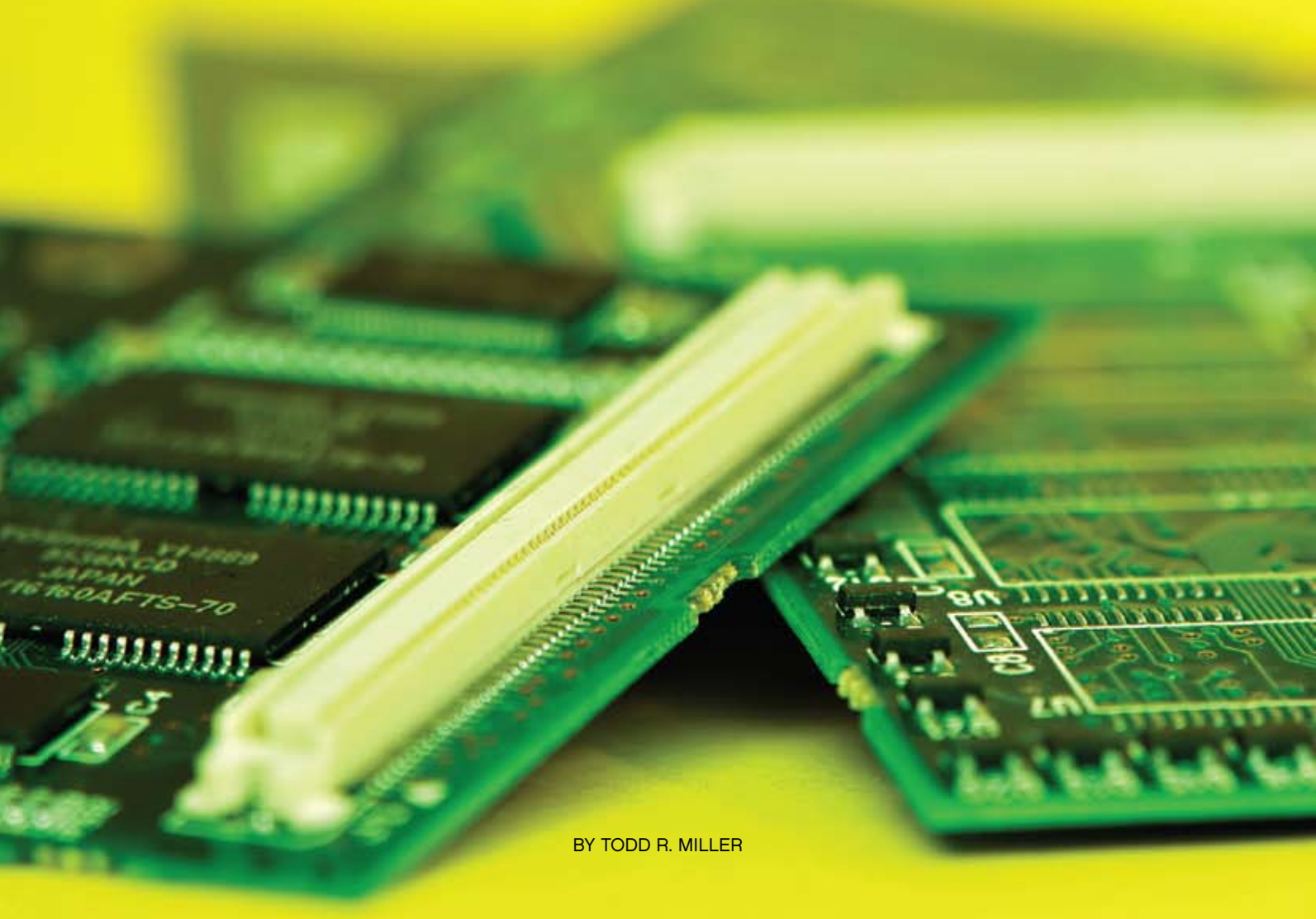


# Patent Litigation and Prosecution Trends in the Semiconductor Industry

Executives and engineers who know and understand the ever-changing patent landscape of the semiconductor industry are in a unique position. They sit atop it all, able to see their company in relation to others, what everybody is doing, and where best to go to protect and enhance the value of their company.<sup>1</sup> This article discusses the industry's patent litigation over the last 10 years—how many suits and when, who was involved and where—and offers insight into the future. The article similarly discusses trends in patent prosecution by examining what has been patented, how often, and by whom since 2000.



BY TODD R. MILLER

### LITIGATION TRENDS: FEDERAL DISTRICT COURT

In the United States, almost 900 patent lawsuits involving the semiconductor industry have been filed in federal district court since 1997, with the number of filings increasing each year. Indeed, there have been more suits filed halfway through 2007 (53 suits) than in all of 1997. Basically, in the last 10 years, suits have doubled.

