GEEHY SEMICONDUCTOR

CORPORATE OVERVIEW
May, 2022

Geehy
SEMICONDUCTOR | **TECHNOLOGY INSPIRED.**

Who We Are

One of China's Fabless Top 10 Companies (MCU)
One of China's Chip Design Top 50 Companies

500+ Engineers

6 R&D Centers

450+ Millions Annual Shipments

660+ Patent Families

Over **100** sales offices & agencies serving over **10,000** customers across the globe

Our Mission

Drive industry innovation
Create value for customers continually

Our Vision

Become an international leading integrated circuit design enterprise

Our Development Process

2004~2017

Focus on dedicated encryption chips and expand in the printing field.

2004

Established in Zhuhai, China. Started dedicated encryption chip business.

2012

Launched multi-core SoC chips.

2015

Became the world's top manufacturer of encryption chips in the printing field.

2018

Obtained permanent authorization of CPU from Arm® Cortex®-M0+/M3/M4 and released first 32-bit general-purpose MCU.

2019

Geehy Semiconductor was founded and strives for the market of MCUs.

2020

Established Geehy US branch and entered into the international market.

2022

Completed the overall technical and product layout of non-printing chips; launched AEC-Q100 compliant automotive MCUs.

2019~ Future

Focus on general-purpose MCUs, and mixed signal analog ICs and expand in industrial, consumer electronics, medical and automotive fields.

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How We Strengthen Our Products

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Technical Capacity

arm **C·SKY** **RISC-V**

- **Multi-core Heterogeneous Chip Design Capability**
- **Secure Embedded eSE Chip Design Capabilities**
- **CPU Design and Application Capability**

Supply Chain

Continue to promote the cooperation of the whole industry chain

Through upstream and downstream cooperation between IC design companies and manufacturing enterprises, an independent and controllable industrial chain in IC design, key IP, characteristic processes, packaging, testing and production capacity is formed to improve the quality of products.

SYNOPSYS	cadence	arm	tsmc	CHROMA
Mentor A Siemens Business	FARADAY	UMC	SMIC	ISSI

Reliability Assurance Platform

- High investment & high-level laboratory
- High-specification industrial-grade test solution
- Built an independent laboratory for automotive-grade ICs

Electrical Verification

Component Reliability

Environmental Reliability

Failure Analysis

Application

Our Product Structure
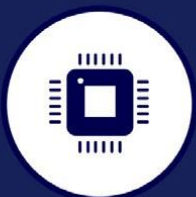
APM32
MCU

Industrial
SoC-eSE

Mixed Signal
Analog IC

Printer SoC

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Focusing on Long-life Cycle Products

