

A thick yellow line starts at the top left, runs vertically down, then turns 90 degrees to the right and runs horizontally across the middle of the page, ending with a rounded corner.

Boundless **Patent** **Strategies**

With Invincible Patent Data
— From East To West



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Part 1:

The Rise of East Asia in Technology and the Importance of Patentcloud in Finding Prior Art from This Region

East Asian companies are playing increasingly important roles in the major established technologies and industries, as well as emerging technologies. As a result, the patent databases from the patent offices of these countries will become important sources of prior art. What is needed is a patent intelligence platform with expertise in East Asia to find this prior art.

East Asian Dominance in Established Technologies

A quick look at certain technologies and industries confirms that companies from East Asian countries have taken the lead.

DRAM

South Korean companies like Samsung and SK Hynix continue to dominate the DRAM industry, with a 43.5% and 30.1% market share, respectively, in Q2 of 2020 (Figure 1).

Semiconductors

When it comes to semiconductor manufacturing and testing, Taiwan's TSMC is at the top of the global top 10 list, followed by South Korea's Samsung (Figure 2).

Figure 1: 2020 Q2 DRAM Market Share

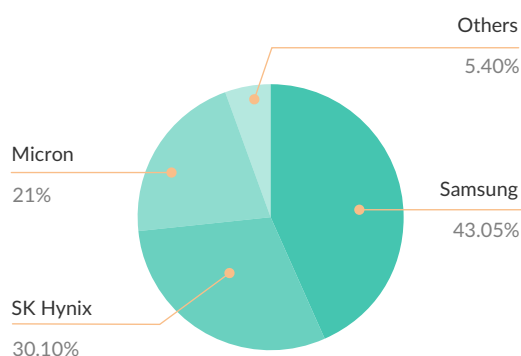
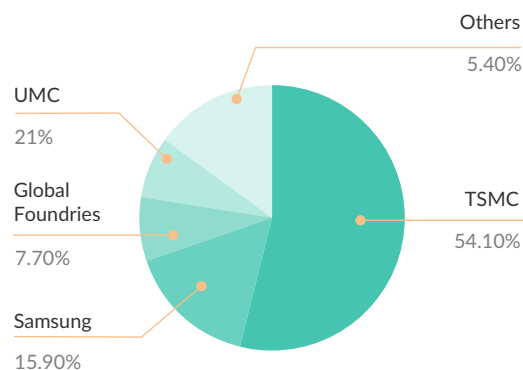


Figure 2: 2020 Q1 IC Foundries Market Share



Chemicals

As highlighted in the 2019 Japan-South Korea trade war, Japanese companies Morita, TOK, and JSR are the clear leaders in three important chemical industries, which are all critical in the production of semiconductors and other high-tech products. As a result of the trade war, South Korea has started producing — or sourcing elsewhere — these three important materials itself (Figure 3-5).

Figure 3: Photoresists market share

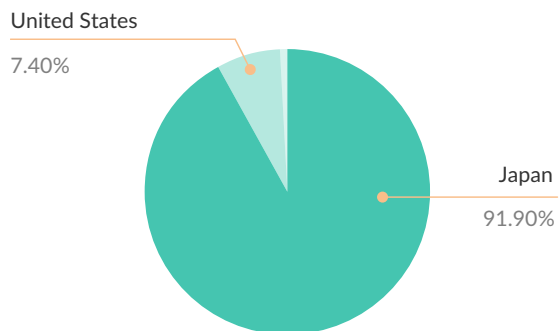


Figure 4: Fluorinated polyimide market share

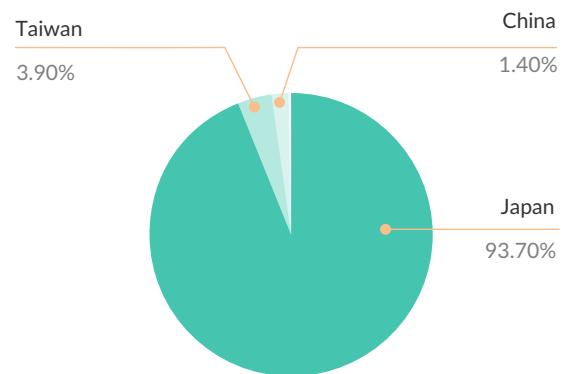
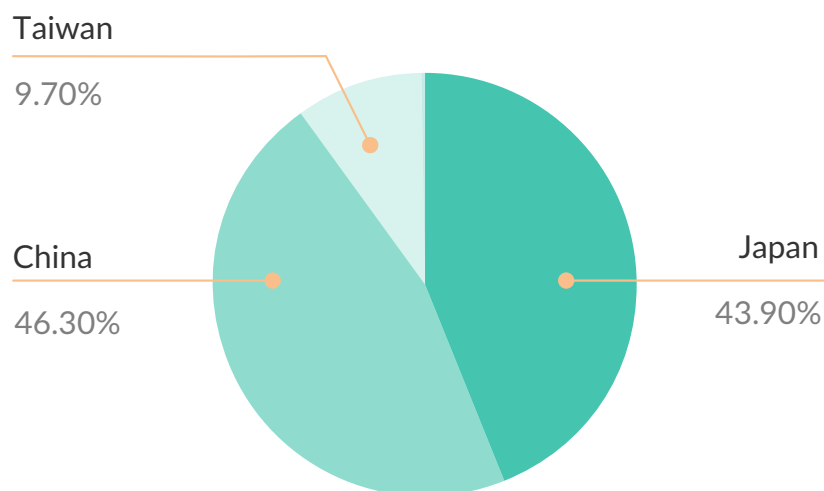