As one could surmise, many different companies have been involved in these suits over the last decade. There are, of course, some frequent players. They are: Intel (some 6.5 percent of the time); Broadcom Corp. (3.6 percent); Texas Instruments Inc. (3.4 percent); Samsung Semiconductor, Inc. (2.5 percent); LSI Corp. (2.3 percent); and International Rectifier Corp. (2.2 percent); with Applied Materials, Micron Technology, STMicroelectronics, and Atmel Corp. each at roughly 2.0 percent. Intel has been involved in about eight cases a year since 1997, with the exception of 2005 (20 cases) and this year (zero cases). In 2003, Broadcom was involved in 10 cases, followed by seven the next year. Texas Instruments has seen a steady decline since it was involved in 13 cases in 1998.

In general, the propensity of large semiconductor companies to enforce their patent rights through litigation has remained stable during the last two decades. Hall and Ziedonis, *An Empirical Analysis of Patent Litigation in the Semiconductor Industry*, January 2007, at 1, 5. In contrast, smaller chip-design firms have been quite litigious. To establish proprietary rights in niche markets, these firms have been said to be so bold as to enforce roughly four out of every 100 patents they own. *Id.* at 3. While the majority of suits are between rivals, there has been a rather dramatic increase in suits brought by outside patent owners or non-rivals. These entities, sometimes pejoratively referred to as “patent trolls,” see a target within the industry and go after it, with the goal of obtaining license revenue. Relatively well-known entities that fit this bill include Acacia Technology (more than 140 patents directed to the “V chip” technology used in television parental control systems), Burst.com (patents directed to buffering techniques used in video and audio streaming), Asure Software—previously Forgent Networks (U.S. Patent No. 4,698,672, directed to JPEG compression, said to bring in more than \$105 million in licensing revenue), NeoMagic Corp. (patents directed to mobile TV technologies), and Patriot Scientific (patents directed to the

design of advanced microprocessors, digital signal processors, embedded processors, and system-on-chip devices). Patriot Scientific and the TPL Group have formed Alliacense. This outfit has sent notice of alleged patent infringement to no fewer than 485 companies; at least 18 capitulated halfway through 2007.

Almost 50 percent of suits in the last decade have been filed in the Ninth Circuit, primarily in courts located in California. The Patent Local Rules in the Northern District of California and the physical locale of many in the semiconductor industry help account for such filing statistics. The Fifth Circuit, with its Eastern District of Texas, has seen roughly 18 percent of the filings. Next comes the Third Circuit, which includes Delaware, with 13 percent. The next circuit, the Fourth Circuit, drops dramatically down to around 4 percent. In 2005, 97 percent of cases were filed in only two circuits: the Ninth Circuit (60 percent) and the Fifth Circuit (37 percent). In 2006, filings decreased to some extent, with the Ninth and Fifth Circuits coming in at around 50 percent and 27 percent, respectively.

It follows that the judges who have been hearing the most cases over the last decade are situated in the Ninth, Fifth, and Third Circuits. Judges Ward and Davis, both in the Eastern District of Texas, are first and second, with 3.1 percent and 3.0 percent, respectively. Judges Fogel and Seeborg, both in the Northern District of California, are tied for third with Judge Robinson of the District of Delaware, at 2.8 percent. Judges Whyte and Trumbull, both of the Northern District of California, are tied for fourth at 2.7 percent.

### TOP 10 COMPANIES INVOLVED IN SEMICONDUCTOR LITIGATION

#### 2006

Intel  
Broadcom Corp.  
Micron Technology  
Altera Corp.  
Analog Devices, Inc.  
AmberWave Systems Corp.  
ON Semiconductor Corp.  
ProMOS Technologies Inc.  
STMicroelectronics  
Lam Research Corp.

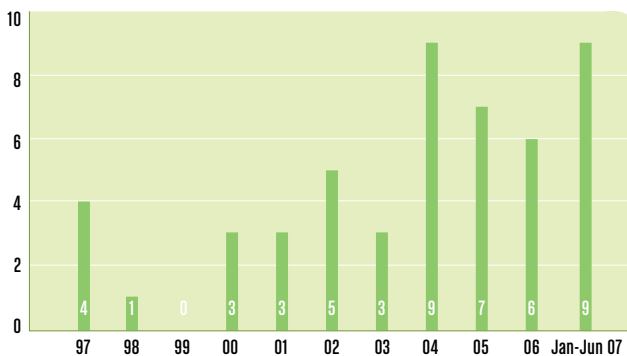
#### HALFWAY THROUGH 2007

Atmel Corp.  
Microsemi Corp.  
Fairchild Semiconductor  
International, Inc.  
Monolithic Power Systems, Inc.  
Samsung Semiconductor, Inc.  
Renesas Technology America, Inc.  
Freescale Semiconductor, Inc.  
Altera Corp.  
JDS Uniphase Corp.  
LSI Corp.