Smart Home
MCU&BLE

Consumer Electronics
MCU&BLE

Automotive
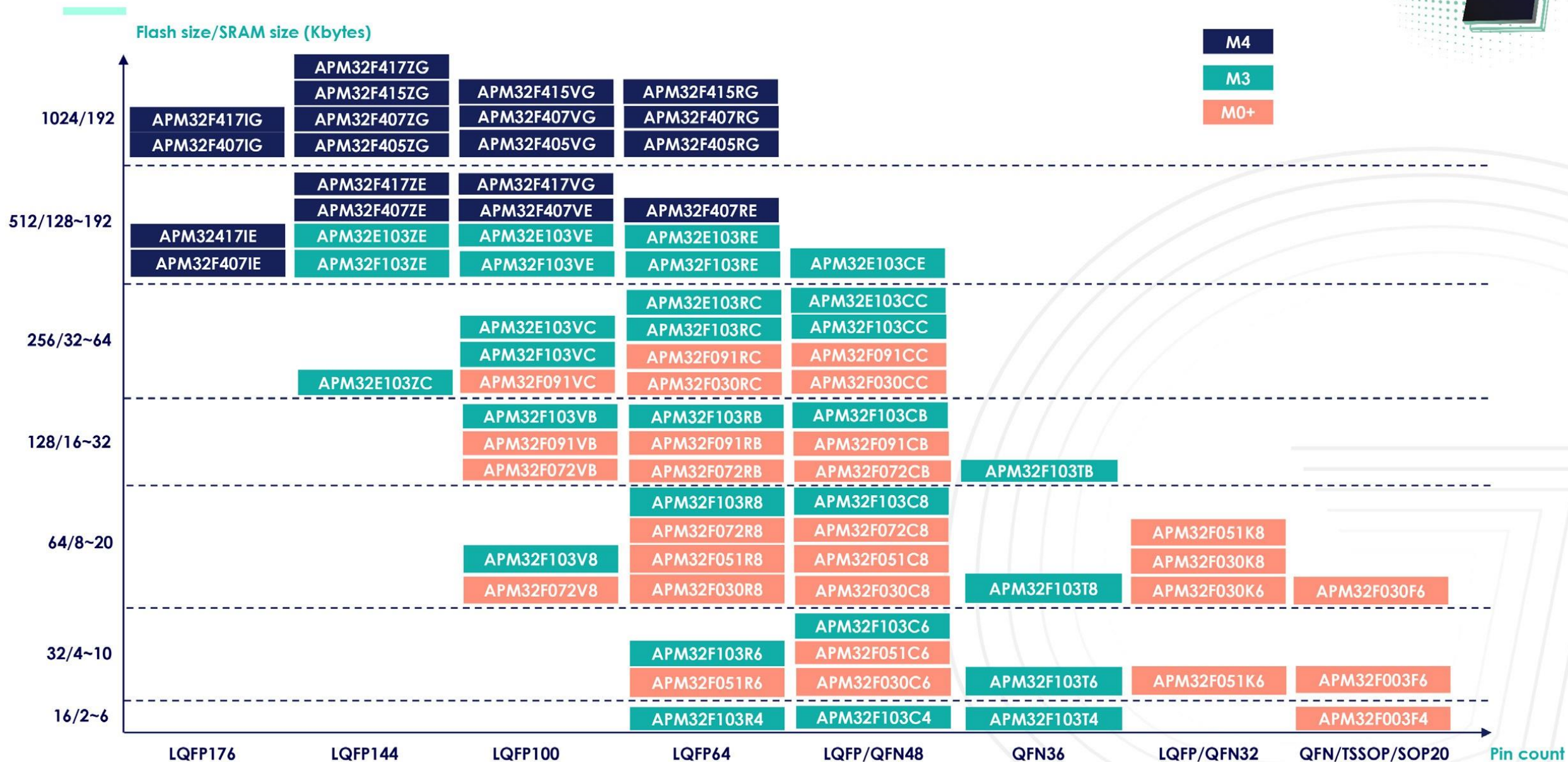MCU, Security MCU

Industry Control
MCU&SoC-eSE

Smart Energy
SoC-eSE, MPU, Security MCU

Communication Facilities
MCU&SoC

APM32 Roadmap

Flash size/SRAM size (Kbytes)

Legend: M4 (dark navy), M3 (teal), M0+ (salmon)

Flash/SRAM	LQFP176	LQFP144	LQFP100	LQFP64	LQFP/QFN48	QFN36	LQFP/QFN32	QFN/TSSOP/SOP20
1024/192	APM32F417IG, APM32F407IG	APM32F417ZG, APM32F415ZG, APM32F407ZG, APM32F405ZG	APM32F415VG, APM32F407VG, APM32F405VG	APM32F415RG, APM32F407RG, APM32F405RG				
512/128~192	APM32417IE, APM32F407IE	APM32F417ZE, APM32F407ZE, APM32E103ZE, APM32F103ZE	APM32F417VG, APM32F407VE, APM32E103VE, APM32F103VE	APM32F407RE, APM32E103RE, APM32F103RE	APM32E103CE			
256/32~64		APM32E103ZC	APM32E103VC, APM32F103VC, APM32F091VC	APM32E103RC, APM32F103RC, APM32F091RC, APM32F030RC	APM32E103CC, APM32F103CC, APM32F091CC, APM32F030CC			
128/16~32			APM32F103VB, APM32F091VB, APM32F072VB	APM32F103RB, APM32F091RB, APM32F072RB	APM32F103CB, APM32F091CB, APM32F072CB	APM32F103TB		
64/8~20			APM32F103V8, APM32F072V8	APM32F103R8, APM32F072R8, APM32F051R8, APM32F030R8	APM32F103C8, APM32F072C8, APM32F051C8, APM32F030C8	APM32F103T8	APM32F051K8, APM32F030K8, APM32F030K6	APM32F030F6
32/4~10				APM32F103R6, APM32F051R6	APM32F103C6, APM32F051C6, APM32F030C6	APM32F103T6	APM32F051K6	APM32F003F6
16/2~6				APM32F103R4	APM32F103C4	APM32F103T4		APM32F003F4