Figure 5: Hydrogen fluoride market share



And a Leading Role in Emerging Technologies

In addition to their dominance in established technologies, East Asian companies are also increasingly playing important roles in a number of new, emerging technologies. These include:

8K Displays

According to a recent [report from CES 2020](#), Samsung, LG, Sony, and TCL are all leading the way when it comes to the technology behind 8K TVs (Figure 6).

Figure 6: An 8K display



Flexible/Foldable Displays

East Asian panel manufacturers like Samsung, LG, and BOE are pushing this technology forward, equipping most of today's foldable smartphones and new generation rollable displays (Figure 7).

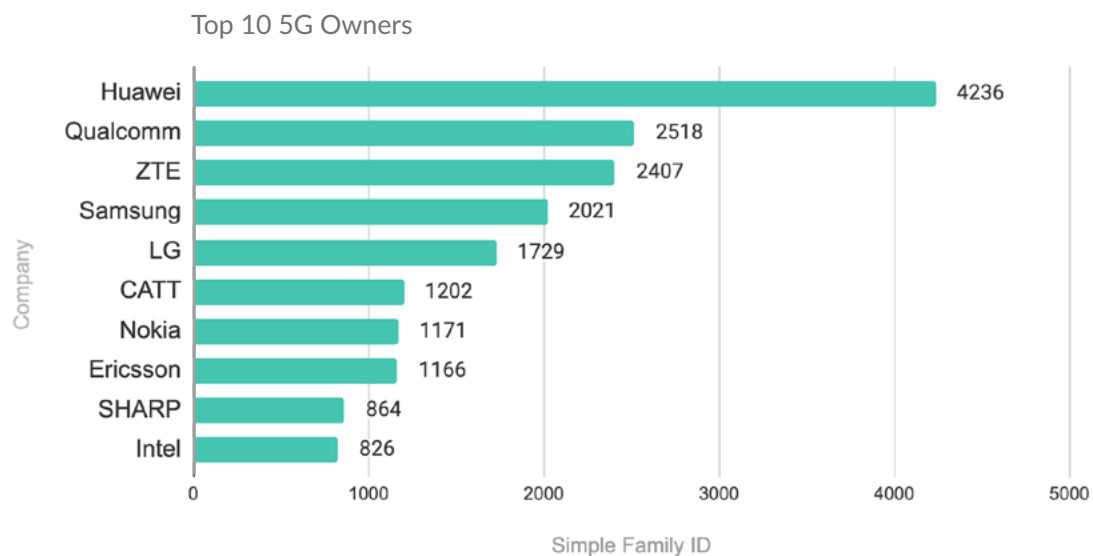
5G Wireless Communications

Real-time cumulative rankings of SEP declaration activity clearly show that Huawei, Samsung, ZTE, and LG are all at the forefront of this crucial technology. Some have speculated that this 5G leadership by Asian companies may be fanning the flames of the trade war between the US and China (Figure 8).

