

TABLE S8-5

USPTO patents and patent families granted in electrical machinery, apparatus, energy, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families		
China	33	94	30	113	50	263	89	209	110	296	106	457	133	794	126	749	172	1,019	171	1,487	268	2,485	327	3,769	555	4,284	614	6,186	726	8,823	781	9,191	840	9,954	949	15,408	1,160	20,610	1,358	23,952	1,571	25,600
India	2	2	1	1	1	1	7	3	9	4	3	2	14	6	21	15	10	14	13	18	14	13	14	14	34	26	51	37	53	38	71	39	80	39	79	39	110	59	94	44		
Japan	2,229	8,160	2,376	8,623	2,539	7,335	2,832	7,604	3,144	7,822	3,286	8,260	3,170	7,415	2,691	7,397	3,066	7,447	2,715	8,855	2,643	9,693	2,861	10,236	3,609	11,865	3,536	13,875	4,044	15,172	3,983	17,203	4,514	16,544	4,815	11,041	5,061	12,827	5,393	12,333	5,144	11,109
Malaysia	0	0	4	2	4	1	3	3	5	2	4	4	4	6	7	6	10	19	15	19	11	13	11	20	10	22	9	24	8	23	8	23	24	13	20	18	20	13	22	13	24	
Singapore	7	5	11	5	11	5	14	3	19	11	16	7	19	9	16	11	16	9	19	13	25	18	29	14	38	16	35	12	45	16	41	15	48	25	56	23	59	26	79	36	62	30
South Korea	276	1,064	294	2,799	222	1,490	234	977	305	1,049	359	1,803	464	2,137	370	3,567	467	6,940	495	8,312	575	4,798	718	3,221	934	3,897	920	6,038	954	6,450	1,222	6,842	1,596	6,791	1,867	5,253	1,933	6,240	1,968	7,284	1,886	6,430
Taiwan	315	358	363	338	633	461	674	724	632	702	591	764	758	935	647	958	865	1,332	854	1,213	843	870	931	935	1,162	1,129	1,285	1,282	1,435	1,332	2,494	1,414	2,219	1,297	2,096	1,240	1,802	1,113	1,284			
All others	1	2	2	4	1	2	2	2	3	4	6	9	5	7	3	5	11	8	5	8	8	8	8	15	8	8	5	6	7	7	8	10	14	21	10	15	13	12	19	27	18	18
Middle East	17	7	23	13	31	23	30	22	41	19	42	22	28	15	35	17	38	20	41	16	44	16	36	14	47	18	47	14	69	25	82	22	76	22	105	27	126	32	143	43	147	51
Israel	16	6	21	11	28	11	28	13	38	16	38	13	27	14	30	13	36	17	40	13	41	12	35	11	41	12	45	12	61	13	72	14	62	12	90	14	106	18	117	25	117	30
All others	1	1	2	2	3	11	3	9	3	3	4	9	1	2	4	4	3	2	1	3	3	4	2	3	5	4	2	2	7	11	10	8	13	10	15	13	20	14	25	19	30	21
Africa	7	18	7	17	4	18	7	14	8	21	6	14	6	18	8	14	9	9	8	6	16	6	14	9	16	6	14	7	14	5	13	7	14	3	21	5	12	11	10	7	9	5
South Africa	7	14	6	11	4	11	6	5	7	10	5	5	6	11	8	10	9	7	3	6	13	5	6	13	11	20	7	5	2	2	1	5	6	4	2	8	3	9	4	4	0	
All others	0	5	1	7	0	7	1	9	1	11	1	9	0	7	0	4	0	2	0	2	0	3	1	3	1	9	0	13	0	10	1	13	1	14	1	1	3	8	2	3	5	5
Australia and Oceania	32	18	17	24	18	26	35	42	28	45	32	36	38	50	25	43	39	37	26	38	47	36	47	30	53	37	62	42	114	36	125	54	101	67	151	56	138	73	110	87	46	
Australia	22	18	12	24	12	26	24	42	21	44	28	35	31	48	20	42	35	37	23	37	47	32	47	25	51	62	35	111	29	124	40	101	39	52	149	38	135	46	108	61	43	
New Zealand	10	0	5	0	6	0	9	0	6	1	4	1	7	2	5	1	4	1	3	1	4	0	5	2	7	1	7	3	7	1	14	1	11	3	14	2	18	3	26	3	26	3
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Unclassified	2	28	0	107	3	138	1	10	0	18	0	2	1	21	1	45	0	17	0	14	0	1	0	3	1	7	0	0	1	7	0	3	1	0	2	10	6	0	1	0	0	

EU = European Union; USPTO = U.S. Patent and Trademark Office.

Note(s)

USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2012) is used to fill in missing information on priority patents using information in successive filings within the patent families (see technical documentation for details). Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in the year for which its output is accounted. The EU includes 28 member countries. China includes Hong Kong.

Source(s)

Science-Metrix; PATSTAT, accessed April 2019; PatentsView, USPTO, accessed June 2019.