Pin count →

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Our Target & Market Layout

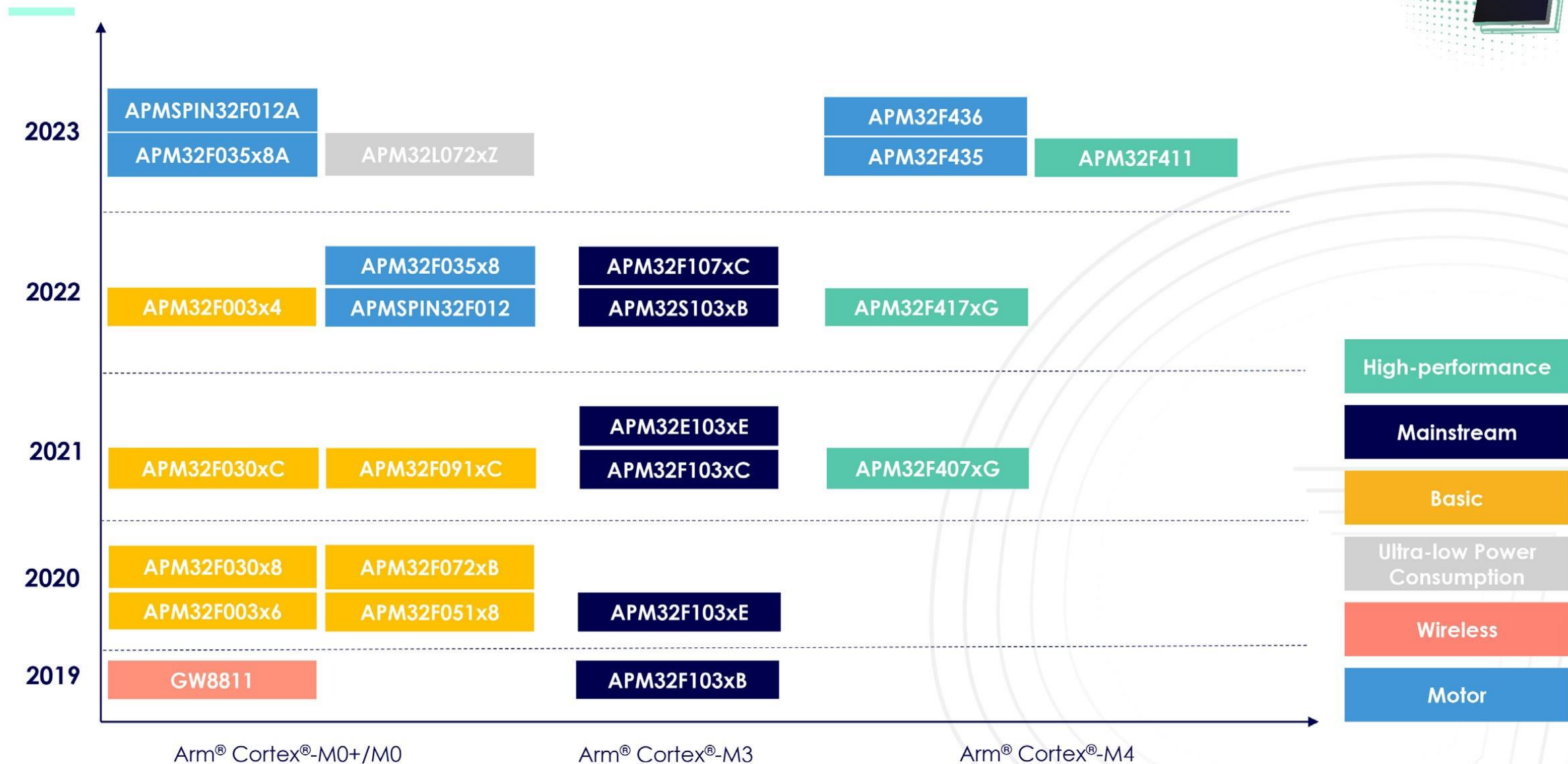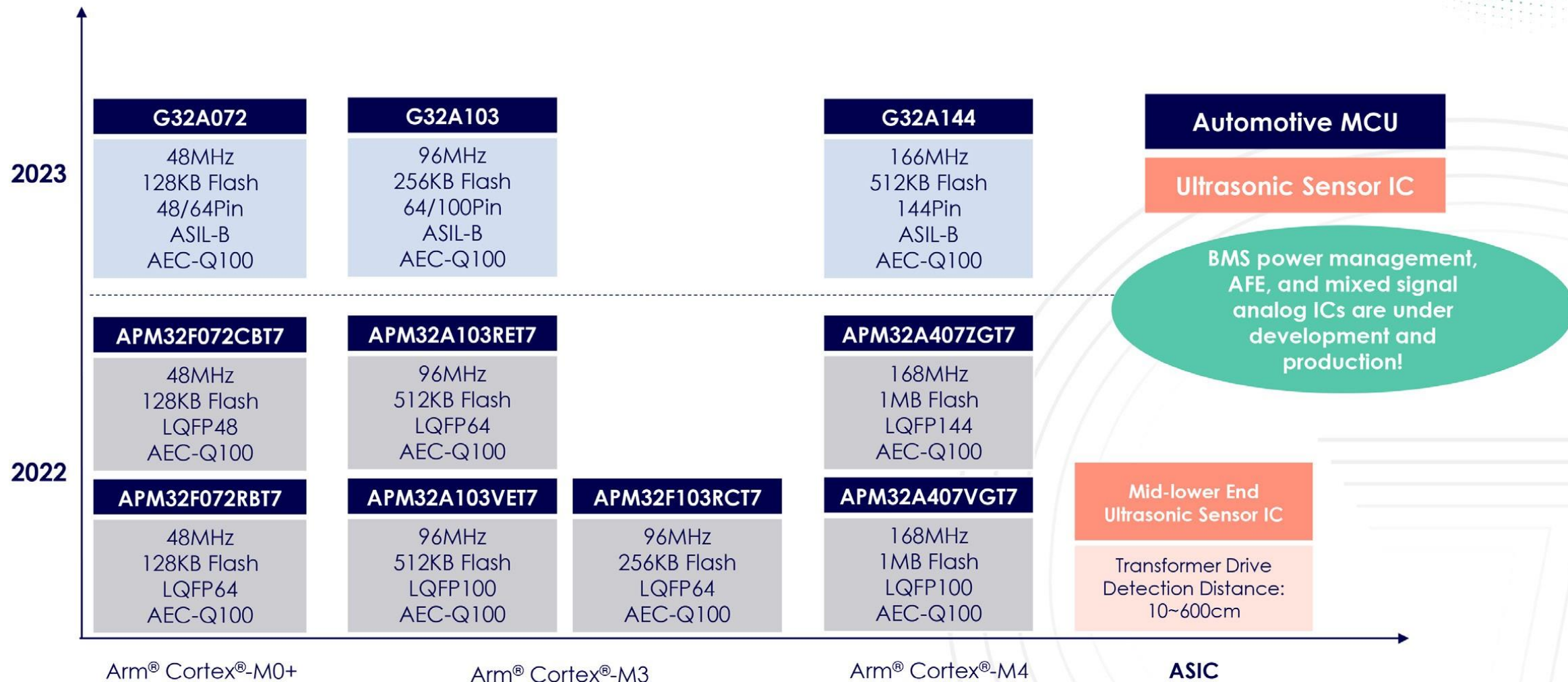| Automotive & New Energy	Industrial & Security	Consumer Electronics
Launched the automotive-grade MCU that complies with the ISO26262 functional safety standard, and launched the automotive-grade sensors.	Accelerate the research and development of **MCU/SoC**, **network communication security IC**, **mixed signal analog IC and sensor IC**.	Keep up with market trends and use a broad product portfolio (**MCUs**, **sensors**) to meet the diverse needs of smart home market applications.
Strategic layout in **ECU market**, **BMS system**, **lidar applications**, etc.	Expand the application of products in the fields of **electric power**, **new energy**, **smart coal mine**, and **carbon neutrality**, and allocate more customer support and technical support resources.	Focus on mid-to-high-end **smart home appliances**, **personal consumer electronics**, and provide customers with differentiated products and **customized** solutions.
In-depth cooperation with domestic OEMs and Tier 1 supporting factories, and full coordination in product definition, iterative upgrade and application verification.	Fully cooperate with partners in industrial application solutions and verification to form an independent and controllable industrial chain in chip design, key IP, packaging, testing and production capacity.	Fully cooperate with customers in product definition, iterative upgrade and application verification to provide reliable quality, long-life-cycle products and services.

