(a) and (b) are aligned, facilitating the top and side view comparison:



Appx534 (annotations in color); Appx540; Appx341.

Viewed in isolation, top view (a) of Figure 1 might suggest that 2a and 2b are separate lines attached to the fuse member 1. Side view (b), however, refutes this understanding. Viewing Figure 1 in its entirety makes clear that 2a and 2b are

not separate lines bonded to fuse member 1—they are part and parcel of fuse member 1. Figure 1 shows that the fuse member 1 is bonded to lines 3a and 3b (shaded in red above) at the connection points 2a and 2b of the fuse member 1 (shaded in blue above). And those connection points 2a and 2b of the fuse member 1 are narrower than the lines 3a and 3b to which they are bonded, just as in the prior art. Dr. Bernstein explained this in detail in his declaration:

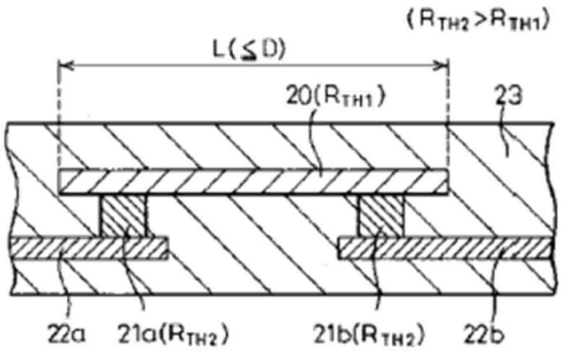
> FIG. 1 also clearly shows that the material in the contact holes 2a and 2b is part of the fuse member 1 because the length L of the fuse member 1 includes the material in contact holes 2a and 2b, the material in the contact holes 2a and 2b is the same material as the material of the fuse (see the hatching in FIG. 1(b)), the material in the fuse member 1 has a uniform thickness throughout its structure, and the laser directly irradiates material in the contact holes 2a and 2b (note the v-shaped depression in the uppermost surface of fuse member 1 in the regions of contact holes 2a and 2b). These facts clearly indicate that the same process ... forms fuse pad 1 and the material in the contact holes 2a-2b at the same time. Therefore, since the material in contact holes 2a and 2b is part of the fuse, this material cannot be the "electrically-conductive lines" conductively bonded to the fuse, as recited in Claim 3.

Appx341-42; Appx369-77. "Consequently, in the embodiment of FIG. 1, the only structure that can be the 'electrically-conductive lines' are interconnection layers 3a and 3b." Appx342. And as Figure 1 depicts, "the width of interconnection layers 3a and 3b is greater than the width of the contact holes 2a and 2b." Appx342. Dr. Bernstein thus concluded that "Koyou does not affirmatively disclose that the width of the fuse member 1 is at least ten percent greater than the width of interconnection layers 3a and 3b," and that Figure 1 in fact indicates the

opposite: that, where the fuse is bonded to the electrically-conductive lines, the fuse is *narrower* than the lines. Appx342. At the point at which the laser energy flows from the fuse pad into the electrically-conductive lines, therefore, "the interconnection layers 3a and 3b do not necessarily constrain the flow of heat/thermal energy from the fuse member 1." Appx342. Thus, like the rest of Koyou's specification, Koyou's Figure 1 reflected the conventional approach, and not the advance taught in the '221 patent.

Figure 3, on the other hand, depicts only the side view of a separate, buried-contact embodiment. As Koyou explains, "FIG. 3 schematically illustrates, in the form of a sectional view, the configuration of a laser fuse in a second embodiment of the present invention." Appx539, ¶ 19. Figure 3 is reproduced below:

[FIG. 3]
sectional view schematically illustrating the configuration of key parts (laser fuse) in a semiconductor device of a second embodiment of the present invention



Appx540 (annotated). In the Figure 3 embodiment, Dr. Bernstein explained,

> Koyou discloses a fuse member 20, contact holes 21a and 21b and interconnection layers 22a and 22b. The individual contact holes 21a and 21b are connected to the fuse member 20 and to the underlying connection layers 22a and 22b using a "buried contact structure." The buried contact structure makes it possible to select material properties for the electrically conductive material buried within the contact holes to be different from the material of fuse 20 ....

Appx343. Dr. Bernstein thus candidly concluded that, in contrast to the Figure 1 embodiment, contact holes 21a and 21b in the Figure 3 embodiment could be considered as separate electrically-conductive lines. Appx343. Nevertheless, Dr. Bernstein pointed out that, with respect to Figure 3, "Koyou is silent with regard to the relative widths of the fuse member 20 and the material filling each of the contact holes 21a and 21b. Thus, Koyou does not affirmatively disclose that the width of the cut-link pad is at least ten percent greater than the width of each of the first and second electrically-conductive lines." Appx343, ¶ 17; Appx372-73.

Dr. Bernstein further explained that this element was not inherent in Koyou's Figure 3 embodiment. He submitted two contemporary references that provided actual circuit measurements; one fuse pad was "arguably 10% wider than the vias," the other "was not." Appx344, ¶ 18. Since these were contemporary items, they were still both conventional horizontal arrangements, as opposed to the new, vertical-via formations in the '221 patent. Appx344, ¶ 18. Dr. Bernstein correctly concluded that a ten percent or greater differential was possible, but not inherent, in contemporary fuse design: "the width of the fuse member 20 disclosed

in FIG. 3 of Koyou is not necessarily at least ten percent greater than the width of the material filling each of the contact holes 21a and 21b." Appx344, ¶ 18.

(2) Substantially less TRPUL. Just as Koyou contained no express teaching on fuse pad width, Koyou also contained no express teaching on thermal resistance per unit length. Appx539, ¶¶ 21-22. Even so, Dr. Bernstein again provided forthright and well-supported analysis with respect to the relative thermal resistance per unit length for each of Koyou's embodiments. Appx344-46; Appx373-77.

Regarding the embodiment in Figure 1, contact holes 2a and 2b, which are part of the fuse pad, are much smaller than the lines 3a and 3b—directly contrary to the invention claimed in the '221 patent. As a result, Dr. Bernstein explained, the TRPUL of the fuse pad is *greater than*, and not *substantially less than*, the TRPUL of the connecting lines in Koyou's Figure 1 embodiment. Appx344, ¶ 19. Thus, Dr. Bernstein concluded, "fuse member 1 of Koyou does *not* have substantially less thermal resistance per unit length than interconnection layers 3a and 3b." Appx344, ¶ 19. Koyou's first embodiment therefore does not disclose the "substantially less TRPUL" element of the '221 patent claims. Appx36 (claim 3).

Regarding the embodiment in Koyou's separate Figure 3, calculating the relative TRPULs required a more complex analysis because Figure 3 shows no top-view widths, and they are discussed nowhere in the specification. But while

Figure 3 does not show top-view widths, Dr. Bernstein pointed out that it does show *thicker* lines 21a and 21b attached to a *thinner* fuse pad 20. Appx345-46. This is the opposite of the claimed relationship in the '221 patent, as reflected in the *thinner* lines 21a and 22a attached to a *thicker* fuse pad 20 in Figure 10 of the '221 patent. *Compare* Appx26 (Fig. 10) *with* Appx346 (Fig. 3).

For a more exacting analysis, Dr. Bernstein estimated width and related dimensions to arrive at a reasonable calculation of TRPUL for Koyou's Figure 3 embodiment. Appx346, ¶ 23. To do this, he looked to contemporaneous industry standard dimensions from specifications for LSI and Samsung DRAM products. Appx346-47. Dr. Bernstein used these variables—thicknesses, widths, and material properties—for the pad and the lines to determine the TRPUL ratios for Figure 3. Appx346-48. Dr. Bernstein also recognized that Koyou mentioned three possible pad materials and four possible line materials, leading to twelve potential permutations. Appx539, ¶¶ 21-22; Appx943-45. But Koyou offered no teaching as to any preferred permutation, or as to any desired TRPUL relationship between the pad and the lines. Appx539. Dr. Bernstein again looked to contemporaneous industry standard practices, and determined that only one combination of materials was actually viable for use in the industry at that time. Appx346-47; Appx946-48. In his calculations, Dr. Bernstein thus considered "the thermal conductivity of the

most likely or most commonly used metals for the fuse member 20 and the material in the contact holes 21a and 21b in FIG. 3 of Koyou." Appx346, ¶ 23.

