

32-Bit Industrial Grade MCUs and Applications



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Company Profile

Geehy Semiconductor Co., Ltd. is an IC Fabless company dedicated to developing industrial & automotive grade Microcontrollers, mixed-signal analog ICs and SoCs, its parent company is Ninestar Corporation (002180. SZ).

With 20 years of IC design experience and embedded system capability, the Geehy team can provide customers with core and reliable chip products that enable accurate sensing, secure transmission, and real-time control, helping them to expand in smart home, high-end consumer electronics, automotive electronics, industrial controls, and smart energy.

20 Years

IC chip design experience

450 Million

Annual chip shipment

500 People

R&D design team

4 Offices

Shanghai / Shenzhen / Chengdu / Guangzhou

6 R&D centers

Zhuhai / Shanghai / Zhengzhou
Hangzhou / Chengdu / North Carolina (USA)

**Leading Chip Design
Technology**

CPU design & application
Heterogeneous multi-core chip design
Secure encryption eSE chip design

Application Field



Consumer Electronics



Industrial Control



Medical Equipment



In 2019, Gehy chip have been used in consumer electronics, industrial control, medical equipment, and other fields.

Automotive Electronics



Intelligent Transportation



Intelligent Energy



In 2020, Gehy officially layout automotive electronics, intelligent transportation, and intelligent energy. In the future, Gehy will continue to focus on the R&D innovation of technology and iterative updating of products and is committed to providing more independent, controllable, safe, and reliable chips and applications .

Industrial Reliability Assurance Platform

A high reliability and high stability quality assurance platform for industrial applications, which can provide full life cycle quality control to meet the core needs of customers.



High-level laboratory: The national CNAS laboratory certification

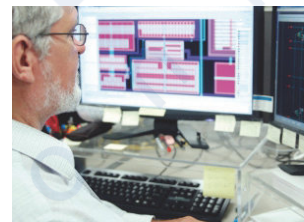
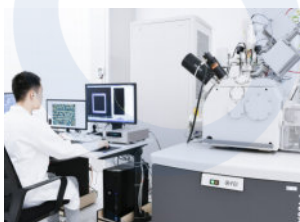
- Covering an area of over 2100m² with nearly \$15 million worth of inspection & testing equipment.
- Five functional laboratories: testing, failure analysis, reliability, electricity, application
- Automotive-grade chip analysis and testing capabilities.
- Customize reliability test solutions according to customer requirements.

Lifecycle management

Reliability test

Security certificate

Security mechanism



High-security certification: Functional security and information security certification

- APM32F103 series MCUs have obtained IEC 61508
- APM32E103/F072/F030 series MCUs have obtained IEC 60730
- Automotive grade MCUs have obtained AEC-Q100
- Geely have obtained ISO 26262 automotive safety certification