Our Roadmap (Industrial MCUs)

2023
- APMSPIN32F012A
- APM32F035x8A
- APM32L072xZ
- APM32F436
- APM32F435
- APM32F411

2022
- APM32F035x8
- APM32F003x4
- APMSPIN32F012
- APM32F107xC
- APM32S103xB
- APM32F417xG

2021
- APM32F030xC
- APM32F091xC
- APM32E103xE
- APM32F103xC
- APM32F407xG

2020
- APM32F030x8
- APM32F072xB
- APM32F003x6
- APM32F051x8
- APM32F103xE

2019
- GW8811
- APM32F103xB

Arm® Cortex®-M0+/M0   Arm® Cortex®-M3   Arm® Cortex®-M4

Legend:
- High-performance
- Mainstream
- Basic
- Ultra-low Power Consumption
- Wireless
- Motor

Our Roadmap (Automotive MCUs)

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	Arm® Cortex®-M0+	Arm® Cortex®-M3	Arm® Cortex®-M3	Arm® Cortex®-M4	ASIC
2023	**G32A072** 48MHz 128KB Flash 48/64Pin ASIL-B AEC-Q100	**G32A103** 96MHz 256KB Flash 64/100Pin ASIL-B AEC-Q100		**G32A144** 166MHz 512KB Flash 144Pin ASIL-B AEC-Q100	**Automotive MCU** **Ultrasonic Sensor IC** BMS power management, AFE, and mixed signal analog ICs are under development and production!
2022	**APM32F072CBT7** 48MHz 128KB Flash LQFP48 AEC-Q100	**APM32A103RET7** 96MHz 512KB Flash LQFP64 AEC-Q100		**APM32A407ZGT7** 168MHz 1MB Flash LQFP144 AEC-Q100	
	APM32F072RBT7 48MHz 128KB Flash LQFP64 AEC-Q100	**APM32A103VET7** 96MHz 512KB Flash LQFP100 AEC-Q100	**APM32F103RCT7** 96MHz 256KB Flash LQFP64 AEC-Q100	**APM32A407VGT7** 168MHz 1MB Flash LQFP100 AEC-Q100	**Mid-lower End Ultrasonic Sensor IC** Transformer Drive Detection Distance: 10~600cm

*A full range of automotive MCUs, passed AEC-Q100 automotive certification

Automotive & New Energy Layout

Layout of microcontrollers, sensors, and battery management for new energy vehicles

Automotive General-purpose MCUs

- A full range of automotive MCUs, covering Arm® Cortex®-M0/M3/M4/M7 and A53 cores.
- Comply with various automotive grade certifications: such as AEC-Q100, functional safety (ISO26262) up to ASIL D.
- Rich digital and analog peripheral interfaces and modules with independent IP.

