STMicroelectronics

Microcontrollers and Digital ICs Group (MDG)

Microcontrollers, Memories & Secure MCUs

Our general purpose microcontroller (MCU) product portfolio largely contains families of products based on 32-bit ARM®-based Cortex®-M0, -M0+, -M3, -M4 and -M7 cores. In 2020, we introduced our STM32L5 series for the Mass Market. STM32L5 is based on the Cortex®-M33 with the ARM® TrustZone® enabling a more secure IoT, and obtained PSA-level-2 (Platform Security Architecture) security certification. For each product family, a broad selection of features is available with respect to MCU performance, ultra-low-power, memory size, peripherals, and packaging. Numerous dedicated families include features such as our TouchGFX advanced 3D graphics, dedicated peripherals for industrial motor controls, security features, and low-power wireless connectivity. Our microprocessors (MPU) product line targeting the industrial market is based on 32- bit ARM®-based® Cortex®-A7 Core, complemented by an integrated Cortex®-M4 and a dedicated Linux distribution. In 2021, we introduced our STM32U5 series for secure & Ultra-Low-Power applications for the Mass Market. STM32U5 is based on the Cortex®-M33 with the ARM® TrustZone® enabling a more secure IoT. STM32U5 is the first STM32 MCU to receive PSA-level-3 (Platform Security Architecture) and SESIP (Security Evaluation Standard for IOT Platform) level-3 security certification, taking IOT cyber-protection to the next level.

In 2020, we acquired three companies to expand our position in the Wireless IoT space, namely (i) Riot Micro for their Cellular IoT product; (ii) BeSpoon for their industrial UWB product; and (iii) SOMOS Semiconductor for their Cellular IoT RF Front-End-Modules.

In 2021, we continued to strengthen our STM32 Wireless MCU portfolio, with the first STM32 Wireless module supporting all-in-one 2.4GHz (STM32WB based) supporting BLE 5.2 ready, Zigbee 3.0 and OpenThread; a new STM32WL line supporting LoRaWAN, Sigfox, MioTy, WMBUS and ZetA protocol; a new STM32WB 2.4GHz MCU supporting Audio full-duplex over Bluetooth LE. Finally ST joined the CSA alliance (Zigbee) as board member and ST joined the MATTERS (Connected Home over IP) initiative.

In 2021, we acquired Edge-AI Software specialist, Cartesiam. With this acquisition, we are reinforcing our AI-at-the-edge MCU strategy and strengthening our technology portfolio to address the full spectrum of embedded machine-learning needs. This acquisition will provide all STM32 users and customers with additional flexibility to integrate machine-learning into their solution.

The STM32 family based on the ARM® Cortex®-M and -A processors are designed to offer significant degrees of freedom to microcontroller and microprocessors users. The product range combines very high performance, real-time capabilities, digital signal processing, and low-power, low-voltage operation, while maintaining full integration and ease of development.

We offer an unparalleled range of STM32 devices, accompanied by a vast choice of tools and software including support for Industrial Safety Standard IEC 61508 SIL2/3, Human Machine Interface ("HMI"). We have extended HMI to Alexa voice-command with an Amazon-qualified reference design. Our dedicated CubeAI toolbox for Artificial Intelligence includes Machine learning and Neural Networks. This comprehensive portfolio makes our STM32 an ideal choice for enabling ever smarter objects for an increasingly broad range of applications.

We offer leading products for secure applications in traditional smartcard applications and embedded security applications. Throughout our 20+ year presence in the smartcard security industry, we have supplied the market's most advanced technologies and solutions, with a continuous focus on innovation and the highest levels of security certification. Our expertise in security is key to our leadership in the mobile communications, banking, digital identity, IoT security, pay-TV and transport fields. We are the leading supplier for the new Embedded SIM market and we are scaling-up in secure mobile transactions using Near Field Communication ("NFC") for mobile phones, trusted computing, brand protection and security for IoT devices. Our secure microcontroller product portfolio offers compliance with the latest security standards up to Common Criteria EAL6+, ICAO, and TCG1.2. Our secure microcontrollers cover a complete range of interfaces for both contact and contactless communication, including ISO 7816, ISO 14443 Type A & B, NFC, USB, SPI and I²C.

Our secure-microcontroller platforms rely on a highly secure architecture combined with leading-edge CPUs, such as ARM®'s SC300 and SC000, and ST proprietary advanced embedded non-volatile memory technologies such as 40 nm embedded Flash and 80 nm embedded EEPROM technologies.

Our wide range of small density serial non-volatile memories has among the highest industry performance. The serial EEPROM family ranges from 1 Kbit to 4 Mbits and offers the most common serial interfaces to facilitate adoption: I²C, SPI and Microwire. Our wide range of products are also automotive compliant. Very small packages options are available for applications where space is critical, such as in camera modules for consumer and mobile devices.

We offer RF memory and transceiver products that are key for logistic and retail applications and are based on the largest industry standard for short range High-Frequency RFID ISO 14443 and 15693. The products are compatible with all NFC technology standards, as defined by the NFC Forum, where ST plays a key role, including the latest NFC type 5. We offer one of the most comprehensive portfolios, which includes NFC/RFID readers, Dynamic NFC/RFID tags, also known as Dual Interface NFC/RFID tags, and Standalone NFC/RFID tags. We also offer RFID Readers operating in the UHF bands for longer range logistics operation.

RF Communications

We offer RF, digital and mixed-signal ASICs, which are based on our proprietary FD-SOI, RF-SOI, and SiGe technologies, as well as foundry-based FinFET technologies, for 4G-5G and Satellite wireless communications RF Front-End Modules, and wired communications infrastructure and Satellite terminals.

We also use our proprietary FD-SOI, RF-SOI, and SiGe technologies to provide RF and mmWave components, based on our know-how in analog and digital beamforming design techniques, to address Massive MIMO Antenna Architectures.

Our unique combination of differentiated Silicon technologies and design expertise is particularly pertinent to address the markets for satellite constellations and user terminals, 5G infrastructure RF Front-End, and transceivers for very-short-range ultra-low-power 60GHz multi-Gigabit/second links.