These calculations confirmed that, for Koyou's Figure 3 embodiment, the "fuse member 20 of Koyou does not necessarily have less thermal resistance per unit length than the material in the contact holes 21a and 21b, much less *substantially* less thermal resistance per unit length." Appx346, ¶ 23.

Appreciative of Dr. Bernstein's candid explanations, the PTO examiners noted that the "[d]eclaration and affidavits filed ... on behalf of the Patent Owner and others have been instrumental in a greater understanding of the intricacies of this case," and—after understanding those intricacies—the PTO issued an *ex parte* reexamination certificate for the '221 patent in July 2012. Appx400-04.

G. MIT Renews Negotiations With Elpida and Successor Micron.

Following the reexamination, MIT reengaged Elpida in amicable negotiations. Appx408-23; Appx445-53. While Elpida continued to contest infringement and validity, the discussions swiftly turned to a settlement framework. Appx457. Elpida argued that MIT should accept a very modest license payment in light of Elpida's then-pending bankruptcy—which Elpida asserted would substantially reduce the value of MIT's claims. Appx474. Elpida also claimed that it planned to eliminate laser fuses from its products once it emerged from bankruptcy so there would be no post-bankruptcy damages. Appx457;

Appx474. Based on these assurances, the parties reached a settlement in principle, which contemplated a reduced, one-time payment from Elpida to MIT and the University of Maryland (UMD). Appx476.

Unfortunately, *after* an agreement in principle had been reached, Elpida and successor Micron added a new and unreasonable condition that scuttled the prospective license to the ’221 patent. That is, Elpida and Micron insisted that the release and covenant not to sue provisions extend not only to the ’221 patent and its family but also to vast swaths of unrelated patents in the expansive patent portfolios of both MIT and UMD. Appx796-97; Appx476; Appx4089.

This was plainly unacceptable: it would have extinguished a legion of potential claims at one stroke, and at an obviously insufficient price, for an untold number patents held by the universities. Appx796-97. In other words, the licensing negotiations did not fail because MIT “walked away,” as Micron asserted in the district court. Appx44. Nor did they fail because MIT “unreasonably limited its license,” as Micron asserts in this Court. Micron Br. 5. They failed because Micron pulled a bait-and-switch and insisted, *after* an agreement in principle had been reached, on new portfolio allowances that Micron knew MIT could not accept. Appx796-97.

H. After Negotiating for Seven Years, MIT Files Suit.

MIT filed suit only when it became clear that it had no other recourse. Appx14. The litigation, initiated in February 2015, saw little activity. Appx14-18. Micron answered the complaint, filed and withdrew a motion to dismiss, and filed a petition for *inter partes* review (IPR) with the Patent Trial and Appeal Board (PTAB) in May 2015. Appx14-17; Appx623. Micron then moved to stay the litigation pending resolution of the IPR. Appx17. While MIT could have opposed, it agreed to join Micron's motion, and the litigation was stayed in June 2015 pending resolution of the IPR in the PTAB. Appx18.

I. An IPR Is Instituted and Micron Moves for Fees in the District Court.

MIT submitted its preliminary response to Micron's IPR petition in August 2015. Appx904-68. In support of its petition, Micron had filed an expert declaration that disagreed with certain of Dr. Bernstein's earlier analyses of Koyou. Appx852. Under the PTO regulation in force at that time, MIT was not permitted to file a similar expert declaration with its preliminary response defending the analysis of Dr. Bernstein and rebutting the analysis of Micron's expert. 37 C.F.R. § 42.107(c). This unbalanced regulation has since been revoked, and patent holders may now submit supporting evidence with the preliminary response. 37 C.F.R. § 42.107(a). But the rule change came too late for MIT. In

November 2015, with only Micron's evidence before it, the PTAB instituted an IPR on the '221 patent. Appx478-528.

MIT was surprised and disappointed by this result, and now confronted a troubling scenario. The PTO's own statistics revealed that, through the end of 2015, roughly 75% of instituted IPRs that proceeded to a final written decision resulted in the invalidation of all claims at issue. Appx980. Having instituted the IPR, MIT was thus presented with the 75% statistical likelihood that the PTAB would invalidate the '221 patent following the full IPR proceeding. Appx980; Appx998-99. Given that statistical reality, MIT made the prudential business decision to forego trial in the PTAB or in the district court, and requested adverse judgment in the IPR. Appx986-88. Given the legitimate disputes between the parties, the PTAB expressed surprise at this development, and advised MIT of the gravity of its decision to abandon the patent in the IPR. Appx1020. But MIT is focused on research, education, and innovation—not on pursuing investments with losing odds. Given the 75% adverse odds, MIT decided to give up its patent.

With the '221 patent invalidated, MIT moved for dismissal of its litigation in the district court. Appx1014. Micron refused to join, and filed a separate motion for fees arguing that the brief and perfunctory district court litigation constituted an "exceptional" case under 35 U.S.C. § 285. Appx1-2.

J. The District Court Finds the Case Unexceptional and Denies Fees.

In May 2016, the district court gave Micron a hearing on its motion that lasted an hour and forty minutes, and involved extensive back-and-forth between the parties and the court. Appx4063; Appx4077-78; Appx4093-96; Appx4115; Appx4123. The district court issued its careful opinion denying fees one month later, on June 17, 2016. Considering the "totality of the circumstances," the court held that Micron had fallen "short of satisfying [its] burden of demonstrating that this is an exceptional case" under § 285. Appx6.

With respect to infringement, the district court found that the parties' dispute concerned a disagreement over the meaning of the claim term "on the substrate," and that MIT's reasonable "infringement position falls appreciably short of making this an 'exceptional' case." Appx6.

With respect to validity, the district court found that MIT's positions with respect to Koyou were "also unexceptional." Appx7. As the court found, there "was certainly a colorable argument that the patent's increased fuse width and substantially lower thermal resistance were novel and non-obvious limitations over Koyou." Appx7. And the court further supported this finding with the observation that, if Micron's contrary arguments were to be credited, that "necessarily means that the three expert examiners who reexamined the patent with full knowledge of Koyou also reached an objectively unreasonable, borderline frivolous, conclusion."

Appx7. And "[t]hat is, to say the least, doubtful." Appx7. The court also emphatically rejected Micron's implicit suggestion that MIT had perpetrated some kind of fraud on the PTO during the reexamination of the '221 patent: "[Micron's] contention that Bernstein and MIT misled the PTO about Koyou by manipulating its teachings is not supported by the record." Appx8.

Finally, the district court found that "MIT did not litigate this case in a manner that warrants a fee award. If MIT's behavior was exceptional at all, it was notable for its willingness to try to negotiate a license in good faith for seven years before filing suit." Appx7. Having rejected every possible ground raised by Micron for a finding of exceptionality under § 285, the district court denied Micron's motion for fees, and dismissed the litigation. Appx8; Appx20.

This appeal followed.

III. SUMMARY OF ARGUMENT

Micron offers four arguments in support of its assertion that the district court abused its discretion in denying fees. None has merit.

1. Micron argues that the district court improperly *assumed* that MIT acted in good faith before the PTAB. Micron Br. 14-15. Not true. The district court *found* that MIT acted in good faith before the PTAB, and that finding is fully supported by the record evidence. Not a shred of evidence, on the other hand, suggests that MIT acted in bad faith before the PTAB. In any event, Micron's

argument that it was bad faith to request adverse judgment in the PTAB is both nonsensical and irrelevant. It is nonsensical because, in Micron's alternate universe, a patent owner facing an adverse decision in the PTAB must always keep on fighting, no matter the odds that the fight will be a losing one in the end. Micron would thus use § 285 to punish prudential behavior and encourage unnecessary litigation. It is irrelevant because, as this Court has held, an adverse judgment in the PTAB has no bearing on an exceptionality analysis in the district court.