IEC 61508



IEC 60730



AEC-Q100



ISO 26262

High-quality ecology: First-class development partner and supply chain

synopsys

cadence

arm

华微电子
CR MICRO

Ansyes

FARADAY

UMC

华虹集团
HUAHONG GROUP

tsmc

SMIC

JCET

TERADYNE

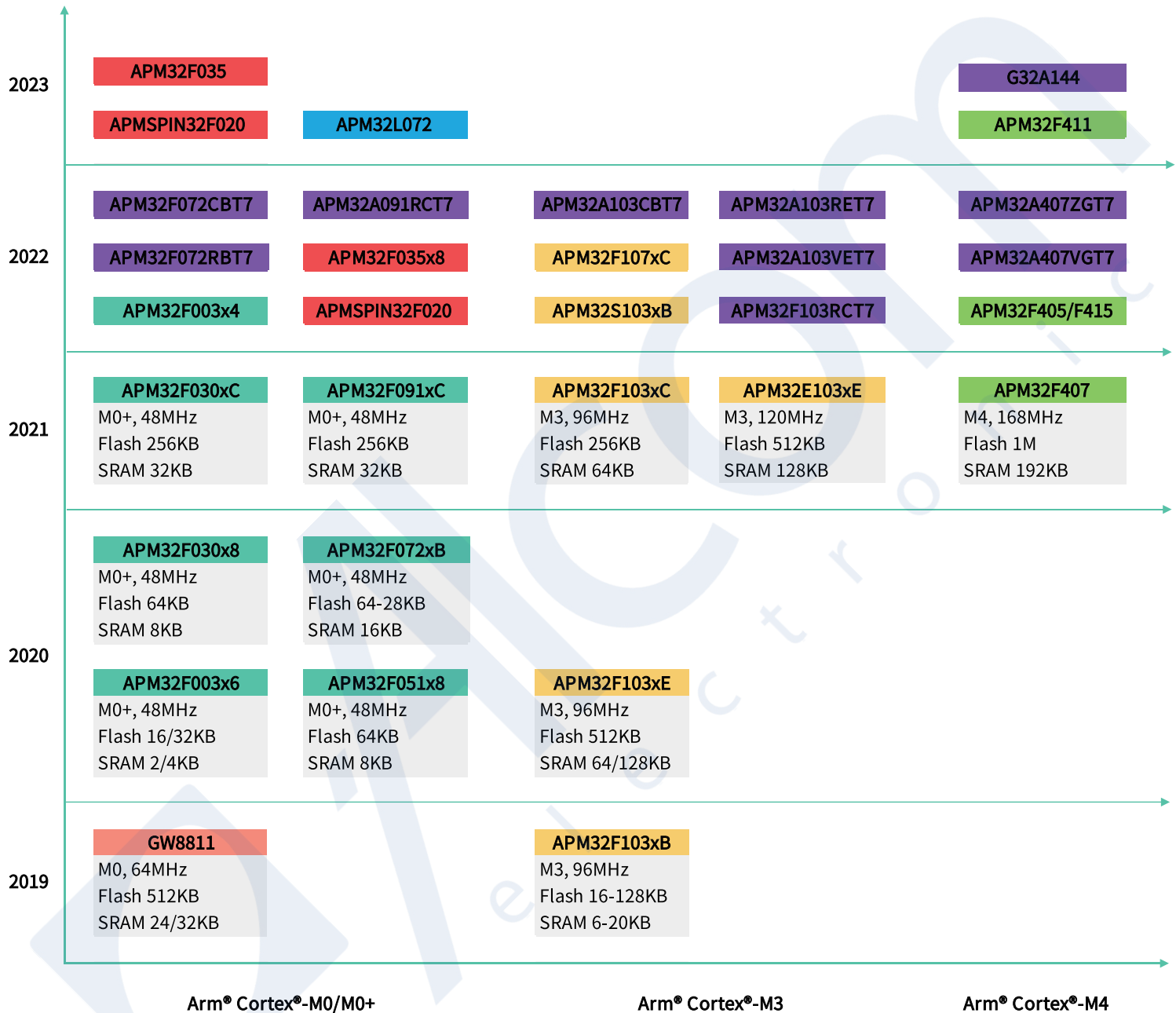
CHROMA

SIEMENS

ISSI

Actt

Chip Roadmap



■ High Performance
 ■ Mainstream
 ■ Entry level
 ■ Ultra-low Power
 ■ Wireless
 ■ Automotive
 ■ Motor

High Security

APM32F415/417

Equipped with a 55nm process technology platform, this series has the characteristics of high capacity, high stability, and high security. It adds high-speed OTG HS2 with on-chip integrated PHY on top of full speed/high-speed USB and adds a variety of international standard algorithms to effectively protect user data security.



System

- Arm® Cortex®-M4
- Working frequency 168MHz
- Built-in RTC and CRC
- Support FPU and DSP

Timer

- 16/32-bit universal timer:8/2
- 16-bit basic timer:2
- 16-bit advanced timer:2
- Watchdog timer:2
- SysTick:1

Package

- LQFP64/100/144/176

Debug Mode

- SWD
- JTAG

Memory

- Flash: 1MB
- SRAM: 192+4KB
- SDRAM:2MB(optional)
- EMMC(optional)

Analog Peripherals

- 12-bit ADC:3, External channel:16/24
- 12-bit DAC:2, Dual channel

Security

- BN/SM3/SM4
- AES/DES/TDES
- 96-bit UID
- HASH, TRNG

Power Consumption

- Operating voltage 1.8~3.6V
- Support POR/PDR/BOR
- Support PVD

I/O

- 51/82/114/140 I/Os
- Map to external interrupt vectors

Peripherals

- U(S)ART : 6
- I2C : 3
- SPI : 3
- I2S : 2
- USB_OTG:3
- Support SDRAM
- CAN: 2
- SDIO: 1
- DCI:1
- Ethernet:1



Card Swiper



Power Protection



Ventilator



Communication Equipment



3D Printer



Robot Controller

Ultra-high Performance APM32F405/F407

Based on Arm® Cortex®-M4 core, working frequency up to 168MHz, supports single FPU and enhanced DSP processing instructions. High-speed OTG interface supporting on-chip PHY. SM3, SM4, and other encryption algorithms are added to ensure data and information security effectively.

