

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY, INC. and
MICRON MEMORY JAPAN, INC.,
Petitioners,

v.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Patent Owner.

IPR2015-01087
Patent 6,057,221 C1

Before KALYAN K. DESHPANDE, BRIAN J. McNAMARA, and
DANIEL J. GALLIGAN, *Administrative Patent Judges*.

GALLIGAN, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Micron Technology, Inc. (“Micron”) and Micron Memory Japan, Inc. (“Micron Memory Japan” or “MMJ”) (collectively “Petitioners”) filed a Petition (“Pet.”) requesting *inter partes* review of claims 3, 4, 6–8, 13–15, 17, 18, and 21–30 of U.S. Patent No. 6,057,221 C1 (“the ’221 patent,” Ex. 1003), which are all of the claims that emerged from reexamination pursuant to Reexamination Request No. 90/011,607. Paper 2. Massachusetts Institute of Technology (“MIT” or “Patent Owner”) timely filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a).

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides:

THRESHOLD—The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

After considering the Petition, the Preliminary Response, and associated evidence, we conclude that Petitioners have demonstrated a reasonable likelihood that they would prevail in showing unpatentability of all the challenged claims. Thus, we institute an *inter partes* review as to claims 3, 4, 6–8, 13–15, 17, 18, and 21–30 of the ’221 patent.

A. Related Matters

Petitioners and Patent Owner indicate that the ’221 patent is asserted against Petitioners in *MIT v. Micron Tech., Inc. et al.*, 1:15-cv-10374 (D. Mass.). Pet. 1; Paper 5, 1. In addition, Patent Owner identifies

corporate reorganization proceedings involving Micron Memory Japan as a related matter under 37 C.F.R. § 42.8(b)(2). Paper 5, 1–2. We address the implications of these Japanese corporate reorganization proceedings, pending in the Tokyo District Court, in the Analysis section of this Decision.

B. Real Parties in Interest

Petitioners identify Elpida USA, Micron Semiconductor Products, Inc., and the trustees reorganizing Elpida Memory, Inc. in Tokyo district court, as real parties-in-interest. Pet. 1–2. Petitioners indicate Elpida Memory, Inc. is a bankrupt Japanese entity, succeeded by and known as Micron Memory Japan. Pet. 1 n.1.

C. The '221 Patent (Ex. 1003)

The '221 patent, titled “Laser-Induced Cutting of Metal Interconnect,” issued May 2, 2000, from U.S. Patent Application No. 08/825,808, filed on April 3, 1997. Ex. 1003. The claims of the '221 patent were submitted to *ex parte* reexamination via Reexamination Request No. 90/011,607, filed March 30, 2011. A reexamination certificate issued on September 11, 2012. *Id.* at 15–16.

As the title suggests, the '221 patent generally relates to using a laser in cutting parts of a circuit. *Id.* at Abst., 1:12–15. The '221 patent explains that using lasers to cut integrated circuits was well-known at the time the application for the '221 patent was filed. *Id.* at 1:12–15. The segment of the circuit that is cut is called a “cut-link,” and a laser is directed onto a cut-link and supplies enough heat energy to vaporize and sever the cut-link. *Id.*

In describing the prior art, the '221 patent explains that typical cut-links have taken one of two forms. The first configuration is where the cut-link is “an undistinguished segment of a line in the circuit, where the width

of the cut-link is equal to the width of the lines to which it is conductively coupled,” as illustrated in Figure 1 (reproduced below). *Id.* at 1:49–56, Fig. 1.

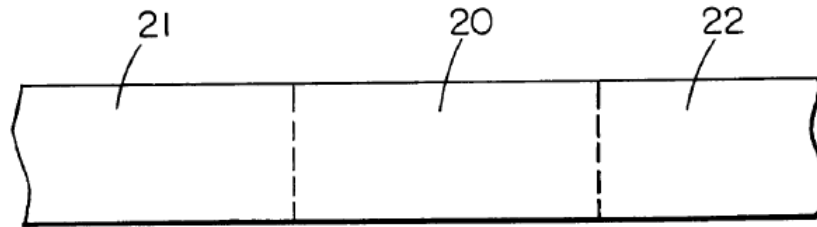


FIG. 1
PRIOR ART

Figure 1 depicts “a cross-sectional illustration of a cut-link pad of the prior art, from a perspective normal to the plane of the substrate, where the width of the pad is equal to the width of the lines.” *Id.* at 3:48–51.

The second alleged prior art configuration is a “dog-bone” configuration in which the cut-link is narrower than the lines to which it is connected, as illustrated in Figure 2 (reproduced below). *Id.* at 1:56–61, Fig. 2.

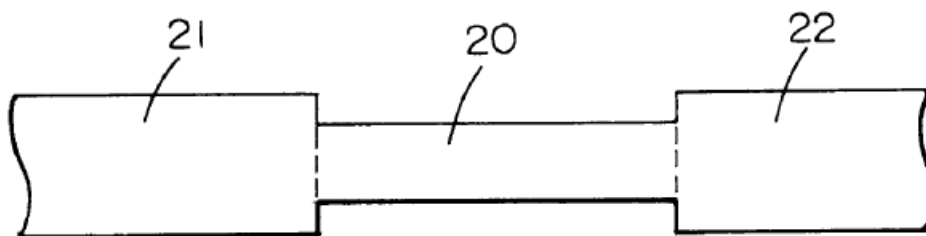


FIG. 2
PRIOR ART

Figure 2 depicts “a cross-sectional illustration of a cut-link pad of the prior art, from a perspective normal to the plane of the substrate, where the interconnect has the shape of a dog bone.” *Id.* at 3:52–55.

According to the '221 patent, “[a]lthough intuition might further suggest that a fuse-shaped cut-link of thin width could be severed with greater precision and efficiency than an otherwise comparable cut-link of greater width, the present inventors have recognized that this notion is generally false.” *Id.* at 2:8–12. Thus, the '221 patent purports to recognize the benefit of having cut-link segments or pads that are wider and of lower thermal resistance per unit length than the lines to which they connect. *Id.* at 2:13–21.

One configuration for a cut-link pad taught in the '221 patent is illustrated in Figures 3 and 4. Figure 3 is reproduced below:

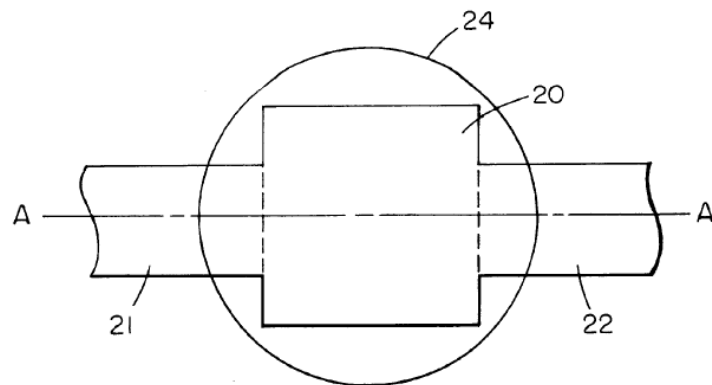


FIG. 3

Figure 3 illustrates a cross-sectional view, from a perspective normal to the plane of the substrate, of cut-link pad 20, which is wider than lines 21 and 22, to which is bonded. *Id.* at 3:57–60, 4:36–39. Circle 24 represents the laser beam spot, and the '221 patent explains that “[t]he amount of laser

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