2. Micron argues that the district court improperly *assumed* that MIT's invalidity positions were reasonable and failed to "even ***mention*** [Micron's] two key issues" relating to fuse width and TRPUL. Micron Br. 15. Not true. The district court *found* that MIT possessed reasonable arguments "that the patent's increased fuse width and substantially lower thermal resistance were novel and non-obvious limitations over Koyou." Appx7. And that finding is fully supported by the record evidence. The claims of the '221 patent require that the width of the fuse pad is "at least ten percent greater" than the width of the connecting lines, and that the pad has "substantially less thermal resistance per unit length" than the lines. Appx36. Koyou contains no express teaching regarding width *or* TRPUL. Micron's invalidity arguments based on Koyou require the manipulation of distinct figures and the misleading substitution of "thermal resistance" for the claimed "thermal resistance per unit length." While Micron's arguments might have carried

the day under the lower standards in the PTAB, they would not have fared as well under the clear-and-convincing standard in the district court.

3. Micron argues that the reexamination "highlights why MIT should reimburse Micron its legal expenses" because MIT and Dr. Bernstein purportedly offered "complex analys[e]s" designed to "distract" the PTO from the very text and figures of Koyou that MIT and Dr. Bernstein put before the PTO. Micron Br. 22-24. That is silly. Micron fails to identify a single untrue or incorrect statement made by MIT or Dr. Bernstein during the reexamination. The PTO highlighted the materials from MIT and Dr. Bernstein as particularly helpful, Appx400, and the district court flatly rejected the idea that MIT or Dr. Bernstein had done anything to mislead the PTO, Appx8. Furthermore, Micron provides no reason to believe that concededly true and correct statements made to the PTO could have any impact whatsoever on an exceptionality analysis in the district court.

4. Finally, Micron argues that the district court improperly concluded that MIT's infringement position was reasonable. Micron Br. 27-28. MIT's position was that the accused products infringed because they met every claim element and matched the preferred embodiment described in the specification and depicted in Figures 10 and 11. Micron's position was that the accused products did not infringe because, while they matched the preferred embodiment described in the specification and depicted in Figures 10 and 11, one of the claim terms should be

read so as to exclude that embodiment and make nonsense of the remaining claim language. Appx461. MIT had the stronger of these positions.

Micron's arguments thus fall flat—and that is before the high standard of review is taken into account. It was Micron's burden to show not only that the district court erred, but that it abused its discretion. Micron has not approached that showing. This Court should affirm the denial of Micron's motion for fees.

IV. ARGUMENT

A. Governing Law and Standard of Review.

Section 285 provides that the district court "in exceptional cases may award reasonable attorneys fees to the prevailing party." 35 U.S.C. § 285. And an "exceptional" case is "one that stands out from others with respect to the substantive strength of a party's litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated." *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749, 1756 (2014). There is "no precise rule or formula" for making exceptionality determinations, and the district court "may determine exceptionality by considering the totality of circumstances, including frivolousness, motivation, objective unreasonableness, and concerns over compensation and deterrence." *Large Audience Display Sys., LLC v. Tennman Prods., LLC* (*LADS*), No. 15-2040, 2016 U.S. App. LEXIS 18854, at *10 (Fed. Cir. Oct. 20, 2016).

While there is no precise rule or formula governing the exceptionality analysis, a few relevant guidelines have been established in the case law.

First, fee awards cannot be used "as a penalty for failure to win a patent infringement suit." *Octane*, 134 S. Ct. at 1753; *Gaymar Indus. v. Cincinnati Sub-Zero Prods.*, 790 F.3d 1369, 1373 (Fed. Cir. 2015). In other words, the fact that "one party's position did not prevail" is unexceptional. *Gaymar*, 790 at 1373.

Second, fee awards cannot be used as a penalty for failure to survive a proceeding before the PTAB. *See id.*; *LADS*, 2016 U.S. App. LEXIS 18854, at *12-13. Indeed, this Court has made clear that failure to survive a PTAB proceeding, in itself, says nothing about the strength of the validity of claims in litigation. For one thing, "the PTAB gives claims their broadest reasonable construction—making claims more susceptible to ... rejection than they would be in the district court." *LADS*, 2016 U.S. App. LEXIS 18854, at *12. For another, "the PTAB only considers whether the claims are invalid under a preponderance of the evidence standard; unlike in the district court, no presumption of validity attaches to the claims and the question of validity is not measured by the clear and convincing standard." *Id.* at *12-13. The simple fact that a patent is invalidated in a proceeding before the PTAB is thus, as a matter of law, unexceptional. *Id.*

Third, "for a case dismissed before trial to be designated exceptional, evidence of the frivolity of the claims must be reasonably clear without requiring a

'mini-trial' on the merits for attorneys' fees purposes." *Trover Grp., Inc. v. Dedicated Micros USA*, No. 2:13-CV-1047, 2015 U.S. Dist. LEXIS 107733, at *11-12 (E.D. Tex. Aug. 17, 2015) (Bryson, J., sitting by designation); *SFA Sys., LLC v. Newegg Inc.*, 793 F.3d 1344, 1348-49 (Fed. Cir. 2015) (confirming this approach). Requiring the district court to decide issues on a motion for fees that would otherwise be decided at *Markman* or at trial would defeat one of the purposes of § 285—to reduce the amount of time and energy spent litigating frivolous claims. Micron Br. 12. The burden of showing that claims are clearly frivolous, without the need for any mini-trial, rests on the party moving for fees. *See Trover*, 2015 U.S. Dist. LEXIS 107733, at *11-12; *SFA*, 793 F.3d at 1349-51.

Critically, these rules are all directed to the discretion of the district court. Because the text of the statute "emphasizes the fact that the determination is for the district court," and because that court "is better positioned" to decide "whether a case is exceptional," an "appellate court should apply an abuse-of-discretion standard in reviewing all aspects of a district court's § 285 determination." *Highmark Inc. v. Allcare Health Mgmt. Sys.*, 134 S. Ct. 1744, 1748-49 (2014). This means that the district court's decision denying fees must be affirmed "unless the court's decision is clearly unreasonable, arbitrary or fanciful, or based on an erroneous conclusion of law or fact." *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1346 (Fed. Cir. 2000). And while questions of

law may occasionally have some relevance "to the § 285 inquiry, that inquiry generally is, at heart, 'rooted in factual determinations.'"[2] *Highmark*, 134 S. Ct. at 1748-49. Furthermore, because there is no need for mini-merits-trials, this Court "need not rule on the correctness of the district court's decision on all underlying issues of law in reviewing a district court's exceptional case determination. [The Court] need only determine whether the district court abused its discretion when it found that the party's litigating position was not so meritless as to 'stand out' from the norm and, thus, be exceptional." *SFA*, 793 F.3d at 1348.

Because the burden to prove exceptionality in the district court is high, and the standard of review for exceptionality determinations on appeal is even higher, appeals from such determinations "may frequently be frivolous." *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 407 (1990); *see also* 9 J. Moore, B. Ward, & J. Lucas, MOORE'S FEDERAL PRACTICE ¶ 238.03[2], at 38-13, 38-14 (2d ed. 1989). MIT respectfully suggests that, if any party to this litigation has made a near-frivolous argument, it is Micron's argument that the district court abused its discretion in finding that this entirely unexceptional case was unexceptional.

[2] Micron's statement of the issues presented suggests that Micron raises "legal errors." Micron Br. 1. Not true. The § 285 inquiry is "rooted in factual determinations," *Highmark*, 134 S. Ct. at 1748-49, and Micron's complaints are with the district court's factual determinations that MIT's arguments were reasonable and that MIT's actions were taken in good faith. Appx5-8.

B. The District Court Did Not Abuse Its Discretion in Finding That MIT Acted in Good Faith.

Micron's opening argument on appeal is that the district court "improperly assumed that MIT acted in good faith" when MIT abandoned the '221 patent in the IPR proceeding, and that this "unsupported finding ... betrayed the district court's unsupported ***presumption*** that MIT's position on the merits" was not frivolous. Micron Br. 14-15. This argument misses the mark for at least three reasons.

First, the court's finding that "the reason [MIT] abandoned its patent was because the IPR statistics doomed its defense of the patent" was *not* "unsupported." Micron Br. 14. It was fully supported by the record evidence. The relevant IPR statistics were before the court, Appx971-85, as was MIT's official request for adverse judgment in the PTAB, which explained that judgment was sought in light of those statistics, Appx986-90. Indeed, the PTAB acknowledged that this was the identified "motivation" for MIT's request for adverse judgment. Appx1020. Unsurprisingly, the PTAB was not anxious to give credence to its sometime-reputation as a patent "death squad[]," Appx999; it therefore entered judgment "without regard" to MIT's "motivation." Appx1020. Nevertheless, the record evidence shows what the record evidence shows. And as a rational actor proceeding in good faith, MIT had no choice but to carefully consider the statistical realities that it faced upon institution of the IPR. Appx986-90; Appx980.

