

# STMicroelectronics



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STMicroelectronics N.V.



STMicroelectronics building in Geneva, Switzerland,  
aerial view

<b><u>Type</u></b>	<a href="#">Naamloze vennootschap</a>
	<a href="#">BIT: STM</a>
<b><u>Traded as</u></b>	<a href="#">Euronext: STM</a>
	<a href="#">CAC 40 Component</a>
<b><u>ISIN</u></b>	<a href="#">NL0000226223</a>
<b>Industry</b>	<a href="#">Semiconductors</a>
<b>Founded</b>	1957; 63 years ago as Società Generale Semiconduttori, 1987 as SGS- Thomson
<b>Founder</b>	SGS Microelettronica
<b>Headquarters</b>	<a href="#">Geneva</a> , Switzerland
<b>Key people</b>	Jean-Marc Chery (President and <a href="#">CEO</a> ),

	<a href="#">Nicolas Dufourcq</a> ( <a href="#">Chairman</a> of the <a href="#">supervisory board</a> )
<b>Products</b>	<a href="#">Integrated circuits</a> for specific applications, <a href="#">memory</a> (including <a href="#">EEPROM</a> ), <a href="#">microcontrollers</a> , <a href="#">transistors</a> , <a href="#">smartcards</a>
<b>Revenue</b>	<a href="#">US\$9.66 billion</a> (2018)
<b>Number of employees</b>	45,500 (December 2017)
<b>Website</b>	<a href="#">st.com</a>

**STMicroelectronics** is a [French-Italian](#) multinational [electronics](#) and [semiconductor](#) manufacturer headquartered in [Geneva, Switzerland](#). It is commonly called **ST**, and it is Europe's largest semiconductor chip maker based on revenue. While STMicroelectronics corporate headquarters and the headquarters for [EMEA](#) region are based in Geneva, the holding company, STMicroelectronics N.V. is registered in [Amsterdam](#), Netherlands.

The company's US headquarters is in [Coppell, Texas](#). Headquarters for the Asia-Pacific region is in [Singapore](#) whilst Japan and Korea operations are headquartered in [Tokyo](#). The company headquarters for the [Greater China](#) region is in [Shanghai](#).<sup>[1]</sup>



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## History

ST was formed in 1987 by the merger of two government-owned semiconductor companies: SGS Microelettronica (Società Generale Semiconduttori) of Italy and Thomson Semiconducteurs, the semiconductor arm of France's [Thomson](#):

SGS Microelettronica originated in 1972 from a previous merger of two companies:

- ATES (Aquila Tubi e Semiconduttori), a vacuum tube and semiconductor maker headquartered in the [Abruzzese](#) city of [l'Aquila](#), which in 1961 changed its name to *Azienda Tecnica ed Elettronica del Sud* and relocated its manufacturing plant to the outskirts of the Sicilian city of [Catania](#)
- Società Generale Semiconduttori (founded in 1957 by [Adriano Olivetti](#)).

Thomson Semiconducteurs was created in 1982 by the French government's widespread nationalisation of industries. It included:

- the semiconductor activities of the French electronics company [Thomson](#).
- in 1985 it bought [Mostek](#), a US company founded in 1969 as a spin-off of [Texas Instruments](#), from UTC.
- Silec, founded in 1977.
- Eurotechnique founded in 1979 in [Rousset, Bouches-du-Rhône](#) as a [joint-venture](#) between [Saint-Gobain](#) of France and US-based [National Semiconductor](#).
- EFCIS, founded in 1977.
- SESCOSEM, founded in 1969.

At the time of the merger the company was named SGS-THOMSON but took its current name in May 1998 following Thomson's sale of its shares. After its creation ST was ranked 14th among the top 20 semiconductor suppliers with sales of around US\$850 million. The company has participated in the consolidation of the semiconductor industry since its formation, with acquisitions including:

- In 1989, British company [Inmos](#) known for its [transputer microprocessors](#) from parent [Thorn EMI](#).
- In 1994, Canada-based [Nortel](#)'s semiconductor activities.
- In 2002, Alcatel's Microelectronics division, which along with the incorporation of smaller ventures such as UK company, Synad Ltd, helped the company expand into the Wireless-LAN market.

- In 2007, US-based [Genesis Microchip](#).<sup>[2]</sup> Genesis Microchip is known for their strength in video processing technology ([Faroudja](#)) and has design centres located in [Santa Clara](#), [Toronto](#), Taipei City, Taiwan R.O.C. and [Bangalore](#).

