

Table SINV-13

International patent families granted in semiconductors, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	13,703	17,916	16,599	18,048	17,136	16,931	15,617	16,929	21,968	22,137	19,175	19,039	21,797	25,146	26,766	27,377	28,903	26,507	29,760	29,138	26,092	27,428	28,211
North America	na	1,904	2,394	2,822	3,255	3,243	3,293	2,916	2,338	2,484	2,327	2,091	2,297	2,900	2,644	2,514	2,899	3,278	3,408	3,690	3,386	2,745	2,871	2,866
Canada	High	19	18	19	24	22	30	37	29	29	39	31	43	41	51	53	44	55	40	50	36	33	39	41
Mexico	Upper middle	0	0	0	1	1	0	0	2	0	2	0	0	0	0	2	1	2	1	7	3	2	9	2
United States	High	1,885	2,376	2,803	3,229	3,219	3,263	2,879	2,308	2,455	2,287	2,059	2,255	2,859	2,593	2,459	2,854	3,221	3,367	3,633	3,347	2,710	2,822	2,822
Central America and Caribbean	na	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	0	1	1	2	1	1	1	2	1	1	0	1	1	2	1	3	2	4	2	4	9	6	11
Argentina	Upper middle	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	3
Brazil	Upper middle	0	1	0	0	0	0	1	1	0	0	0	1	1	1	1	2	2	3	2	2	7	5	7
Europe	na	719	734	746	940	1,160	1,290	1,203	1,190	1,323	1,282	1,251	1,346	1,499	1,529	1,627	1,700	1,821	1,831	1,916	1,900	1,900	1,713	1,484
EU-27 + UK ^a	na	588	623	655	845	1,047	1,141	1,053	1,050	1,150	1,090	1,071	1,065	1,278	1,339	1,403	1,464	1,536	1,576	1,693	1,640	1,613	1,470	1,302
United Kingdom	High	41	28	30	55	68	90	93	60	57	54	65	82	83	91	79	87	91	95	83	76	73	83	93
EU-27 ^b	na	548	595	625	790	979	1,052	960	989	1,093	1,036	1,006	984	1,194	1,248	1,324	1,377	1,445	1,481	1,610	1,564	1,540	1,387	1,209
Austria	High	9	14	10	19	19	25	32	29	31	45	50	44	52	69	65	68	94	112	143	160	125	115	96
Belgium	High	4	3	13	12	15	28	24	14	20	13	25	36	46	45	49	51	60	67	94	70	72	81	79
Denmark	High	1	1	1	1	2	3	3	3	5	2	3	3	6	4	4	3	7	6	4	4	3	5	4
Finland	High	7	4	4	3	8	7	6	13	12	13	8	13	14	15	12	11	17	19	17	8	14	18	19
France	High	88	95	83	147	146	209	143	178	168	180	174	179	203	271	271	305	293	272	318	302	367	294	250
Germany	High	279	302	337	406	590	579	577	618	698	665	605	540	679	643	679	701	752	784	775	774	723	645	559
Hungary	High	0	0	0	1	0	1	0	2	0	0	1	0	2	0	1	0	1	1	2	0	1	3	1
Ireland	High	7	3	2	6	3	2	5	4	6	4	6	3	3	10	10	9	11	7	17	11	13	17	23
Italy	High	62	89	85	70	76	64	66	32	27	22	21	31	37	44	43	38	40	46	37	81	83	66	49
Netherlands	High	37	33	42	62	81	96	66	62	88	55	54	73	85	89	105	110	85	83	112	78	66	75	59
Spain	High	6	5	5	6	3	3	5	9	10	10	13	13	14	14	19	22	19	16	17	14	14	11	11
Sweden	High	28	35	30	43	28	24	21	12	14	11	15	11	22	21	17	12	19	20	25	14	16	20	18
Other Europe	na	130	112	90	95	113	148	150	140	173	192	181	281	221	190	224	236	286	255	223	260	287	242	182
Other Europe-2020 ^b	na	171	140	120	150	181	238	243	200	230	247	246	362	304	281	303	323	376	350	306	336	360	325	276