Notably, while the record evidence supports the district court's conclusion that MIT abandoned the '221 patent as a good-faith business decision, not a shred of evidence supports Micron's suggestion that MIT acted in bad faith when it requested adverse judgment in the IPR. Micron Br. 14-15. It was Micron's burden to muster evidence on this point—and it found none. Appx6-7.

Second, Micron's theory that MIT acted in bad faith when "it abandoned its patent," Micron Br. 14, is not only unsupported; it is also nonsensical and at odds with the purposes of § 285. Micron suggests that MIT's abandonment was in bad faith because "[p]atent owners" acting in good faith "routinely defend their patents on the merits before the PTAB after an institution decision." Micron Br. 14. But according to Micron, the '221 patent suffered from "rank invalidity." Micron Br. 11. If that were true, abandoning the patent after the PTAB's institution would necessarily be an act of *good faith*; it would be *bad faith*, on the other hand, to press forward with the defense of such a "definitely invalid" patent after an institution decision. Micron Br. 10. Yet under Micron's theory, up is down, black is white, and *good faith* means continuing to defend "definitely invalid" patents. Micron Br. 10, 14. That is nonsensical. It is also at odds with the goals of § 285, which, as Micron recognizes, seek to dissuade, not promote, frivolous litigation. Micron Br. 12. Micron's backwards theory—which would use § 285 to punish

patent owners who abandon claims early in the PTO and elsewhere—can be rejected out of hand. *See Octane*, 134 S.Ct. at 1753; *Gaymar*, 790 at 1373.

Third, and more fundamentally, Micron's argument rests on an assumption that the voluntary entry of adverse judgment in the PTAB has some bearing on whether the litigation in the district court was exceptional, or whether MIT's defense of the '221 patent would have been frivolous. Micron Br. 14-15. It does not. As this Court has held, the simple fact that claims are invalidated by the PTAB "does not support a finding of frivolousness"—and is therefore not relevant to an exceptionality analysis. *LADS*, 2016 U.S. App. LEXIS 18854, at *12-13. And that is the rule when the PTAB finds the claims *actually* invalid. Here the PTAB simply instituted the IPR, finding that, in view of the petition and preliminary response, there was a "*reasonable likelihood*" that certain claims of the '221 patent were invalid—but without making any "final determination with respect to the patentability of these claims." Appx526 (emphasis added). Even more so here than in *LADS*, therefore, the entry of adverse judgment in the PTAB "does not support a finding of frivolousness." *LADS*, 2016 U.S. App. LEXIS 18854, at *12.

Furthermore, one critical reason that the judgment of invalidity in the PTAB has little relevance to the § 285 inquiry in this case is that "no presumption of validity attach[ed] to the claims" of the '221 patent in the PTAB. *Id.* at *13. In the district court litigation, on the other hand, the claims of the '221 patent were

entitled to a presumption of validity. *Id.* Micron's complaint that the district court's finding of good faith "betrayed [an] unsupported ***presumption***" of validity thus not only misses the mark as a factual matter, Micron Br. 14-15, it conflicts with a "common core of thought and truth" reflected in the Supreme "Court's precedents for a century"—patents are entitled to a ***presumption*** of validity in district court litigation. *Commil USA, LLC v. Cisco Sys.*, 135 S. Ct. 1920, 1928 (2015).

Micron's opening foray thus falls completely flat. The district court did not abuse its discretion in finding—as the uncontested record evidence demonstrated—that MIT acted in good faith before the PTAB. And even more fundamentally, the judgment in the PTAB has no bearing on the question of exceptionality in the district court—where the '221 patent carried a legal presumption of validity.

C. The District Court Did Not Abuse Its Discretion in Finding That MIT Possessed Reasonable Invalidity Arguments.

Micron next asserts that the district court simply "*assumed*" that MIT's invalidity positions were reasonable and failed to "even ***mention*** [Micron's] two key issues" relating to fuse width and TRPUL. Micron Br. 15. Not true. As the district court *found* after considering full briefing and engaging in a lengthy hearing on these issues: "[t]here was certainly a colorable argument that the patent's increased fuse width and substantially lower thermal resistance were novel and non-obvious limitations over Koyou." Appx7. And Micron's suggestion that the district court was required to make particular merits-based findings with

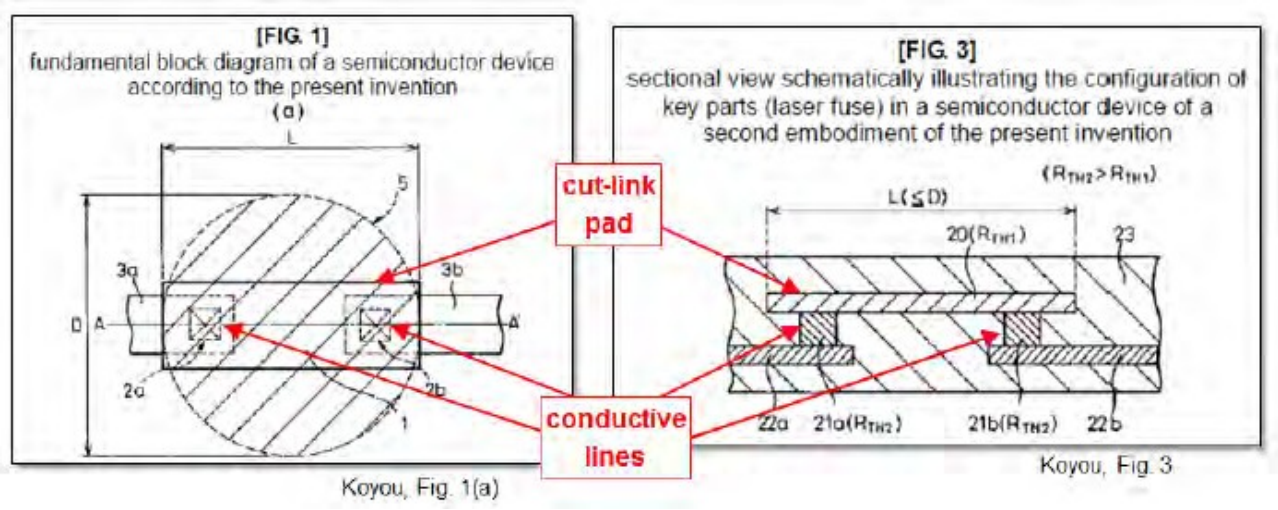
respect to "the facts [and] evidence relating to" its invalidity arguments, Micron Br. 15, is wrong as a matter of law. For this case that was "dismissed before trial to be designated exceptional," Micron bore the burden of producing sufficiently clear "evidence of the frivolity of the claims" such that no "'mini-trial' on the merits"—with its attendant findings on the merits—would be necessary. *Trover*, 2015 U.S. Dist. LEXIS 107733, at *11-12; *SFA*, 793 F.3d at 1348-49.

Micron failed to carry that burden. Appx6-7. This is plainly not a case where "the frivolity of the claims" is "clear," *SFA*, 793 F.3d at 1348-49, and the district court did not abuse its discretion in finding otherwise. In fact, the record evidence demonstrates that MIT's validity arguments were reasonable and well-supported. The fact that "[t]hree expert patent examiners in the PTO's Central Reexamination Unit ... concluded that the patent was valid" over Koyou is *not the only* evidence supporting the district court's finding. Appx7; Micron Br. 15-16. But it *is highly persuasive* evidence. And as the district court rightly found, it makes Micron's suggestions of frivolity, "to say the least, doubtful." Appx7.

1. MIT possessed reasonable arguments regarding the "ten percent greater width" element.

With respect to Micron's first "key" invalidity issue, Micron asserts that it "was exceptional for MIT to deny that the Koyou cut-link was wider than the connecting lines." Micron Br. 16. This assertion is meritless.