Geehy
SEMICONDUCTOR
APM32

System

- Arm® Cortex®-M4
- Working frequency 168MHz
- Single FPU
- Enhanced DSP instruction

Timer

- 16/32-bit universal timer:8/2
- 16-bit advanced timer:2
- 16-bit basic timer:2
- Watchdog timer:2
- 24-bit system timer:1

Package

- LQFP64/100/144/176

Security

- BN/SM3/SM4
- 96-bit UID

Memory

- Flash: 1MB
- SRAM: 192KB
- SDRAM:2MB(optional)
- Support external memory extension

Analog Peripherals

- 12-bit ADC:3, External channel:16/24
- 12-bit DAC:2

Debug Mode

- SWD
- JTAG

Power Consumption

- V_{DD}/V_{DDA}: 1.8~3.6V
- Backup domain power V_{BAT}:1.65~3.6V
- Support power-on and power-down reset
- Support PVD

I/O

- Up to 140 I/Os
- Map to external interrupt vectors

Peripherals

- U(S)ART : 6
- I2C :3
- SPI : 3
- I2S : 2
- DCMI:1
- Support SDRAM
- USB OTG : 3
- CAN: 2
- SDIO: 1
- Ethernet: 1
- EMMC : 1



Electrocardiogram Analyzer



AC Drive



Charging Pile



Industrial Gateway



DTU



RTU

Large Capacity APM32E103xCxE

Based on Arm® Cortex®-M3 core and the performance of APM32F103xE, working frequency up to 120MHz and chip ESD level up to 5KV. Abundant on-chip resources can be configured to provide better user application scenarios with better performance and higher cost performance.

Geehy
SEMICONDUCTOR
APM32

System

- Arm® Cortex®-M3
- Working frequency 120MHz
- Support FPU
- Built-in RTC、5/7channels DMA

Timer

- 16-bit universal timer:4
- 16-bit advanced timer:2
- 16-bit basic timer:2
- Watchdog timer:2
- 24-bit system timer:1

Security

- 96-bit unique device ID
- CRC cells

Package

- LQFP48/64/100/144
- QFN48

Memory

- Flash: 512KB
- SRAM: 128KB
- SDRAM:2MB(optional)

Analog Peripherals

- 12-bit ADC:2/3, External channel:10/16/21
- 12-bit DAC:2

Debug Mode

- SWD
- JTAG

Power Consumption

- V_{DD}/V_{DDA} : 2.0~3.6V
- Backup domain power V_{BAT} :1.8~3.6V
- Support power-on and power-down reset
- Support PVD

I/O

- Up to 112 I/Os
- Map to external interrupt vectors

Peripherals

- U(S)ART : 5
- I2C : 2
- SPI :3
- I2S : 2
- USB : 1
- CAN : 2
- SDIO: 1
- Support SDRAM
- USB and CAN could work independently at the same time



Security Equipment



Solar Energy Storage



Industrial Motor



Portable Medical



Elevator Control



Motormeters

Connectivity

APM32F105/F107

Built-in dual CAN bus, USB OTG_FS, Ethernet MAC, compatible with IEEE-802.3-2002 protocol, using MII or RMII for Ethernet LAN communication, mainly focusing on connection transmission, real-time performance of the application of innovation.



System

- Arm® Cortex®-M3
- Working frequency 96MHz
- Built-in RTC and CRC
- Built-in DMA

Timer

- 16-bit universal timer:4
- 16-bit advanced timer:1
- 16-bit basic timer:2
- Watchdog timer:2
- SysTick:1

Security

- 96-bit unique device ID
- CRC cells

Memory

- Flash:64~256KB
- SRAM:64KB

Analog Peripherals

- 12-bit ADC:2,External channel:16
- 12-bit DAC:2,Dual channel

Package

- LQFP64/100

Power Consumption

- Operating voltage1.2.0~3.6V
- Support POR/PDR
- Support power-on and power-down reset
- Support Sleep/Stop/standby low power mode

I/O

- 51/80 I/Os
- Map to external interrupt vectors

Communication Interfaces

- U(S)ART:5
- I2C:1/2
- SPI:3
- I2S:2
- CAN:2
- USB OTG_FS:1
- EthernetMAC:1



UPS



Home Stereo



Ultrasonic Diagnostic Apparatus



PLC



Building Controller



Scanner

Large Capacity APM32F103xDxE

Based on Arm® Cortex®-M3 core, equipped with enhanced external memory controller eMMC, parallel LCD compatible with 8080 / 6800 mode, it has passed IEC61508 SIL2 and USB-IF certification, working temperature is -40°C~+105°C, which meets the high-reliability standard of the industrial level and has the characteristics of low-power, large capacity, and good portability.