Figure 7: Samsung's foldable smartphone



Figure 8: Top SEP owners



Artificial Intelligence

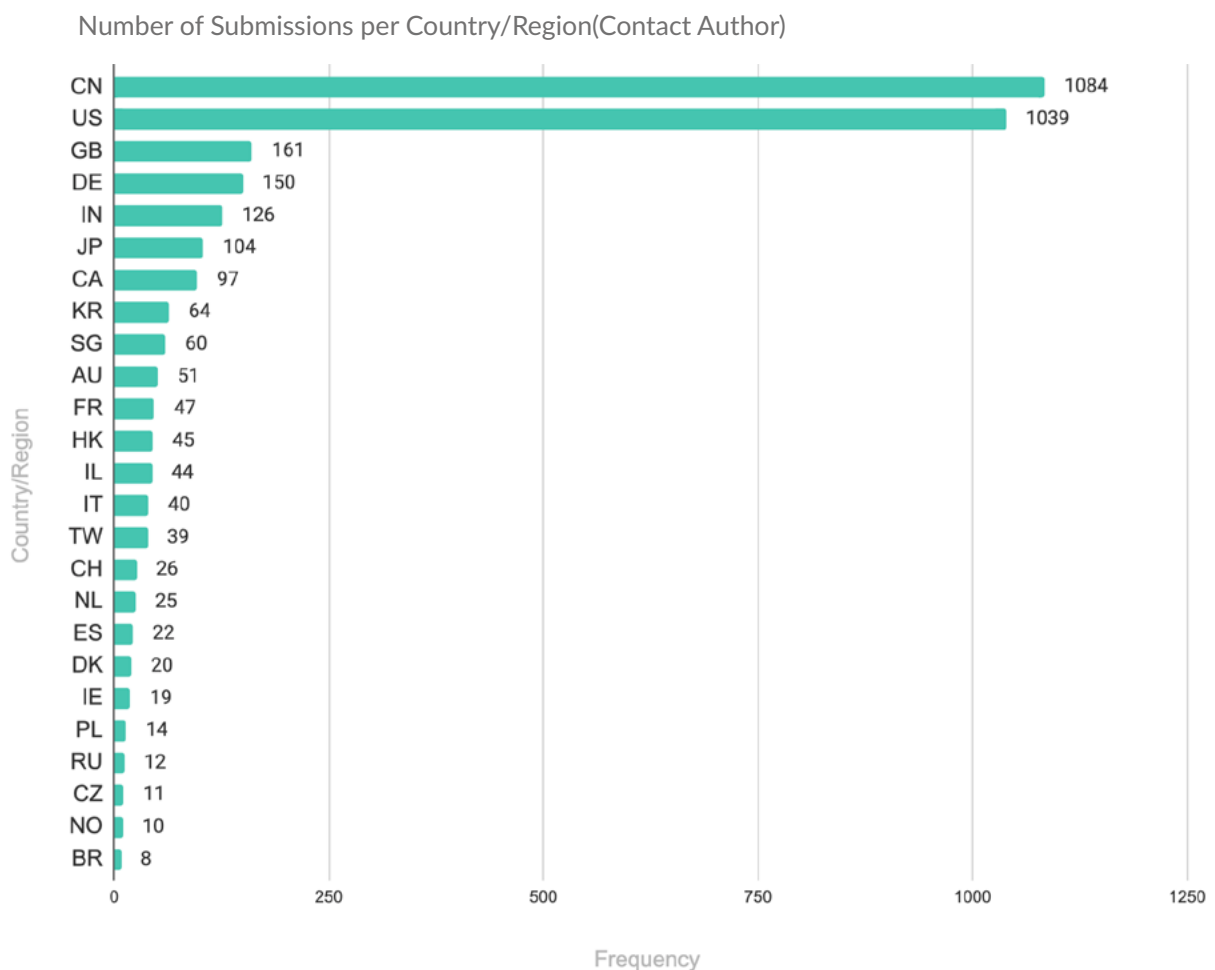
After announcing in 2017 its plans to “lead the world” in artificial intelligence by 2030, China has managed to reduce the gap with the US for what it concerns AI-related research. Looking at the world of patents, China leads the world in AI-related patent filings and publications with 900 patents related to facial recognition in 2017 alone compared with fewer than 150 in the United States (Figure 9).

This can also be seen in China’s steady rise — in the chart below — which shows the papers submitted to the Association for Computational Linguistics (ACL).

The Growing Importance of East Asian Patent Office Databases

Undoubtedly, East Asian companies are playing an increasingly important role in a range of technologies. So, for anyone carrying out IP work involving these technologies, the importance of East Asian patent office databases cannot be overstated, especially when it comes to finding prior art references.

Figure 9: Top AI-related papers submissions in ACL



Patentcloud: A Patent Intelligence Platform with East Asian Expertise

With patent databases from all the major patent offices, including Japan, Korea, China, and Taiwan, Patentcloud delivers comprehensive coverage of East Asia (Figure 10).

Couple this with language ability and regional cultural expertise, as well as proprietary natural language processing (NLP) technology, and Patentcloud certainly stands out from the other search and analytics products in the market.

Additionally, features like **Semantic Prior Art** in *Quality Insights* utilize AI-powered technology to provide relevant and insightful results.

Go Where the Prior Art Is

When a reporter asked the infamous bank robber Willie Sutton why he robbed banks, Sutton is said to have replied: “because that’s where the money is.”

Similarly, if you are looking for prior art for certain established technologies or industries, such as DRAM, NAND flash, displays, and semiconductors, it seems clear that East Asia has become an increasingly important place to search.