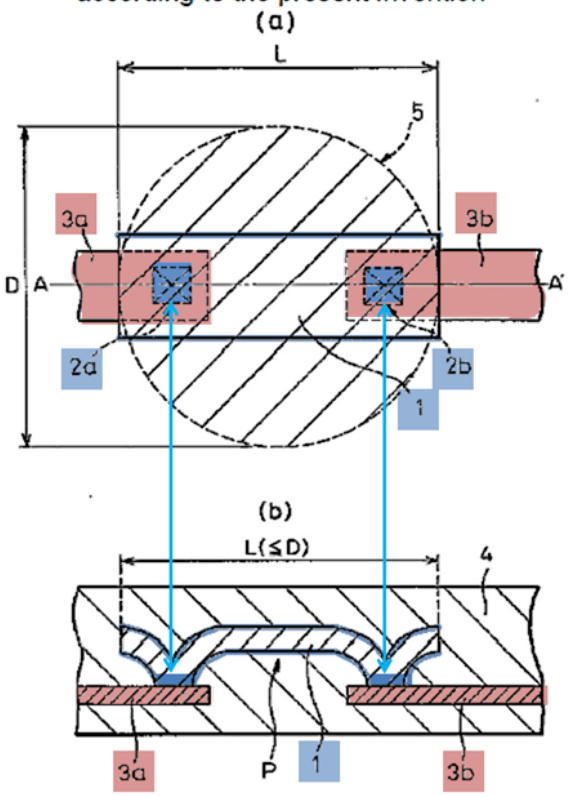
Micron posits that it "is simple to see" that the "Figure 1 embodiment shows a cut-link much wider than the connecting lines," and offers the Court the following annotated illustration that Micron pieced together from Koyou:



Micron Br. 18-19. But Micron resorts to misdirection and manipulation here, as those pictures do not reflect the complete "Figure 1 embodiment." Appx540; Appx584; Micron Br. 18-19.

The picture on the left shows the top view (a) of the embodiment in Figure 1; the picture on the right shows the side view of the "second embodiment" in Figure 3. By juxtaposing and combining parts of these different Figures, Micron intimates—and expresses with its annotation—that the contact holes 2a and 2b in Figure 1 are the same as the connecting lines 22a and 22b in Figure 3. Micron Br. 19. But they are not, as the side view (b) of the embodiment in Figure 1 demonstrates. This becomes clear when Koyou's Figure 1 is shown in its entirety:

[FIG. 1]
fundamental block diagram of a semiconductor device according to the present invention



Appx540 (annotations in color).

The complete Figure 1 leaves little doubt that the contact holes 2a and 2b are *not*, as Micron posits, separate connecting lines. They are unmistakably *part and parcel* of the cut-link pad itself. The connecting lines in Figure 1 are not elements 2a and 2b; they are elements 3a and 3b. The relevant width comparison in Figure 1 is thus between electrically-conductive lines 3a and 3b (wide) and the cut-link pad at points of contact 2a and 2b (narrow). Appx341-42. Micron might quibble about the status of elements 2a and 2b in Figure 1, but Figure 1 itself belies Micron's glib

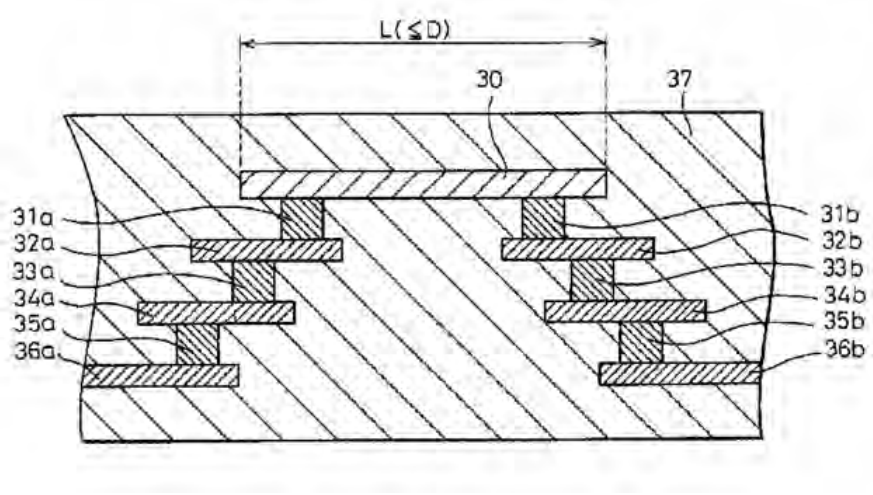
assertion that it "is simple to see" that the contact holes 2a and 2b correspond to the separate electrically-conductive lines claimed in the '221 patent.[3]

And of course Figure 3 shows no widths whatsoever, and so does not support Micron's argument with respect to this element. Appx540; Micron Br. 18-19. Micron argues that it is justified in assuming that the undisclosed top view of Figure 3 would be identical to the top view of Figure 1 because the "claims of Koyou tie the figures together unmistakably." Micron Br. 19. Micron points out that Koyou claim 1 recites components from Figure 1, while Koyou claim 4 depends from claim 1 but adds components from Figure 3. "Case closed," says Micron. Micron Br. 19. Not so fast. Micron's argument—which holds that Figures 1 and 3 depict "the same structure," Micron Br. 19—proves far too much.

For one thing, the Figures themselves indicate that they depict separate structures, and they contain no overlapping numbers. Appx540. For another, while

[3] Dr. Bernstein's reasonable view was that the proper width comparison in Koyou Figure 1 was not between lines 3a and 3b (shown in red in the annotated diagram above) and the widest part of the fuse pad, but instead between lines 3a and 3b and the part of fuse pad to which the lines were actually bonded—contact points 2a and 2b (shown in blue in the annotated diagram above). Appx341-42. Dr. Bernstein took this view, with which the examiners agreed, because the contact points 2a and 2b reflect the points at which laser energy flows off the pad onto the lines 3a and 3b. Thus, the width of 3a and 3b relative to 2a and 2b dictates the degree to which energy is constricted onto the pad, which the '221 patent teaches is desirable. Appx341-42. And in Koyou's Figure 1, the width of the fuse pad at contact points 2a and 2b is *narrower* than the lines 3a and 3b—the opposite of the claimed invention, which requires the pad to be at least ten percent wider than the lines.

Koyou claim 4 depends from claim 1 but adds components from Figure 3, Koyou claims 5 and 6 also depend from claim 1 but add components from Figures 4 and 5, respectively. Appx537. Like Figure 3, Koyou Figures 4 and 5 offer side views, but not top views. Appx540-41. Under Micron's case-closed approach, the top views of Figures 5 and 6 would be identical to the top view of Figure 1—because the "claims of Koyou tie the figures together unmistakably." Micron Br. 19. But viewing the Figures together makes clear that this cannot be the case. Consider the Figure 4 side view, rotated right-side-up for a more direct comparison:



Appx540. If Micron is right, then what is true for Figure 3 is true for Figure 4—it likewise depicts "the same structure," and single-layer Figure 1 provides the top view for multi-layer Figure 4. But that is plainly wrong: these various figures do not depict "the same structure," and single-layer Figure 1 cannot possibly provide the top view for multi-layer Figure 4. Micron thus cannot be right.

To be sure, this analysis also may not have closed the case. But it demonstrates that Micron's treatment of the Figures in Koyou is far from simple and straightforward. To the contrary, it is misguided and misleading. Were MIT's arguments regarding the "ten percent greater width" element frivolous, there would have been no reason for Micron to resort to manipulated partial reproductions of Figure 1 and convoluted arguments to support the proposition that Figures marked as depicting separate structures actually depict the same structure.

Furthermore, the fact that the PTAB appeared to initially credit many of Micron's arguments in the institution decision carries little weight: that is more a reflection of the previously unbalanced procedure in which such decisions were made after receiving evidence from only one party. Indeed, Micron notes that the "PTAB recognized that Claim 4 proved that Figure 1 and Figure 3 are part of the same structure and laid it out chapter and verse." Micron Br. 19; Appx514-15. But as shown, under that same logic claim 5 proves that single-layer Figure 1 and multi-layer Figure 4 are part of the same structure—and that cannot be the case. Appx540. The PTAB's institution decision thus does little to undermine MIT's arguments; it simply suggests that the PTAB itself, like everyone else, sometimes gets it wrong. There is one certainty: neither the claims of Koyou, nor their interdependencies, expressly teach the width element of the'221 patent.

