1.1

下表为 Intel 历代微型处理器上的晶体管数量(1971-2015)，来源：维基百科
https://en.wikipedia.org/wiki/Transistor_count#Microprocessors
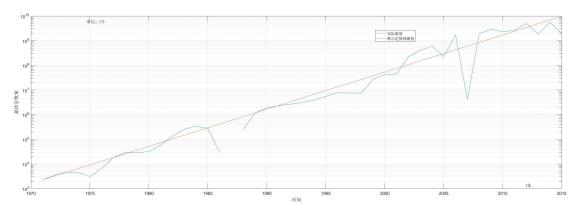
Intel 4004	2,300	1971	Intel	10,000 nm	12 mm²
Intel 8008	3,500	1972	Intel	10,000 nm	14 mm²
Intel 8080	4,500	1974	Intel	6,000 nm	20 mm²
Intel 8085	6,500	1976	Intel	3,000 nm	20 mm²
Intel 8086	29,000	1978	Intel	3,000 nm	33 mm²
Intel 8088	29,000	1979	Intel	3,000 nm	33 mm²
Intel 80186	55,000	1982	Intel	3,000 nm	60 mm²
Intel 80286	134,000	1982	Intel	1,500 nm	49 mm²
Intel 80386	275,000	1985	Intel	1,500 nm	104 mm²
Intel i960	250,000[15]	1988	Intel	600 nm	
Intel 80486	1,180,235	1989	Intel	1000 nm	173 mm²
Pentium	3,100,000	1993	Intel	800 nm	294 mm²
Pentium Pro	5,500,000[17]	1995	Intel	500 nm	307 mm²
Pentium IIKlamath	7,500,000	1997	Intel	350 nm	195 mm²
Pentium IIDeschutes	7,500,000	1998	Intel	250 nm	113 mm²
Pentium IIIKatmai	9,500,000	1999	Intel	250 nm	128 mm²
Pentium IIMobile Dixon	27,400,000	1999	Intel	180 nm	180 mm²
Pentium IIICoppermine	21,000,000	2000	Intel	180 nm	80 mm²

Processor	Transistor count	Year	Manufacturer	Process	Area
Pentium 4Willamette	42,000,000	2000	Intel	180 nm	217 mm²
Pentium IIITualatin	45,000,000	2001	Intel	130 nm	81 mm²
Pentium 4Northwood	55,000,000	2002	Intel	130 nm	145 mm²
Itanium 2McKinley	220,000,000	2002	Intel	180 nm	421 mm²
Itanium 2Madison 6M	410,000,000	2003	Intel	130 nm	374 mm²
Pentium 4Prescott	112,000,000	2004	Intel	90 nm	110 mm²
Itanium 2with 9 MBcache	592,000,000	2004	Intel	130 nm	432 mm²
Pentium 4Prescott-2M	169,000,000	2005	Intel	90 nm	143 mm²
Pentium DSmithfield	228,000,000	2005	Intel	90 nm	206 mm²
Pentium 4Cedar Mill	184,000,000	2006	Intel	65 nm	90 mm²
Pentium DPresler	362,000,000	2006	Intel	65 nm	162 mm²
Core 2 DuoConroe	291,000,000	2006	Intel	65 nm	143 mm²
Dual-core Itanium 2	1,700,000,000[25]	2006	Intel	90 nm	596 mm²
Core 2 DuoAllendale	169,000,000	2007	Intel	65 nm	111 mm²
Core 2 DuoWolfdale	411,000,000	2007	Intel	45 nm	107 mm²
Atom	47,000,000	2008	Intel	45 nm	24 mm²
Core 2 DuoWolfdale 3M	230,000,000	2008	Intel	45 nm	83 mm²
Core i7(Quad)	731,000,000	2008	Intel	45 nm	263 mm²
Six-core Xeon 7400	1,900,000,000	2008	Intel	45 nm	503 mm²

Six-core Core i7(Gulftown)	1,170,000,000	2010	Intel	32 nm	240 mm²
Quad-core Itanium Tukwila	2,000,000,000[27]	2010	Intel	65 nm	699 mm²
8-core XeonNehalem-EX	2,300,000,000[29]	2010	Intel	45 nm	684 mm²
Quad-core + GPU Core i7	1,160,000,000	2011	Intel	32 nm	216 mm²
Six-core Core i7/8-core Xeon E5 (Sandy Bridge-E/EP)	2,270,000,000[28]	2011	Intel	32 nm	434 mm²
10-core XeonWestmere-EX	2,600,000,000	2011	Intel	32 nm	512 mm²
Atom"Medfield"	432,000,000[18]	2012	Intel	32 nm	64 mm²
Quad-core + GPU Core i7 Ivy Bridge	1,400,000,000	2012	Intel	22 nm	160 mm²
8-core Itanium Poulson	3,100,000,000	2012	Intel	32 nm	544 mm²
61-core Xeon Phi	5,000,000,000[38]	2012	Intel	22 nm	720 mm²
Six-core Core i7 Ivy Bridge E	1,860,000,000	2013	Intel	22 nm	256 mm²
Quad-core + GPU Core i7 Haswell	1,400,000,000[24]	2014	Intel	22 nm	177 mm²
8-core Core i7 Haswell-E	2,600,000,000[30]	2014	Intel	22 nm	355 mm²
15-core Xeon Ivy Bridge-EX	4,310,000,000[36]	2014	Intel	22 nm	541 mm²
18-core Xeon Haswell-E5	5,560,000,000[39]	2014	Intel	22 nm	661 mm²
Quad-core + GPU GT2 Core i7 Skylake K	1,750,000,000	2015	Intel	14 nm	122 mm²
Dual-core + GPU Iris Core i7	1,900,000,000[26]	2015	Intel	14 nm	133 mm²

Broadwell-U					
10-core Core i7 Broadwell-E	3,200,000,000[34]	2016	Intel	14 nm	246 mm² [35]
22-core Xeon Broadwell-E5	7,200,000,000[41]	2016	Intel	14 nm	456 mm²

根据数据，做出图如下：

由图可知，至 2015 年为止，晶体管数量的增长规律基本符合摩尔定律。

1.2

	Message-passing Computers	Shared-Address-Space Computers
Advantage	内存独立，数据保密性、安全性较好	通过共享地址，减少了通信带来的资源浪费
Disadvantage	主机之间的交流会消耗较多资源	由于内存共享，难以保证数据的安全性与私密性