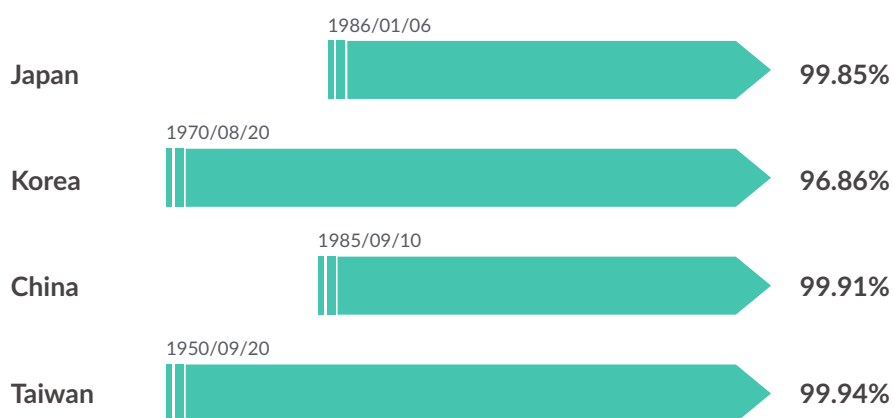
In the future, this may also be true for emerging technologies like 8K, 5G, and AI since the East Asian companies will likely play important roles in the development of these technologies and industries.

Therefore, having the right platform to help you find this prior art is even more important.

This is where Patentcloud, with its comprehensive coverage of all of the major East Asian patent offices along with its language, cultural, and translation skills, gives you an advantage when navigating the increasingly important East Asian patent landscape.

After all, if we are truly living in what may end up being the Asian Century, it only makes sense to use the patent intelligence platform with the greatest East Asian expertise — Patentcloud.

Figure 10: Patentcloud's East Asian Patent Database Coverage



Note: Updated in October 2020

Part 2:

Looking at the GlobalFoundries vs. TSMC Case from a Patentcloud Perspective

After establishing that East Asian companies are playing a leading role in advanced technologies, let's take a closer look at a recent case that involved one of the companies previously mentioned — TSMC — and one of the technologies previously highlighted — semiconductors — to see how and why Patentcloud can be an effective tool for litigation.

The Background

On Monday, August 26, 2019, [GlobalFoundries](#) filed 19 patent infringement lawsuits and 2 International Trade Commission (ITC) actions

against [Taiwan Semiconductor Manufacturing Company](#) (TSMC) and other defendants, including [Apple](#), [Google](#), and [Nvidia](#), among others.

Learning More With Litigation Daily

Shortly after the announcement of the lawsuits, the filing information — along with the summarized rejection records, PTAB records, and potential prior art references — were gathered and organized in a clear table in *Litigation Daily*, InQuartik's free online resource that collects the latest information about US District Court, PTAB, and ITC cases (see Figure 11).

Figure 11: Patentcloud's *Litigation Daily*

Filing Date	Plaintiff (# of Patents Owned)	Defendant (# of Patents Owned)	Court / Case No.	# of Patents in Litigation	
2019-08-26	GLOBALFOUNDRIES US INC (22)	APPLE INC (55,692) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00489	2	
Patent No.	# of Rejection(s)	Related Proceedings	Novelty & Eligibility Issues	§ 102 Ref. in History	§ 103 Ref. in History
7378357	0 Non Final 0 Final 0 RCE	0 PTAB 0 Reexam		Refs	Refs
8823178	1 Non Final 0 Final 0 RCE	0 PTAB 0 Reexam		Refs	Refs
2019-08-26	GLOBALFOUNDRIES US INC (22)	MOTOROLA MOBILITY LLC (3,627)	District of Delaware 1-19-cv-01574	2	
2019-08-26	GLOBALFOUNDRIES US INC (22)	MOTOROLA MOBILITY LLC (3,627)	District of Delaware 1-19-cv-01571	2	
2019-08-26	GLOBALFOUNDRIES US INC (22)	GOOGLE LLC (48,424)	Western District of Texas 6-19-cv-00501	3	
2019-08-26	GLOBALFOUNDRIES US INC (22)	GOOGLE LLC (48,424)	Western District of Texas 6-19-cv-00497	2	
2019-08-26	ULTRAVISION TECHNOLOGIES LLC (118)	HOLOPHANE EUROPE LTD (12)	Eastern District of Texas 2-19-cv-00291	2	

Continued on the next page (1/2)