It is worth noting that Micron also miscasts the relevant question as whether the cut-link in Koyou is simply "wider than the connective lines." Micron Br. 16. The claim element requires that "the width of the cut-link pad is *at least ten percent greater* than the width of each of the first and second electrically-conductive lines" bonded to the cut-link pad. Appx36 (claim 3) (emphasis added).

Micron's omission of the specific relative dimension required by the claim is intentional because, as Micron conceded in the district court, "[t]he text of Koyou does not specifically say or include language regarding the width of the cut-link pad." Appx4078. Micron's width-related arguments are based entirely upon an "infer[ence] ... from the picture" reflecting the top view (a) of Koyou's Figure 1. Appx4078; Appx540. And the case law holds that patent drawings "cannot be the basis for challenging the validity of claims reciting specific dimensions not disclosed directly in such prior art." *Nystrom v. Trex Co., Inc.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005); *see also Hockerson-Halberstadt, Inc. v. Avia Grp. Int'l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) ("patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue"). Koyou's specification says nothing about width at all, much less "ten percent greater width." Appx4078; Appx538, ¶¶ 10, 17; Appx540. There is thus a reasonable argument, based on these

authorities, that Koyou's drawings cannot be used to show a teaching of the claimed "ten percent greater width" as a matter of law.

While neither MIT nor Dr. Bernstein offered this argument to distinguish Koyou in the reexamination, the parties disputed the significance and applicability of this case law in the IPR proceeding. There is no need to resolve that dispute here—the fact that the *complete* Figure 1 does not support Micron's arguments disposes of the exceptionality claim. Nevertheless, that Micron feels the need to miscast the relevant question as one of general width, without the specific claimed dimension, further reveals that Micron recognizes the problems with its position.

2. **MIT possessed reasonable arguments regarding the "substantially less TRPUL" element.**

With respect to Micron's second "key" invalidity issue, Micron asserts that it "was exceptional for MIT to deny that the Koyou cut-link has substantially less thermal resistance per unit length than the connecting lines." Micron Br. 20. Micron points to Koyou's suggestion that "contact holes 21a and 21b" have "higher ... thermal resistance" than "fuse member 20" in the Figure 3 embodiment, Appx539, ¶ 21, and notes that Koyou "proposes three materials to fill the contact holes" 21a and 21b: "tungsten (W), titanium (Ti), [and] titanium nitride or the like." Micron Br. 21; Appx539, ¶ 21. While there is no dispute that using tungsten for the connecting lines will not satisfy this claim element of the '221 patent,

Micron asserts that "[t]here is no principled reason to assume the use of tungsten, but not titanium or titanium nitride." Micron Br. 22. That is wrong.

In fact, there is a principled reason to assume the use of tungsten, but not titanium or titanium nitride, for the electrically-conductive lines: of those three materials, only tungsten is suitable for use as a conductor of electricity. Appx946-48. Tungsten is almost 800% more conductive than titanium and titanium nitride. Appx948. For that reason, while all three materials were in use in the relevant time frame, only tungsten was known as a viable filling material for connecting lines and contact holes; titanium and titanium nitride, on the other hand, were used as lining material to improve adhesion and prevent diffusion of the tungsten into surrounding layers of material. Appx944-46. This is not controversial; it is basic materials and semiconductor science. Appx946-48. And Micron understands that this is how a person of ordinary skill in the art would have approached these three materials. Appx945-48; Appx4075. Micron's assertion that there "is no principled reason to assume the use of tungsten" therefore again misleads the Court.

In addition, it is important to understand that, while Koyou discusses "thermal resistance," it never mentions "*substantially* less thermal resistance," nor "substantially less thermal resistance *per unit length*." Appx539 (emphasis added). And the *substantial* difference in thermal resistance *per unit length* is critical: that is what creates the conditions for optimal severance observed by the inventors and

described and claimed in the ’221 patent. Appx30; Appx36. It is the *substantial* and sharp transition in thermal resistance *per unit length* at the point of contact that acts as a stiff shock absorber, creating the sudden heat boundary and fracturing that the inventors demonstrated experimentally. Appx30-31, 5:17-7:50.

Consider the difference between a soft shock absorber and a stiff shock absorber. Both may provide the same suspension capacity, but the soft shock absorber will provide a smoother ride, absorbing more of the energy from the road, while the stiff shock absorber will provide a more jarring ride, sending more of the energy from the road into the cabin of the car. In the same way, two materials may provide the same total *thermal resistance*, but only the material with a substantially different thermal resistance *per unit length* will act as the stiff shock absorber described in the ’221 patent. Appx30-31, 5:17-7:50. The omission of any teaching regarding thermal resistance *per unit length* in Koyou, much less any teaching regarding a *substantially* less thermal resistance *per unit length*, is thus critical. Again, Micron may have had arguments regarding the significance of the fact that Koyou contains no teaching regarding a *substantially* less thermal resistance *per unit length*—but MIT’s explanations on this issue are certainly not frivolous.

It is further worth noting that, while Koyou mentions three possible materials for use in the contact holes of the Figure 3 embodiment, Koyou also mentions four possible materials for use in the fuse member of the Figure 2

embodiment—for a total of twelve possible permutations among the two separate embodiments. Appx538-39, ¶¶ 16, 21. And most of these permutations actually result in a higher TRPUL on the fuse pad than on the lines—the *opposite* of the claimed requirement. Appx944. Koyou never teaches "thermal resistance *per unit length*" for the lines relative to the pad, and thus there is no guidance in Koyou that would lead to the particular permutation of materials upon which Micron would rely. The combination comes to the fore only in light of the teachings of the '221 patent regarding a substantially less TRPUL.[4]

[4] It should also be noted that mixing and matching the materials listed in paragraphs 16 and 21 of Koyou—each paragraph relating to a different embodiment—is improper for an assertion of anticipation. *NetMoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008); *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1083 (Fed. Cir. 2008); *Applied Materials v. Advanced Semiconductor Materials Am.*, 98 F.3d 1563, 1576 (Fed. Cir. 1996). The PTAB noted that paragraph 21 was "not disclosing three possible materials in disparate embodiments." Appx510. That may be true. But paragraph 16, which mentions the four possible materials for the fuse pad, *does describe an embodiment disparate* from the embodiment in paragraph 21. Appx538-39. Furthermore, while Micron's argument regarding the "ten percent greater width" element relies on Koyou's Figure 1 embodiment, Micron's argument regarding the "substantially less TRPUL" element relies on Koyou's Figure 3 embodiment. Micron Br. 18, 21. Again, these separate embodiments cannot be mixed and matched for an assertion of anticipation. *NetMoneyIN*, 545 F.3d at 1371. At best, therefore, Micron could have combined its arguments on these two elements for an assertion of obviousness based on the Koyou reference. *See id.*

D. The District Court Did Not Abuse Its Discretion in Finding That MIT Was Forthright With the PTO.

Micron also argues that the *ex parte* reexamination that was completed in 2012—three years before this case was filed—"highlights why MIT should reimburse Micron its legal expenses." Micron Br. 22. Again, this argument fails.

1. Micron makes no PTO-related allegation that could impact the exceptionality analysis.

Micron does not argue that anything that might have occurred during the *ex parte* reexamination constitutes grounds for a finding of exceptionality in this case. Micron Br. 22-23. Instead, Micron simply argues that the results of the reexamination do not "support[] the district court's decision" because the "proceeding was infected by misleading arguments." Micron Br. 22-23. Micron soft-pedals this argument for good reason: it makes no allegation on appeal that might have impacted the exceptionality analysis in the district court.

Octane Fitness holds that a case may be "exceptional" with respect to "the substantive strength of party's litigation position" or "the unreasonable manner in which the case was litigated." 134 S. Ct. at 1756. MIT's decision to request reexamination, and its actions in the reexamination, fall into neither of these categories. *Octane Fitness* thus provides no hook for Micron's reexamination-related complaints, and Micron does not argue otherwise. Micron Br. 22-23.