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Belarus	Upper middle	1	2	0	0	0	3	1	0	3	2	1	4	3	0	1	1	2	0	2	8	3	2	1
Moldova	Lower middle	3	2	1	4	5	2	4	6	5	5	3	4	6	5	3	3	2	3	0	2	2	2	1
Norway	High	0	0	2	3	2	2	2	2	2	2	3	4	3	5	4	9	4	3	3	2	3	2	2
Russia	Upper middle	105	92	62	67	80	104	88	96	129	140	137	207	157	129	176	171	223	198	161	190	228	190	126
Switzerland	High	17	15	23	20	23	26	18	22	27	26	21	37	29	29	28	40	37	36	44	44	40	41	45
Ukraine	Lower middle	5	1	1	1	4	11	37	14	6	16	16	23	22	21	11	9	14	10	9	11	8	2	1
Asia	na	11,056	14,639	12,840	13,744	12,585	12,156	11,294	13,260	18,049	18,438	15,742	15,332	17,346	20,925	22,513	22,719	23,736	21,200	24,083	23,787	21,389	22,783	23,799
China	Upper middle	15	35	58	50	49	155	417	579	716	960	1,558	2,347	2,258	2,668	3,717	3,584	3,355	5,337	7,177	8,133	7,697	9,225	10,462
India	Lower middle	2	2	1	4	2	8	2	2	6	5	8	4	8	10	16	26	24	24	42	44	36	41	44
Japan	High	7,880	7,953	6,779	7,510	6,994	7,139	6,060	5,814	6,164	7,515	7,129	8,216	9,430	10,282	10,995	11,516	11,377	7,964	8,445	7,636	6,511	6,004	5,512
Malaysia	Upper middle	2	3	6	14	18	10	20	34	38	45	37	32	44	50	50	39	63	81	57	65	53	38	47
Singapore	High	28	37	77	164	151	131	102	80	87	77	66	74	145	171	162	164	176	175	157	162	129	122	96
South Korea	High	2,163	5,207	3,293	2,293	2,944	2,517	2,670	4,647	9,058	8,363	5,798	3,461	4,183	6,187	5,739	4,956	5,565	4,504	4,809	4,653	4,625	5,040	5,425
Taiwan	High	966	1,399	2,622	3,703	2,415	2,179	2,011	2,095	1,972	1,460	1,140	1,191	1,264	1,541	1,824	2,420	3,163	3,094	3,371	3,062	2,315	2,291	2,189
Middle East	na	7	13	12	29	24	23	23	20	16	15	17	21	24	22	24	23	39	38	48	49	34	35	40
Israel	High	6	13	12	24	22	23	20	20	13	15	16	20	23	19	20	20	34	29	35	37	23	23	25
Africa	na	2	2	2	2	1	2	1	1	2	1	1	2	2	3	4	8	7	3	2	1	4	3	3
South Africa	Upper middle	2	1	1	1	1	1	0	0	1	0	1	1	1	1	2	3	2	1	0	0	0	1	0
Australia and Oceania	na	9	21	37	60	111	166	168	103	83	66	42	37	23	21	17	25	16	22	15	10	10	16	8
Australia	High	9	21	37	60	110	166	168	102	83	64	41	36	22	20	15	24	12	18	15	9	9	14	8
New Zealand	High	1	0	1	0	1	0	0	1	0	2	1	1	1	1	2	1	3	2	1	1	2	2	0
Unclassified	na	5	110	140	17	12	2	11	16	9	7	29	3	2	0	66	1	2	1	3	0	0	0	0

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.

^b Beginning in 2020, the United Kingdom was no longer a member of the EU.

Note(s):

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. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families 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. China includes Hong Kong. Data were extracted in June 2021. 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 year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.

Science and Engineering Indicators