Figure 11: Patentcloud's *Litigation Daily*

✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	AVNET INC (25)	Western District of Texas 6-19-cv-00500	3
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	MOUSER ELECTRONICS INC (0) XILINX INC (5,114)	District of Delaware 1-19-cv-01573	3
✓ 2019-08-26	ULTRAVISION TECHNOLOGIES LLC (118)	EATON CORP PLC (0)	Eastern District of Texas 2-19-cv-00290	2
✓ 2019-08-26			District of Vermont 2-19-cv-00148	3
✓ 2019-08-26	TECHNICAL LED INTELLECTUAL PROPERTY LLC (3)	KULED INC (0)	Southern District of Texas 4-19-cv-03208	2
✓ 2019-08-26	SOCKEYE LICENSING TX LLC (3)	JMC ELECTRONICS LLC (0)	Northern District of Illinois 1-19-cv-05719	2
✓ 2019-08-26	LUTRON ELECTRONICS CO INC (481) LUTRON TECHNOLOGY CO LLC (2,084)	SAVANT SYSTEMS LLC (223)	District of Delaware 1-19-cv-01570	1
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	LENOVO GROUP LTD (18) NVIDIA CORP (6,680) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00496	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	ASUSTEK COMPUTER INC (2,819) NVIDIA CORP (6,680) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00494	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	ARISTA NETWORKS INC (329) BROADCOM CORP (4,695) BROADCOM INC (8) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00491	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	CISCO SYSTEMS INC (199) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00492	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	APPLE INC (55,692) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00489	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	MOUSER ELECTRONICS INC (0) XILINX INC (5,114)	District of Delaware 1-19-cv-01576	3
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	AVNET INC (25)	Western District of Texas 6-19-cv-00495	3
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	TCL CORP (0) TCL ELECTRONICS HOLDINGS LTD (0) TTE TECHNOLOGY INC (111)	District of Delaware 1-19-cv-01572	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	TCL CORP (0) TCL ELECTRONICS HOLDINGS LTD (0) TTE TECHNOLOGY INC (111)	District of Delaware 1-19-cv-01575	2
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	HISENSE CO LTD (125) HISENSE ELECTRIC CO LTD (296) MEDIATEK US INC (30) MEDIATEK INC (10,690) MSTAR SEMICONDUCTOR INC (2,046) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0) HISENSE IMPORT & EXPORT CO LTD (0) HISENSE INTERNATIONAL CO LTD (490) QINGDAO HISENSE COMMUNICATION CO LTD (0)	Western District of Texas 6-19-cv-00498	3
✓ 2019-08-26	GLOBALFOUNDRIES US INC (22)	SHENZHEN ONEPLUS TECHNOLOGY CO LTD (26) QUALCOMM TECHNOLOGIES INC (244) QUALCOMM INC (86,253) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0) GUANGDONG OUIJIA COMMUNICATION TECHNOLOGY CO LTD (0) GUANGDONG OUIJIA HOLDING CO LTD (0) ONEPLUS BEIJING MARKETING PLAN CO LTD (0) ONEPLUS MOBILE COMMUNICATION GUANGDONG CO LTD (0) SHENZHEN YUNLING TRADE CO LTD (0)	Western District of Texas 6-19-cv-00499	2

End of data (2/2)

Whether you are a lawyer at the pitching stage or a defendant trying to collect as much information as possible to prepare for a lawsuit, Litigation Daily is a great tool and is certainly worth trying.

Right after accessing the portal, we identified all of the patents in each lawsuit. By doing so, we noticed that four patents are involved in 5 out of the 9 complaints against TSMC. These patents are '178, '643, '357, and '877.

Patent '357 does not have any rejection records in the prosecution, nor are there any validity challenges in the post-grant proceedings. However, it is certainly worth taking a closer look at the patent's report to uncover potential prior art references to be used in the event of an invalidity action (see Figure 12).

Figure 12: Patent '357 and '178 are involved in the GF vs. TSMC cases

Filing Date	Plaintiff (# of Patents Owned)	Defendant (# of Patents Owned)	Court / Case No.	# of Patents in Litigation	
 2019-08-26	GLOBALFOUNDRIES US INC (22)	APPLE INC (55,692) TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD (41,421) TSMC NORTH AMERICAN CORP (0) TSMC TECHNOLOGY INC (0)	Western District of Texas 6-19-cv-00489	2	
Patent No.	# of Rejection(s)	Related Proceedings	Novelty & Eligibility Issues	§ 102 Ref. in History	§ 103 Ref. in History
7378357	0 Non Final 0 Final 0 RCE	0 PTAB 0 Reexam		Refs	Refs
8823178	1 Non Final 0 Final 0 RCE	0 PTAB 0 Reexam		Refs	Refs