Prior to *Octane Fitness*, this Court held that district courts "may award attorney fees in equitable conduct cases, but are not required to do so." *Nilssen v. Osram Sylvania, Inc.*, 528 F.3d 1352, 1358 (Fed. Cir. 2008). Significantly, however, Micron does not allege inequitable conduct, and makes no effort to meet its high bar—which requires proof "that the patentee acted with the specific intent to deceive the PTO." *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1290 (Fed. Cir. 2011). Indeed, rather than alleging and attempting to prove that MIT acted with a specific intent to deceive the PTO, Micron simply asserts that MIT offered "misleading arguments" designed to "distract" the PTO examiners from the very text and figures of Koyou *that MIT put before the PTO examiners*. Micron Br. 23-24. As a matter of law, these allegations—even if true—would not rise to the level of inequitable conduct. *Therasense*, 649 F.3d at 1290; *Rothman v. Target Corp.*, 556 F.3d 1310, 1329 (Fed. Cir. 2009). Inequitable conduct case law thus provides no hook for Micron's reexamination complaints.

And as *Nilssen* holds, a district court would not abuse its discretion by denying fees in a case involving actual proof of inequitable conduct with a specific intent to deceive the PTO. 528 F.3d at 1358. *A fortiori*, the district court clearly did not abuse its discretion by denying fees in this case involving mere allegations of "misleading arguments" purportedly intended to "distract" the PTO. Micron Br.

23-24. Micron's reexamination complaints are thus irrelevant to its appeal. Even so, those complaints are themselves misguided and meritless.

2. MIT hid nothing from the PTO, and had no incentive to hide anything from the PTO.

Micron repeatedly suggests, for example, that MIT "did not present Elpida's invalidity positions to the Patent Office," Micron Br. 4; "suppressed [evidence] in the ex parte reexamination," Micron Br. 5; "did not present Elpida's side of the story to the Patent Office," Micron Br. 11; and "failed to present the facts that Elpida had presented to [MIT]," Micron Br. 23. These statements are false.

Elpida identified a number of prior art references to MIT, and MIT presented those references to the PTO, along with a 68-page request for reexamination. Appx269-336. And with respect to Koyou in particular, a quick comparison between "the facts that Elpida had presented to [MIT]," Micron Br. 23; Appx284-89, and the facts that MIT presented to the PTO, Appx326-32, reveals that MIT's detailed reexamination request went far beyond Elpida's perfunctory analysis of the reference. MIT discussed the particular figures and embodiments of Koyou, as well as the particular portions of Koyou discussing "thermal resistance." Appx285. And MIT's reexamination request was not only detailed; it was persuasive. The request was granted, and the ensuing reexamination resulted in the cancellation of ten out of twenty-one original '221 patent claims, and the amendment of others, before the PTO allowed issuance. Appx36. So far from *suppressing* Elpida's

references, MIT secured an *intensive PTO review* of those references—and that intensive review resulted in substantial changes to the patent.

Furthermore, Micron's suggestion of evidence suppression simply makes no sense. MIT had no incentive to hide anything from the PTO—the very point of seeking reexamination was to secure the PTO's careful review of Elpida's references. Indeed, the *ex parte* reexamination was not going to prohibit Micron or Elpida from raising Koyou or the other references again, so MIT had every reason to present the *best* arguments possible to fully test the patent, to ensure that it emerged with claims that were patentable over Koyou.

3. **Dr. Bernstein's explanations did not mislead the PTO.**

Micron's arguments that Dr. Bernstein submitted "misleading declarations and arguments to the Patent Office," Micron Br. 23, are similarly meritless. The district court found that Micron's "contention that [Dr.] Bernstein and MIT misled the PTO about Koyou by manipulating its teachings is not supported by the record." Appx8. This factual finding must stand unless Micron can show that the district court's view of the evidence was "clearly erroneous." *LADS*, 2016 U.S. App. LEXIS 18854, at *11. Micron has not come close to making that showing.

(1) Ten percent greater width. With respect to this claim element, Micron argues that Dr. Bernstein "distract[ed]" the PTO by pointing out "that Figure 3 does ***not*** disclose the width of the cut-link." Micron Br. 24. But of course this was

absolutely correct: Figure 3 presents only a side view. Appx540. It does not show widths, though it does show a *thinner* cut-link and *thicker* connecting lines—which would teach away from the claims of the '221 patent. Appx343; Appx540.

Well, says Micron, this absolutely correct statement was misleading because it "ignore[s] that Figure 3 and Figure 1 are different perspectives of the ***same*** embodiment." Micron Br. at 24. That is the entirety of Micron's argument regarding misleading statements with respect to this first claim element, and that argument is silly: Figure 3 is expressly marked as a "*second embodiment*." Appx540 (emphasis added). Figure 1 also includes a sectional view that looks nothing like the sectional view of Figure 3, so those Figures are plainly not, as Micron posits, "part of the same structure." Micron Br. 25; Appx540. Furthermore, under Micron's theory, the top view (a) of single-layer Figure 1 is also the top view of multi-layer Figure 4—which cannot be the case. Appx540; Micron Br. 25.

Micron thus identifies no misleading statement from Dr. Bernstein with respect to the "ten percent greater width" element. Indeed, it is *Micron* that has repeatedly taken a misleading approach to this issue, deliberately removing side view (b) from its reproductions of Figure 1 in order to obfuscate the fact that Figure 1 and Figure 3 are not reasonably considered "part of the same structure." Micron Br. 19, 25; Appx514 ("Petitioners provide the following annotated versions of Figures 1(a) and 3 side by side ...."). In sharp contrast to Micron's manipulation

of the Koyou figures, Dr. Bernstein reproduced the entirety of Figures 1, 2 *and* 3 in his declaration for the PTO. Appx341-43. And he carefully walked the PTO through the analysis, described above, which demonstrates that, when Figure 1 is viewed in its entirety, it "clearly shows that the material in the contact holes 2a and 2b ***is part of the fuse member 1***," and so cannot be the separate connecting lines as proposed by Micron. Appx341. While busily suggesting that Dr. Bernstein somehow misled the PTO, Micron fails even to mention Dr. Bernstein's careful explanation for his opinion—again confirming that, if any party has been guilty of obfuscating the relevant facts in this case, it is Micron.[5]

(2) Substantially less TRPUL. With respect to this claim element, Micron notes that Koyou discusses selecting material for contact holes 21b and 21b in the Figure 3 embodiment "so as to be ***higher*** than the thermal resistance" of fuse 20. Micron Br. 26; Appx539, ¶ 21. "In the face of this statement," Micron asserts, Dr. Bernstein performed "a complex analysis" of thermal resistance "using tungsten as the material for the connecting lines." Micron Br. 26. Micron does not argue that

[5] Micron spends two additional pages in this section of its brief arguing about whether or not Micron's technical expert "allege[d] that [Dr.] Bernstein and MIT misled the PTO." Micron Br. 25-26. That is of no moment whatsoever. Dr. Bernstein and MIT did not mislead the PTO; the district court found that Dr. Bernstein and MIT did not mislead the PTO; and even if the technical expert's disagreements were understood as allegations that Dr. Bernstein and MIT offered misleading arguments to the PTO, those allegations would not amount to inequitable conduct, and would not impact the exceptionality analysis in this case.

this complex analysis was incorrect or inaccurate; Micron simply posits that it reflected a "flurry of complexity" that somehow "obscured that Dr. Bernstein assumed tungsten would be the metal and ignored that Koyou also proposed the use of titanium and titanium nitride." Micron Br. 26. And "MIT," says Micron, "has never provided a good explanation for selecting tungsten and ignoring the other two materials that Koyou also proposed." Micron Br. 27.