On December 8, 1994, the company completed its initial public offering on the Paris and [New York](#) stock exchanges. Owner Thomson SA sold its stake in the company in 1998 when the company also listed on the [Borsa Italiana](#) in [Milan](#).

In 2002, [Motorola](#) and [TSMC](#) joined ST and [Philips](#) in a new technology partnership. The Crolles2 Alliance was created with a new 12" [wafer](#) manufacturing facility located in [Crolles](#) (France).

By 2005, ST was ranked fifth, behind [Intel](#), [Samsung](#), [Texas Instruments](#) and [Toshiba](#), but ahead of [Infineon](#), [Renesas](#), [NEC](#), [NXP](#), and [Freescale](#). The company was the largest European semiconductors supplier, ahead of Infineon and NXP.

Early in 2007, [NXP](#) (formerly Philips Semiconductors) and Freescale (formerly Motorola Semiconductors) decided to stop their participation in Crolles2 Alliance. Under the terms of the agreement the Alliance came to an end on December 31, 2007.<sup>[3]</sup>

On May 22, 2007, ST and Intel created a joint venture in the memory application called [Numonyx](#). This new company merged ST and Intel Flash Memory activities.

Semiconductor market consolidation continued with ST and [NXP](#) announcing on April 10, 2008, the creation of a new joint venture of their mobile activities, with ST owning 80% of the new company and NXP 20%. This joint venture began on August 20, 2008.

On February 10, 2009, [ST Ericsson](#), a joint venture bringing together ST-NXP Wireless and Ericsson Mobile Platforms, was established.<sup>[4]</sup>

In 2011, ST announced the creation of a joint lab with [Sant'Anna School of Advanced Studies](#). The lab will focus on research and innovation in bio-robotics, smart systems and microelectronics.<sup>[5]</sup> Past collaborations with Sant'Anna School of Advanced Studies included DustBot, a platform that integrated self-navigating "service robots" for waste collection.<sup>[5]</sup>

[ST Ericsson](#) was a multinational manufacturer of [wireless](#) products and [semiconductors](#), supplying to mobile device manufacturers.<sup>[6]</sup> ST-Ericsson was a 50/50 joint venture of [Ericsson](#) and STMicroelectronics established on February 3, 2009, and dissolved on August 2, 2013. Headquartered in [Geneva](#), Switzerland, it was a [fabless](#) company, outsourcing [semiconductor manufacturing](#) to foundry companies.

## Shareholders

As of December 31, 2014, the shareholders were:<sup>[7]</sup>

- 68.4% public ([New York Stock Exchange](#), [Euronext Paris](#), [Borsa Italiana Milano](#))

- 4.1% treasury shares
- 27.6% STMicroelectronics Holding B.V.
  - 50% FT1CI ([Bpifrance](#) 79.2% and [French Alternative Energies and Atomic Energy Commission](#) (CEA) 20.8%; previously [Areva](#) and CEA<sup>[citation needed]</sup>)
  - 50% [Ministero dell'Economia e delle Finanze](#) of Italy ([Finmeccanica](#) until 2004, [Cassa Depositi e Prestiti](#) until 2010, both between 2004-2009)<sup>[citation needed]</sup>

## Company structure

Following an earlier failure, STMicroelectronics has stayed out of the volatile markets for [DRAM](#) and [PC](#) microprocessors. In 1994, it attempted to launch compatible [Intel 80486](#) microprocessors in partnership with American company [Cyrix](#). Only model one was completed, the 1995 Cyrix M1 microprocessor, which was intended to compete with Intel's [Pentium](#) family.<sup>[citation needed]</sup>

It did achieve some success, however, in the PC-compatible [x86 embedded systems](#) market with its STPC [SoC](#) line, culminating in the 486-class STPC Atlas, which reached end-of-life in 2008.