Exploring Deeper With Quality Insights

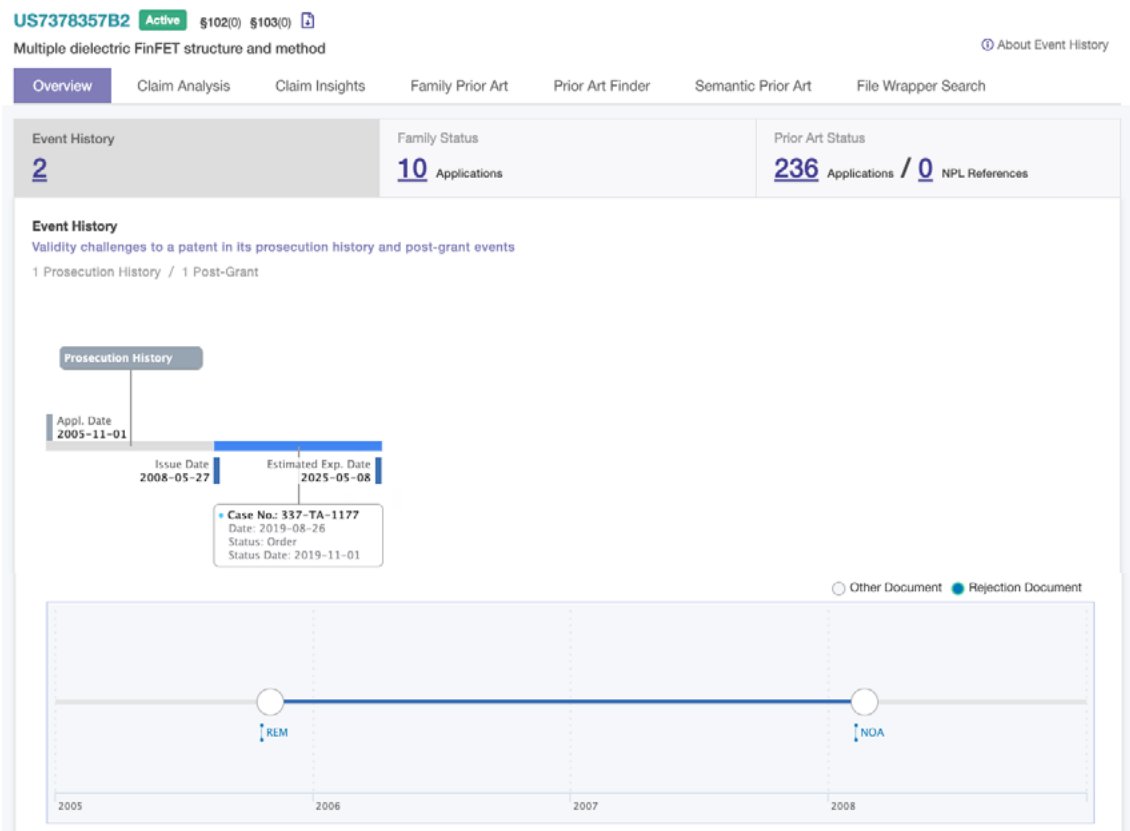
To do so, let's move to *Quality Insights* — Patentcloud's exclusive one-click solution that can instantly reveal the true quality of a patent — by clicking on any of the links **# of rejection(s)**, **Related Proceedings** or **102/103 Refs**, to get a comprehensive report on this patent.

Though we already know from *Litigation Daily* that there are no rejections or PTAB invalidity

records for the '357 patent, we can still use the **Overview** tab in *Quality Insights* to thoroughly examine this patent's file wrapper data (see Figure 13).

By looking at the **Family Prior Art** tab — one of the three tabs in *Quality Insights* that allows us to browse and locate possible prior art references — we can identify any abandoned family members, which is a great strategic move when preparing an Inter Partes Review or an invalidity action proposal.

Figure 13: The Overview tab of the '357 patent in *Quality Insights*



The reason for this is that prior art used against members of the same family – which cover the same technology or invention, just in other countries – may be used against the patent at issue as well: such references, then, should then be analyzed first.

Although the records of '357 – which has a total of 10 family members – may look clean initially, *Quality Insights* has identified abandoned family members: **EP1787331A2** and **US20070290250A1** (see Figure 14).

To find out the prior art used against them, let's select the **Backward Citation: Patent** tab: this list offers an overview of all the prior art references

of the family members of the patent at issue, including the abandoned ones.

This particular family has a total of 31 backward citations for its family members. First, let's toggle the selection to **Applicable Only** to focus on the 29 references that have a filing date that comes earlier than the earliest priority date of the patent at issue. This defines them as prior art, and thus eligible to be used in Inter Partes Reviews or invalidity action proposals.

If we want to focus on the prior art references of the abandoned patents, we need to focus on the purple lines (see Figure 15).