Again, this is the entirety of Micron's argument regarding misleading statements with respect to this second claim element. Micron Br. 26-27. And again, it is silly. Dr. Bernstein did not mislead the patent office by performing a complex—and accurate—thermal resistance analysis. Nor did he hide the relevant disclosure in Koyou: both Dr. Bernstein and MIT referred the PTO directly to the paragraphs at issue, and frankly addressed Koyou's discussion of thermal resistance. Appx346-47; Appx285; Appx327; Appx539.[6] And as Micron well knows, MIT has provided a good explanation for selecting tungsten over the other

[6] Contrary to Micron's refrain that the examiners were somehow lured away from Koyou's mention of "thermal resistance," MIT extensively quoted this exact portion of Koyou to the PTO during the reexamination. Appx285.

two materials for the electrically-conductive lines: the other two materials are not electrically conductive for these purposes. Appx945-48.[7]

While MIT and Dr. Bernstein directly addressed Koyou's discussion of thermal resistance before the PTO, Micron again obfuscates on this issue—and fails to acknowledge or explain that, as Dr. Bernstein opined to the PTO, there is a significant distinction between the basic "thermal resistance" discussed in Koyou and the "thermal resistance *per unit length*" claimed in the '221 patent. Micron Br. 26-27; Appx348 ("Thus, even though Koyou discloses that the material ... has a higher thermal resistance ..., it is not necessarily true that the material ... has a higher thermal resistance ***per unit length*** ...."). Once again, if any party has been guilty of obfuscating the relevant facts in this case, it is Micron.

[7] In his "complex analysis" of thermal resistance, Dr. Bernstein selected tungsten from the three materials that Koyou mentions for the electrically-conductive lines. This was because tungsten was the only material known to be a viable candidate for conducting electricity. Micron ignores that Dr. Bernstein also selected aluminum from the four materials that Koyou mentions for the fuse pad. This is significant because aluminum is the most thermally conductive material of the fuse pad materials mentioned in Koyou—and thus the *least helpful* material for MIT's purposes. If Dr. Bernstein were attempting to pull a fast one on the PTO, he never would have selected aluminum for the fuse pad material in his analysis. Yet he did: because, as with tungsten for the electrically-conductive lines, aluminum was the most viable candidate for the cut-link pad. Appx944.

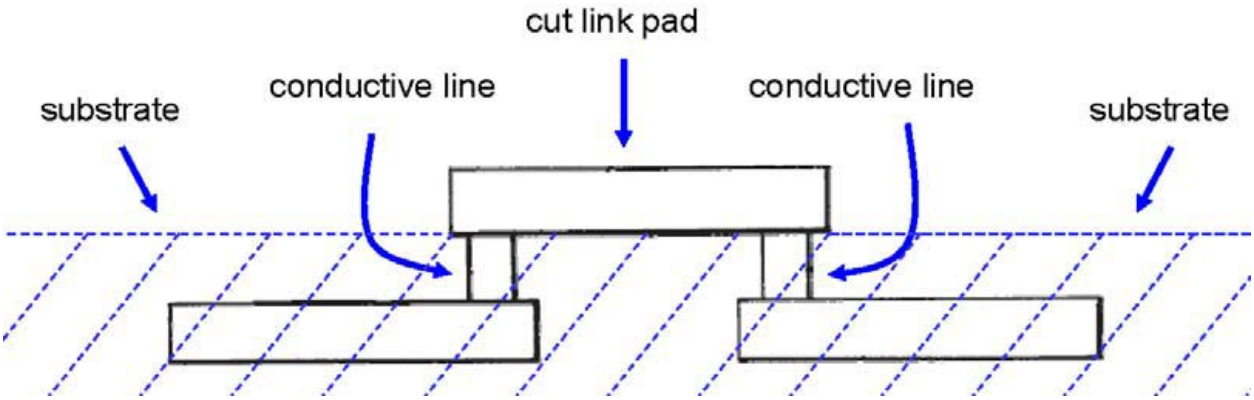
E. The District Court Did Not Abuse Its Discretion in Finding That MIT Possessed Reasonable Infringement Arguments.

The district court found that Micron's noninfringement-related arguments fell "appreciably short" of showing that this was an exceptional case. Appx6. And even that was an understatement. Micron only ever proposed one noninfringement argument, and that argument rested on a proposed claim construction of the word "on" that—as Elpida recognized—made nonsense of the claim language and read out the preferred embodiment to which claim was directed. Appx461; Appx176. Indeed, Micron does not dispute that this is the rare case in which the accused devices practice a preferred embodiment of the patent. Appx430-40; Appx26 (Figs. 10 and 11); Micron Br. 28 ("For the more complex [embodiments of the '221 patent], the lines are instead ***within*** the substrate.").

On appeal, Micron continues to argue that there is no infringement because the connecting lines in its products extend "within a substrate," and not "on a substrate." Micron Br. 27-28, 32. The claims expressly recite, however, that the connecting lines extend "into the substrate." Appx36 (claim 3). Case closed.

But Micron ignores this unambiguous portion of the claim, and focuses exclusively on another portion of the claim: "an electrically-conductive *cut-link pad* conductively *bonded between* a *first* electrically-conductive *line* and a *second* electrically-conductive *line* ***on a substrate***, the *cut-link pad* having ...." Appx36 (claim 3) (emphasis added). According to Micron, this claim language requires that

the first and second lines extend out on the "same plane as the substrate," without ever extending into the substrate. Micron Br. 28-29. But of course that is not what the claim language says. The subject of the clause is the *cut-link pad*—confirmed by the reiteration of the subject *cut-link pad* after the comma—and the clause simply provides that the *cut-link pad* and the two electrically-conductive *lines* are *bonded* at a point of contact *on a substrate*. Appx36 (claim 3). In other words, "on a substrate" describes the location at which the two electrically-conductive lines are bonded to the cut-link pad. Micron's own pictures confirm that this scenario describes every embodiment of the '221 patent claims:



Micron Br. 30. Case closed.

But even if that did not close the case, there is no reason to think that Micron had the better of the argument. Micron's argument that "on a substrate" requires that the lines extend out on a horizontal plane makes nonsense the subsequent requirement that the lines extend "into the substrate." Appx36; Appx461. That violates the fundamental rule that claim terms should be construed to harmonize,

not conflict, with the surrounding claim language. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). Micron's argument also reads the preferred embodiment described in the patent and depicted in Figures 10 and 11 straight out of the claims. Appx26; Appx31, 8:20-42. Such a claim construction "is rarely, if ever, correct." *Broadcom v. Emulex Corp*., 732 F.3d 1325, 1333 (Fed. Cir. 2013).

Much more sensible would be a construction of "on a substrate" that is consistent with "into the substrate"—as both of those phrases describe the electrically-conductive lines at different places in the same claim. Appx36. And of course there are plain and ordinary meanings of these terms that make perfect sense in this context. As MIT explained to Elpida almost seven years ago,

> the words "on" and "into" are not mutually exclusive. For example, a boat sitting "on" the water generally also penetrates the surface of the water, and thus simultaneously "extends into" the water.

Appx993. Such a definition is not hard to find: this Court has confirmed, for example, that "on" can mean in a "position of contact." Appx993; *Senmed, Inc. v. Richard-Allan Med. Indus., Inc.*, 888 F.2d 815, 819-20 & n.9 (Fed. Cir. 1989). Nothing more is needed to make plain-and-ordinary sense of these claims, and to conclusively confirm infringement by Elpida and Micron.

MIT never had the chance to fully test these claims of infringement and the underlying claim-construction positions. But these infringement claims and claim-construction positions were strong. Most certainly they were not frivolous, and the

district court did not abuse its discretion in finding that Micron failed to prove that this case was "exceptional" on these grounds. Appx6.

V. CONCLUSION AND RELIEF REQUESTED

For all of these reasons, the Court should affirm the district court's denial of Micron's motion for attorneys' fees and costs.

Date: December 28, 2016

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on December 28, 2016, the foregoing BRIEF OF PLAINTIFF-APPELLEE MASSACHUSETTS INSTITUTE OF TECHNOLOGY was served by operation of the Court's CM/ECF system per FED. R. APP. P. 25.

Date: December 28, 2016

/s/ Joel L. Thollander

CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing BRIEF OF PLAINTIFF-APPELLEE MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

1. complies with the type-volume limitation of FED. R. APP. P. 32(a)(7)(B). This brief contains 13,885 words, excluding the parts of the brief exempted by FED. R. APP. P. 32(a)(7)(B)(iii) and FED. CIR. R. 32(b). Microsoft Word 2010 was used to calculate the word count.

2. complies with the typeface requirements of FED. R. APP. P. 32(a)(5) and the type style requirements of FED. R. APP. P. 32(a)(6). This brief has been prepared in a proportionally-spaced typeface using Microsoft Word 2010 in 14-point Times New Roman type style.

Date: December 28, 2016

/s/ Joel L. Thollander