## Manufacturing facilities

Unlike so-called [fabless semiconductor companies](#), STMicroelectronics owns and operates its own semiconductor [wafer fabs](#). The company owned five 8 inch (200 mm) wafer fabs and one 12 inch (300 mm) wafer fab in 2006.<sup>[citation needed]</sup> Most of the production is scaled at 0.18  $\mu\text{m}$ , 0.13  $\mu\text{m}$ , 90 nm and 65 nm (measurements of transistor gate length). STMicroelectronics also owns back-end plants, where silicon dies are assembled and bonded into plastic or ceramic packages.<sup>[8]</sup>

Major sites include:<sup>[citation needed]</sup>

### Grenoble, France

[Grenoble](#) is one of the company's most important R&D centres, employing around 4,000 staff. The Polygone site employs 2200 staff and is one of the historical bases of the company (ex SGS). All the historical wafer [fab](#) lines are now closed but the site hosts the headquarters of many divisions (marketing, design, industrialization) and an important R&D center, focused on silicon and software design and fab process development.

The [Crolles](#) site hosts a 200 mm (8 in) and a 300 mm (12 in) fab and was originally built as a common R&D center for submicrometre technologies as part of the 1990 *Grenoble 92* partnership between SGS-Thomson and [CNET](#), the R&D center of French telecom company **France Telecom**. The 200 mm (8 in) fab, known as Crolles 1, is the company's first and was built as part of a 1991 partnership between SGS-Thomson and Philips to develop new manufacturing technologies. Crolles 1 was opened on September 9, 1993 by Gérard Longuet, French minister for industry.

The 300 mm (12 in) fab was inaugurated by French president [Jacques Chirac](#), on February 27, 2003. It includes a R&D center which focuses on developing new nanometric technology processes for 90 nm to 32 nm scale using 300 mm (12 in) wafers and it was developed for *The Crolles 2 Alliance*'. This alliance of STMicroelectronics, [TSMC](#), [NXP Semiconductors](#) (formerly [Philips](#) semiconductor) and [Freescale](#) (formerly [Motorola](#) semiconductor) partnered in 2002 to develop the facility and to work together on process development. The technologies developed at the facility were also used by global semiconductor [foundry TSMC](#) of Taiwan, allowing TSMC to build the products developed in Crolles on behalf of the Alliance partners who required such foundry capacity. A new fab is under construction since 2015.

## **Rousset, France**

Employing around 3,000 staff, [Rousset](#) hosts several division headquarters including [smartcards](#), [microcontrollers](#), and [EEPROM](#) as well as several R&D centers. Rousset also hosts an 8-inch (200 mm) fab which was opened on May 15, 2000 by French prime minister [Lionel Jospin](#).

The site opened in 1979 as a 100 mm (3.9 in) [fab](#) operated by Eurotechnique, a joint venture between [Saint-Gobain](#) of France and [National Semiconductor](#) of the US. Rousset was sold to Thomson-CSF in 1982 as part of the French government's 1981-82 nationalization of several industries. As part of the nationalisation, a former Thomson plant in the center of [Aix-en-Provence](#) operating since the 1960s was closed and staff were transferred to the new Rousset site. The original 100 mm (4 in) [fab](#) was upgraded into 130 mm (5 in) and later 150 mm (6 in) fab in 1996. It is now being shut down.

In 1988, a small group of employees from the Thomson Rousset plant (including the director, Marc Lassus) founded a start-up company, [Gemalto](#) (formerly known as [Gemplus](#)) which became a leader in the smartcard industry.

## **Tours, France**

Employing 1,500 staff, this site hosts a [fab](#) and R&D centers. <sup>[[citation needed](#)]</sup>

## **Milan, Italy**

Employing 6,000 staff, the Milan facilities match Grenoble in importance. [Agrate Brianza](#), employs around 4000 staff and is a historical base of the company (ex SGS). The site has several [fab](#) lines (including an 300 mm (12 in) fab) and an R&D center. [Castelletto](#), employs 300 to 400 staff and hosts some divisions and R&D centers.

Update-2012: Numonyx JV (with Intel) is acquired by Micron As such, R2 Fab (Agrate previous R&D 200mm Fab) is currently a Micron entity

## **Catania, Italy**

The [Catania](#) plant in [Sicily](#) employs 5,000 staff and hosts several [R&D centers](#) and divisions, focusing on [flash memory](#) technologies as well as two [fabs](#). The plant was launched in 1961 by

ATES to supply under licensing to [RCA](#) of the US and initially using [Germanium](#). The site's two major wafer fabs are a 200 mm (8 in) fab, opened in April 1997 by [Romano Prodi](#), president of the Italian council and a 300 mm (12 in) fab that has never been completed and which was transferred in its current state to Numonyx in 2008.