Figure 14: The Family Prior Art tab of the '357 patent in *Quality Insights*

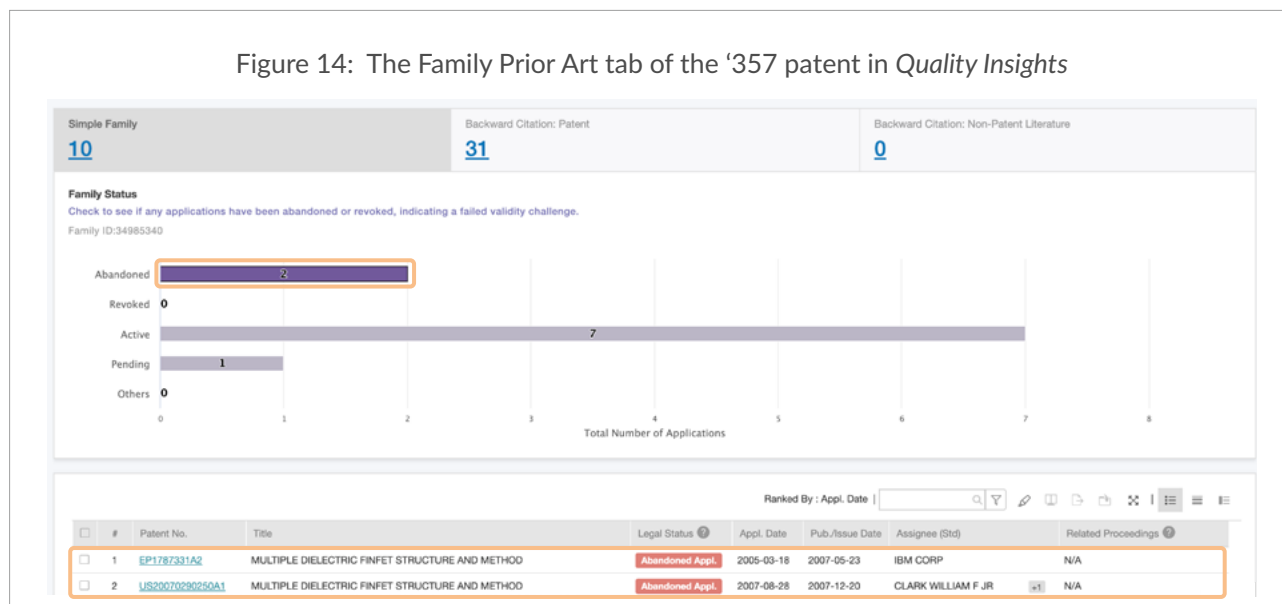
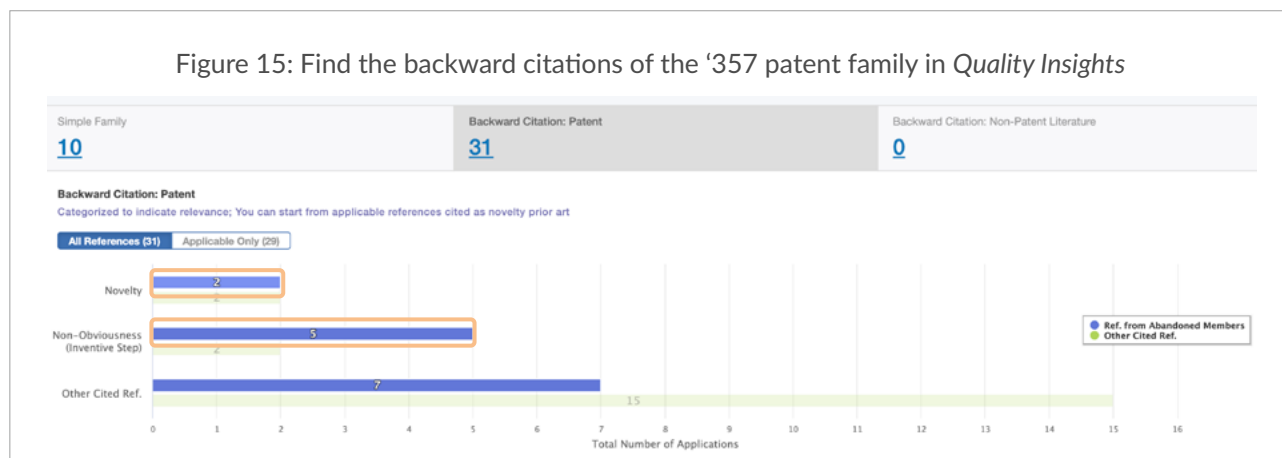


Figure 15: Find the backward citations of the '357 patent family in *Quality Insights*



For convenience, the references are grouped according to their basis: novelty or non-obviousness. The same result can be obtained by typing “aban” into the filter bar at the top of the list (see Figure 16).

Under the **Reference** column of the newly-filtered view, we notice again the abandoned family members **EP1787331A2** and

US20070290250A1: by taking a quick look on the left, under the Patent No. column, we can uncover their prior art references.

Once identified a few potential prior art references, it is possible to utilize the powerful **Prior Art Analytics** function to check the similarities between them and the patent at issue. Read [here](#) for an overview of this feature.