## LITIGATION TRENDS: INTERNATIONAL TRADE COMMISSION

As illustrated in Figure 1 (below), there have been 50 United States International Trade Commission (“ITC”) Section 337 investigations alleging infringement of patents involving the semiconductor industry over the last decade. The chart shows a notable change in the number of investigations recently (nine halfway through 2007) compared to a decade ago (four in 1997). This increase may be a reaction to *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837 (2006). With this landmark unanimous decision, the Supreme Court put an end to the “general rule” that a permanent injunction should follow a finding of infringement of a valid patent in a district-court proceeding. Whether an injunction should issue is now within the trial court’s discretion. In contrast, in the ITC, the primary remedy is still the almighty exclusion order.

**Semiconductor Patent Investigations – ITC** Figure 1



Over the last decade, the primary players in these investigations have been Toshiba Corporation (six investigations); Samsung Electronics Co., Ltd. (five); and Fujitsu Limited, Gateway, Hewlett-Packard Company, Hynix Semiconductor Inc., and Qualcomm Incorporated (each with three).

In 2006, the investigations involved BIAx Corp. (against Philips and 2Wire, Inc.); Fluke Corp. (against Altadox Inc., et al.); Lexar Media, Inc. (against Toshiba); Linear Technology Corp. (against Advanced Analogic Technologies); Microsoft (against Belkin Corp.); and Qualcomm (against Nokia).

The 2007 investigations involve Tessera (against ATI Technologies, Freescale Semiconductor, Motorola, Qualcomm, Spansion, and STMicroelectronics); Toshiba (against Hynix); Samsung (against Renesas); Toshiba (against Daewoo Electronics America, et al.); Topower Computer Industrial Co. (against Xion/Axpertec Inc., et al.); Callpod, Inc. (against GN Netcom); St. Clair Intellectual

## UNITED STATES DATA

Since 2000, the industry has seen a consistent annual output of around 7,000 United States patents. Around 9,000 United States patent applications are published yearly.

Figure 2 (below) illustrates the top seven companies receiving such patents: Micron Technology, International Business Machines, Toshiba, NEC, Samsung, Mitsubishi, and Hitachi. Until recently, Micron Technology has been on top, with around 1,200 patents assigned to it annually. IBM is second with around 800 patents a year, with a notable increase in patents in 2002. Patents issued to Mitsubishi have tailed off rather dramatically, falling from 616 in 2003 to 125 in 2006.

**Top Seven Companies – U.S. Patents** Figure 2

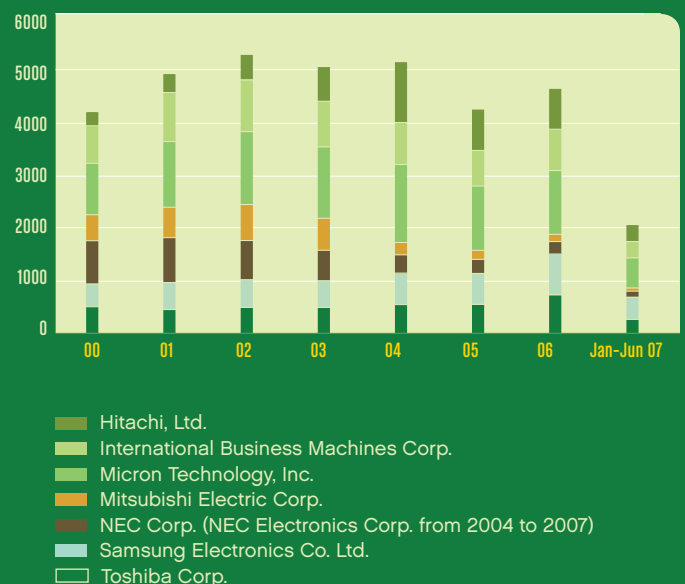


Figure 3 (top right) illustrates the top semiconductor areas that have been patented since 2000. They are (1) active solid-state devices, (2) semiconductor device manufacturing: process, (3) static information storage and retrieval, (4) miscellaneous active electrical nonlinear devices, circuits, and systems, (5) coherent light generators, (6) electricity: measuring and testing, and (7) electricity: electrical systems and devices. The heaviest activity came between 2001 and 2005, with some 5,000 patents issuing in active solid-state devices.