## **Caserta, Italy**

Stmicro esim and sim production facility for embedded form factor esim. It is the center of excellence in the field for the company.[\[1\]](#)

## **Kirkop, Malta**

As of 2010, ST employed some 1,500 people in [Kirkop](#), making it the largest [private sector employer](#), and the country's leading [exporter](#).<sup>[9]</sup>

## **Singapore**

In 1970, SGS created its first assembly back-end plant in Singapore, in the area of [Toa Payoh](#). Then in 1981, SGS decided to build a wafer [fab](#) in Singapore. The Singapore technical engineers have been trained in Italy and the fab of Ang Mo Kio started to produce its first wafers in 1984. Converted up to 200 mm (8 in) fab, this is now an important 200 mm (8 in) wafer fab of the group. Ang Mo Kio also hosts some design centers. The site currently employs 6000 staff.<sup>[citation needed]</sup>

Update-2012: Numonyx JV (with Intel) is acquired by Micron in 2010. As such, AMK8 Fab (200mm HVM Fab) is currently a Micron entity. AMK5 and AMK6 remains to be STM entities. Update-2019: AMK8 has been reacquired by STM from Micron.

## **Tunis, Tunisia**

Application, design and support. about 110 employees. Divisions: MCD

## **Other sites**

### **Administrative headquarters**

- [Geneva](#), Switzerland: Corporate headquarter which hosts most of the ST top management. It totals some hundred of employees.
- [Saint-Genis-Pouilly](#), France, near Geneva: A few hundred of employees. Headquarters for logistics.
- [Paris](#): Marketing and support.

### **Assembly plants**



- [Malta](#): In 1981, SGS-Thomson (now STMicroelectronics) built its first assembly plant in Malta. STMicroelectronics is, as of 2008, the largest private employer on the island, employing around 1,800 people.
- [Muar, Malaysia](#): around 4000 employees. This site was built in 1974 by Thomson and is now an assembly plant.
- [Shenzhen](#), Guangdong province, China, near [Hong Kong](#): In 1994, ST and the Shenzhen Electronics Group signed a partnership to construct and jointly operate an assembly plant (ST has majority with 60%). The plant is located in Futian Free Trade Zone and became operational in 1996. It has around 3,300 employees. A new assembly plant is built in Longgang since 2008, and closed up till 2014. The R&D, design, sales and marketing office is located in the Hi-tech industrial park in Nanshan district.
- [Calamba City](#), in the province of [Laguna](#), Philippines,: In 2008, ST acquired this plant from [NXP Semiconductors](#). Initially as part of joint venture with NXP but later acquired the whole share turning it into a full-fledged STMicroelectronics Assembly and Testing plant. Currently it employs 2,000 employees.

## Design centers

- [Rabat, Morocco](#): A design center that employs 160 people.
- [Naples, Italy](#): A Design center employing 300 people.
- [Lecce, Italy](#): HW & SW Design Center which hosts 20 researchers in the Advanced System Technology group.
- [Ang Mo Kio, Singapore](#): In 1970, SGS created its first assembly back-end plant in Singapore, in the area of Toa Payoh. Then in 1981, SGS decided to build a wafer fab in Singapore. The Singapore technical engineers have been trained in Italy and the fab of Ang Mo Kio started to produce its first wafers in 1984. Converted up to 8 inch (200 mm) fab, this is now an important 8 inch (200 mm) wafer fab of the ST group. Ang Mo Kio also hosts design centers for various groups.
- [Greater Noida, India](#): The Noida site was launched in 1992 to conduct software engineering activities. A silicon design center was inaugurated on February 14, 1995. With 120 employees, it was the largest design center of the company outside Europe at the time. In 2006, the site was shifted to [Greater Noida](#) for further expansion. The site hosts mainly design teams. It is now primarily involved with the design of home video products ([Set-Top Box](#), [DVD](#)), [GPS](#) and [Wireless LAN](#) chips, and accompanying software. Worldwide Data center support is also transferred to Greater Noida in 2004. The employee strength in Greater Noida is around 2000. This also includes employees of ST-Ericsson.
- [Santa Clara, California, \(Silicon Valley\)](#), United States: 120 staff in marketing, design and applications.
- [La Jolla, California, \(San Diego\)](#), United States): 80 staff in design and applications.
- [Lancaster, Pennsylvania](#), U.S.: Application, support, and marketing.
- [Prague](#), Czech Republic: 100 to 200 employees. Application, design and support.
- [Tunis, Tunisia](#): 110 employees. Application, design and support.
- [Sophia Antipolis](#), near [Nice](#), France: Design center with a few hundred employees.
- [Edinburgh](#), Scotland: 200 staff focused in the field of imaging.