Figure 16: Sort out the applicable prior art in *Quality Insights*

Ranked By: Appl. Date |

Patent No.	Prior Art Analytics	Title	Legal Status	Appl. Date	Pub./Issue Date	Assignee (Std)	Applicability	Reference
JP110-056184A		SEMICONDUCTOR INTEGRATED CIRCUIT...	Abandoned Appl.	1997-05-30	1998-02-24	SEMICONDUCTOR ENER...	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b)	JP5039987
US6463156B1	1	Double planar gated SOI MOSFET structure	Lapsed	2000-03-16	2002-11-19	IBM CORP	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(b)(2)	TW1341586
US6432829B2	2	Process for making planarized silicon fin d...	Lapsed	2001-03-08	2002-08-13	IBM CORP	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b) (Pre-AIA) § 102(b)(2)	TW1341586
JP2003-188163A		THIN FILM TRANSISTOR, ITS FABRICATI...	Abandoned Appl.	2001-12-20	2003-07-04	FUJITSU DISPLAY TECHN...	(Pre-AIA) § 102(a)	JP5039987
JP2003-229575A		INTEGRATED SEMICONDUCTOR DEVICE...	Abandoned Appl.	2002-02-04	2003-08-15	HITACHI LTD	(Pre-AIA) § 102(a)	JP5039987
US6706571B1	3	Method for forming multiple structures in a...	Active	2002-10-22	2004-03-16	ADVANCED MICRO DEVIC...	(Pre-AIA) § 102(a) (Pre-AIA) § 102(b)(2)	US20070290250 (ABAN):103
US6762483B1	4	Narrow fin FinFET	Active	2003-01-23	2004-07-13	ADVANCED MICRO DEVIC...	(Pre-AIA) § 102(b)(2)	US20070290250 (ABAN):103
US20040063286A1	5	Field effect transistors having multiple sta...	PGPub - Granted	2003-07-01	2004-04-01	KIM SUNG-MIN	(Pre-AIA) § 102(b)(1)	US20070290250 (ABAN):103
US20050040444A1	6	Strained-channel fin field effect transistor (...)	PGPub - Granted	2003-08-22	2005-02-24	IBM CORP	(Pre-AIA) § 102(b)(1)	US20070290250 (ABAN):102; US7115947 :102 US7312502 :102 US7378357
US20050148137A1	7	Nonplanar transistors with metal gate elec...	PGPub - Granted	2003-12-30	2005-07-07	BRASK JUSTIN K	(Pre-AIA) § 102(b)(1)	US20070290250 (ABAN):102

We can also leverage Quality Insights to discover the weak patents in the lawsuits by using the **Claim Insights** tab to identify claim construction issues during prosecution. We already know from *Litigation Daily* that patent '178 has one non-final rejection in its prosecution history.

Firstly, **Claim Insights** helps us by extracting the keywords in the claims. These keywords are then searched across a digitized copy of all the prior art references cited by the examiner during prosecution. The matches are then organized in a table for easy comparison (see Figure 17).

Gathering this amount of first-hand data and valuable insights would traditionally require a tremendous amount of effort, both in terms of time and resources. What used to take hours —

even days — can now be accomplished in just minutes with an AI-powered patent intelligence platform like Patentcloud, which greatly improves efficiency during the earliest and most important phases of the invalidity action process.

This is equally true for both the plaintiff and the defendant. With platforms like Patentcloud, defendants accused of infringement can quickly gain an understanding of the strength and validity of the patents in the lawsuit. Patentcloud can even help to find the prior art needed to invalidate the patents at issue.

Plaintiffs, on the other hand, can use these tools to make sure they are asserting the strongest patents before they even file a lawsuit, greatly increasing their chances of success and reducing the risk of their patents being invalidated.

Figure 17 Claim Insights in *Quality Insights*

The screenshot displays the 'Claim Insights' interface within the 'Quality Insights' section. At the top, a navigation bar shows 'Claim Insights Summary Table > Claim Table (Claim# 1) > Claim Element Page (Claim# 1.02)'. Below this, a 'Side-by-side comparison; Claim terms not found may imply the reasons for patentability.' message is visible. A row of colored circles (1.01 to 1.07) represents different claim elements, with 1.02 selected. The main content area is divided into two columns. The left column, titled 'Claim Element', shows claim element #1.02: 'providing at least one word line structure, at least one ground line structure, and at least one power line structure;'. The right column, titled 'Prior Art Ref.', shows two results. The first result is for 'Osada [US2002/0117722]', with a 'Rejection' section stating 'Claims 1 - 3 and 6 - 7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Osada (US 2002/0117722 , hereinafter as Osada ' 722)...' and a 'Remarks' section stating 'Independent claim 1 has been amended by reciting, inter alia, ' connecting the at least one double patterned metal layer structure to active region contacts and gate contacts, wherein the at least one word line structure comprises a first tip edge and a first side edge, and the at...'. The second result is for 'Llao [US2006/0019488]', with a 'Rejection' section stating 'Claims 16—17 and 19—20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Llao (2006/0019488 , hereinafter as Llao ' 488)...' and a 'Remarks' section stating 'Claims 16, 17, 19, and 20 were rejected for anticipation under 35 U.S.C. § 102(b) predicated upon Llao (US 2006/0019488). This rejection is respectfully traversed. ...'. The interface includes a 'Find 4 Result(s)' search bar, a 'Filter' dropdown, and a 'Clear All' button.

About Patentcloud

Patentcloud is a cloud-based patent intelligence platform for all the stages of the patent lifecycle. Businesses and professionals alike can utilize this intuitive platform to uncover the full potential and true value of patents. Patentcloud currently consists of six core products — covering a wide range of scenarios.

Patent work, one step ahead. Get started with Patentcloud.



Free Guide: Patentcloud playbook for attorneys

Grab more business opportunities with our free guide
for patent attorneys

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