# ON TRENDS

Top Seven U.S. Classes Since 2000 – U.S. Patents **Figure 3**

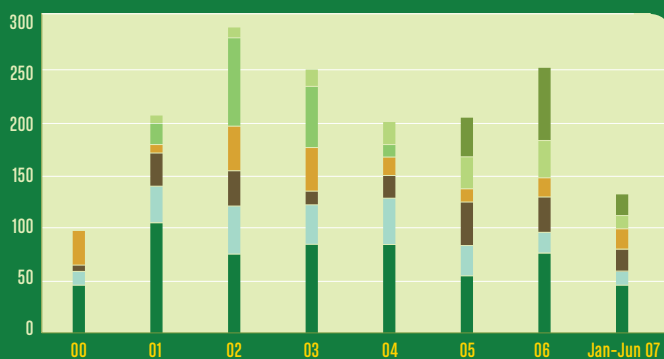
Class	Description	
257	Active Solid-State Devices	49%
438	Semiconductor Device Manufacturing: Process	31%
365	Static Information Storage and Retrieval	9%
327	Misc. Active Electrical Nonlinear Devices, Circuits, and Systems	4%
372	Coherent Light Generators	3%
324	Electricity: Measuring and Testing	2%
361	Electricity: Electrical Systems and Devices	2%

## PATENT COOPERATION TREATY DATA

The number of Patent Cooperation Treaty (“PCT”) applications published annually is consistently around 2,000. Figure 4 (below) illustrates the frequency with which the top seven companies (Koninklijke Philips Electronics N.V., Advanced Micro Devices, IBM, Applied Materials, Motorola, Intel, and Semiconductor Energy Laboratory Co.) are filing.

The top areas being applied for under the PCT since 2000 include the semiconductor itself, semiconductor devices, optics, coatings, and static stores.

Top Seven Companies – PCT Applications **Figure 4**



- Semiconductor Energy Laboratory Co., Ltd.
- Intel Corporation
- Motorola, Inc.
- Applied Materials, Inc.
- International Business Machines Corp.
- Advanced Micro Devices, Inc.
- Koninklijke Philips Electronics NV.

Property Consultants, Inc. (against Eastman Kodak); Global Locate (against SiRF Technology, et al.); and SiRF Technology (against Global Locate).

## EXPECTATIONS

In the next decade, absent legislation or other dramatic reform, expect to see another twofold increase in patent litigation in the industry, if not more. We should see the same steady rate of enforcer litigation by the large semiconductor companies. We should continue to see aggressive enforcement by smaller chip-design companies, and we should see many more lawsuits as a result of more and more outside patent owners/nonrivals seeking to cash in on licensing fees. Such lawsuits may come as a result of the greater ease with which an accused infringer can now file suit for declaratory judgment, per the Supreme Court’s *MedImmune, Inc. v. Genentech, Inc.*, 127 S. Ct. 764 (2007). Or they may come as preemptive filings, *i.e.*, as a result of the patentee affirmatively seeking to sue first in its chosen forum and then initiating contact with the accused infringer to negotiate a license. Moreover, an accused infringer may be more willing to sue for declaratory judgment of invalidity in light of the Supreme Court’s *KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), which may make it easier to prove obviousness, and in light of *eBay*, which makes it much more difficult for a nonrival to obtain an injunction. Due to the latter reason alone, expect to see more ITC investigations, as these quick proceedings offer an exclusion order as the primary remedy.

Assuming the litigation takes place in federal district court, the Ninth Circuit should continue to be the primary go-to circuit, with its Northern District Court and Central District Court seeing the most action. The Eastern District of Texas should continue to be a favored forum for patentees. However, expect to see this forum’s shine diminish somewhat, as trial dates are being pushed farther and farther into the future due to backlog, coupled with the knowledge that at least some defendants are coming away victorious, as evidenced by recent summary-judgment motions in favor of the accused infringer and jury findings of invalidity. Indeed, at trial, the patentee’s win rate for 2007 is 20 percent. Also expect to see more suits filed in the increasingly popular, speedy Western District of Wisconsin. The Northern District of Texas, Northern District of Georgia, and Western District of Pennsylvania, each of which has now enacted local patent rules, should also see increased filings.

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## **Patent Litigation and Prosecution Trends**

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With regard to patent prosecution, Micron Technology, IBM, and Samsung should continue to be the dominant players receiving United States patents in the coming years. Philips and AMD should be the major filers of PCT applications. Semiconductor Energy Laboratory should continue to be an aggressive filer, as it has been since 2005. Expect patent activity in the area of active solid-state devices to remain dominant, followed by process protection in semiconductor device manufacturing. ▶▶

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### **ENDNOTE**

<sup>1</sup> Almost 75 percent of the value of publicly traded companies in the United States comes from intellectual property assets, up from around 40 percent in the early 1980s. Around \$45 billion is collected annually in the United States from technology licensing alone; \$100 billion is collected worldwide, and that figure is rapidly increasing. *The Economist*, Issue 950, October 22, 2005.