- [Ottawa, Ontario](#), Canada: In 1993, SGS-Thomson purchased the semiconductor activities of [Nortel](#) which owned in Ottawa an R&D center and a fab. The fab was closed in 2000, however, a design, R&D centre and sales office is operating in the city.
- [Toronto, Ontario](#), Canada: HW & SW Design Center primarily involved with the design of video processor ICs as part of ST's TVM Division.
- [Palermo, Sicily](#), Italy: Design Center.
- [Bangalore](#), India: HW and SW design center employing more than 250 people (Including the employees of [ST Ericsson](#) and [Genesis Microchip](#)).
- [Zaventem](#), Belgium: 100 employees. Design & Application Center. Closed in 2013
- [Helsinki](#), Finland: Design Center.
- [Turku](#), Finland: Design Center.
- [Oulu](#), Finland: Design Center.
- [Tampere](#), Finland: Design Center.
- [Longmont, Colorado](#) USA: Design Center.
- [Graz](#), Austria: NFC Competence Center.<sup>[10]</sup>

## Closing sites

The [Phoenix, Arizona](#) 8 inch (200 mm) fab, the [Carrollton, Texas](#) 6 inch (150 mm) fab, and the [Ain Sebaa](#), Morocco fab are beginning rampdown plans, and are destined to close by 2010.<sup>[11]</sup>

The [Casablanca](#), Morocco site consists of two assembly parts (Bouskoura and Aïn Sebaâ) and totals around 4000 employees. It was opened in the 1960s by Thomson.

The [Bristol](#), United Kingdom site employing well over 300 at its peak (in 2001/2) but was ramped down to approx. 150 employees at close by early 2014.

The [Ottawa, Ontario](#), Canada plant (approx. 450 employees) will close down by 2013 end.<sup>[12]</sup>

## Closed sites

- [Rennes](#), France hosted a 6-inch (150 mm) fab and was closed in 2004
- [Rancho Bernardo, California](#), a 4-inch (100 mm) fab created by Nortel and purchased by SGS-Thomson in 1994, after which it was converted into a 6-inch (150 mm) fab in 1996.
- SGS's first presence in the US was a sales office based in [Phoenix](#) in the early 1980s. Later, under SGS-Thomson, an 8-inch (200 mm) fab was completed in Phoenix in 1995. The company's second 8" [fab](#) after Crolles 1, the site was first dedicated to producing microprocessors for [Cyrix](#). On July 10, 2007, ST said that it would close this site, and in July 2010 the shell of the Phoenix PF1 FAB was bought by Western Digital Corporation.<sup>[11]</sup>
- The [Carrollton, Texas](#) site was built in 1969 by [Mostek](#), an American company founded by former employees of [Texas Instruments](#). In 1979, Mostek was acquired by [United Technologies](#) which sold it to Thomson Semiconducteurs in 1985. Initially equipped with a 4-inch (100 mm) fab, it was converted into a 6-inch (150 mm) [fab](#) in 1988. The [Colorado Springs](#) activities of British company [INMOS](#) were transferred to Carrollton in 1989 following its acquisition by SGS Thomson. Since then the site has been refocused

to [wafer](#) testing. On July 10, 2007, ST announced it would close this fab, and it was finally closed in 2010.<sup>[11]</sup>

- [Bristol, UK](#) This R&D site housed the British company [Inmos](#) which in 1978 began development of the famous [Transputer](#) microprocessor. The site was acquired with Inmos in 1989, and was primarily involved with the design of home video and entertainment products (e.g. [Set-Top Box](#)), [GPS](#) chips, and accompanying software. At its peak the site employed more than 250 employees. The site officially closed on March 31, 2014.<sup>[13]</sup>

## Future locations

- On August 8, 2007, ST bought [Nokia's microchip](#) development team and plans to invest heavily in development of cellular [ASIC](#) applications. The purchase included Nokia's ASIC team in [Southwood \(UK\)](#) and the company plans several sites in Finland.<sup>[14][15][16]</sup>

## Solar cells

STMicroelectronics is involved in a project to produce [plastic solar cells](#) that employ a matrix of [carbon nanotubes](#) to convert photons to electrical power.<sup>[17]</sup>