Automotive Dedicated Interfaces & Sensors

- Vehicle network interface ICs
- Dedicated ICs for battery management
- High-precision sensor signal processing
- Dedicated encryption ICs for automotive communication
- Dedicated ICs for automotive power

Automotive Dedicated MCUs

- A dedicated motor control IC that integrates MCU and LIN transceiver. The product integrates a variety of analog and digital peripheral interfaces, with full functions and small size
- Automotive engine control dedicated IC with multiple Arm® M7 cores that meets ASIL D level
- Automotive-specific security chip integrating MCU and encryption and decryption engine

Solutions

- Overall solution for battery management
- Motor Control Solutions
- In-vehicle communication safety ground preparation solution
- Reversing radar and autonomous parking radar product overall solution

Industrial & Security Layout

Achieve effective breakthroughs in key chips in the industrial field

Mid-to-high-end Industrial Control MCUs

- Arm® Cortex®-M0+/M3/M4 core
- Industrial enhanced international standard
- Operating temperature -40℃ ~ 105℃, ESD up to 8KV
- IEC61508 SIL3 certified

Application Field: Motor drive, inverter, HMI, building control, elevator control, etc.

SoC-eSE Security Controller & Network Communication IC

- Based on the China's C-SKY multi-core heterogeneous security encryption architecture
- Coprocessor: DSP/ASIP/NPU/GPU
- eSE embedded security technology
- Cryptographic security engine, trusted architecture

Application Field: Smart energy, distribution network equipment, numerical control devices, network terminals, printers, etc.

Industrial Servo Drive & Motor Control Solution

- Servo Drive
  - Control algorithm
  - Current loop bandwidth ≥ 3.2KHz, speed loop bandwidth ≥ 800Hz
  - Flexible software architecture and expansion space
- Motor Control
  - BLDC motor control dedicated SoC
  - Motor control algorithm library

Application Field: Servers, inverters, CNC machine tools, industrial robots, industrial terminal equipment, etc.

High Performance Mixed Signal Analog IC

- High performance operational amplifier - electrochemical sensor
- High-precision ADC, high-speed ADC architecture
- Provide customized encryption design
- Provide mixed signal analog and digital-analog hybrid IC and system solutions

Application Field: Intelligent hardware, industrial infrastructure, 5G base stations, communication modules.

Consumer Electronics Layout

Promote energy-saving, efficient and intelligent development of high-end consumer electronics

High-end Consumer MCUs	BLE5.1 SoC	Motor Control Solutions
• Arm® Cortex® -M0+/M3/M4 cores • Low power consumption, high performance, high stability • Operating temperature -40℃ ~ 105℃, ESD up to 8KV • IEC61508 SIL3 certified and USB-IF test certified	• Dual-core architecture: Arm® Cortex®-M4F + domestic CK802 • Support AoA/AoD positioning, MESH networking, transparent transmission, OTA • Excellent RF characteristics and anti-interference performance	• BLDC motor control dedicated SoC • Motor Control Algorithm Library • Fast response speed, wide application range, low solution steady-state error • Provide industry-specific production-grade reference designs
Application Field: Smart home appliances, medical equipment, access control systems, smart lighting, etc.	**Application Field:** Wearable devices, medical devices, location services, human-computer interaction, etc.	**Application Field:** Inverter home appliances, cordless vacuum cleaners, fitness equipment, electric bicycles, power tools, etc.

Friendly Ecosystem for Development

Development Tools

IAR SYSTEMS

arm KEIL

Operating System

F103/F407	F103
freeRTOS RT-Thread	

Hardware Tools

The Geehy-Link is a CMSIS-DAP compatible debugger/ programmer which allows developers to debug applications from a host computer directly to an APM32 via a micro-USB cable.

Support development via the J-Link emulator

APM32 PROG
MODE STATUS
www.geehy.com
Geehy

The APM32-Programmer is a stand alone programmer for use with the APM32-PROG UI software application. This device allows a user to execute several operations to manipulate the contents of the internal flash within an APM32.