System

- Arm® Cortex® -M3
- Working frequency 96MHz
- Support FPU
- Built-in 12 channels DMA

Timer

- 16-bit universal timer: 4
- 16-bit advanced timer: 2
- 16-bit basic timer: 2
- Watchdog timer: 2
- 24-bit system timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP64/100/144

Memory

- Flash: 384/512
- SRAM: 64/128KB

Analog Peripherals

- 12-bit ADC: 3, External channel: 16/21
- 12-bit DAC: 2
- Support dual sampling and holding function

Debug Mode

- SWD
- JTAG

Power Consumption

- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

I/O

- 51/80/112 I/O
- Map to 16 external interrupt vectors

Communication Peripherals

- U(S)ART : 5
- I2C : 2
- SPI : 3
- I2S : 2
- USB : 1
- CAN 2.0B: 1
- SDIO: 1
- Support SDRAM
- USB and CAN could work independently at the same time



Handheld Tripod Head



Electronic Balance



Password Keyboard



Encoder



Power meter



Alarm

Enhanced APM32F103xC

Based on Arm® Cortex®-M3 core, built-in two CAN interfaces, compatible with 2.0A and 2.0B (active) specifications, communication speed up to 1Mbit/s, can ensure the reliability and real-time of communication at the same time, help to expand industrial and automotive application scenarios.



System

- Arm® Cortex® -M3
- Working frequency 96MHz
- Built-in RTC
- Built-in 12 channels DMA

Timer

- 16-bit universal timer: 4
- 16-bit advanced timer: 2
- 16-bit basic timer: 2
- Watchdog timer: 2
- 24-bit system timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP48/64/100

Memory

- Flash: 256KB
- SRAM: 64KB

Analog Peripherals

- 12-bit ADC: 3, External channel: 10/16
- 12-bit DAC: 2

Debug Mode

- SWD
- JTAG

Power Consumption

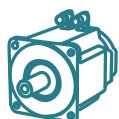
- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

I/O

- Up to 80 I/O
- Map to external interrupt vectors

Peripheral

- U(S)ART : 5
- I2C : 2
- SPI : 3
- USB : 1
- CAN: 2
- USB and CAN could work independently at the same time



Motor Control



Motormeters



Air Conditioner System



Access Control



Intelligent Lighting



Micro Printer

Mainstream

APM32F103x4x6x8xB

Based on Arm® Cortex®-M3 core, with strong operation efficiency and excellent power consumption efficiency, has abundant enhanced peripheral functions, USB and CAN could work independently at the same time, has passed IEC61508 SIL3 and USB-IF certification, and the working temperature is -40°C~+105°C, which meets the high-reliability standard of the industrial level.



System

- Arm® Cortex®-M3
- Working frequency 96MHz
- Support FPU
- Built-in 7 channels DMA

Timer

- 16-bit universal timer: 3
- 16-bit advanced timer: 1
- Watchdog timer: 2
- 24-bit system timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP48/64/100

Memory

- Flash: 16-128KB
- SRAM: 6-20KB

Analog Peripherals

- 12-bit ADC: 2, External channel: 10/16
- ADC voltage conversion range: 0~V_{DAA}

Debug Mode

- SWD
- JTAG

Power Consumption

- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

I/O

- 26/37/51/80 I/O
- Map to 16 external interrupt vectors

Communication Peripherals

- USART : 3
- I2C : 2
- SPI : 2
- USB : 1
- CAN 2.0B: 1
- QSPI: 1
- USB and CAN could work independently at the same time



Intercom



Electric Bicycle



Sweeping Machine



Fan



Pulse Oximeter



Access Card Reader

Entry Level APM32F091xBxC

Based on Arm® Cortex®-M0+, it supports up to 256KB of Flash memior and offers multiple communication interfaces, and up to 8 USARTs to enhances communication function, and has built-in HDMI CEC and TSC capacitive touch function. It supports CAN protocol communication and is suitable for expanding the application scenarios of intelligent household appliances, industrial equipment, and automotive electronics.



System

- Arm® Cortex® -M0+
- Working frequency 48MHz
- Built-in RTC
- Built-in 12 channels DMA

Memory

- Flash: 128~256KB
- SRAM: 32KB

Power Consumption

- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

System

- 16/32-bit universal timer: 5/1
- 16-bit advanced timer: 1
- 16-bit basic timer: 2
- Watchdog timer: 2
- 24-bit system timer: 1

Analog Peripherals

- 12-bit ADC: 1, External channel: 16
- 12-bit DAC: 1, Channel: 2
- Programmable analog comparator: 2
- Capacitance sensing channel: 24

I/O

- Up to 88 I/O
- Map to external interrupt vectors
- Up to 69 I/O with 5V input

Security

- 96-bit unique device ID (UID)
- CRC cells

Debug Mode

- SWD

Peripheral

- USART : 8
- I2C : 2
- SPI : 2
- I2S: 2
- CAN: 1
- HDMI CEC

Package

- LQFP48/64/100
- QFN48



Frying Machine



Car GPS



Car Audio



Tablet PC



Digital Camera Controller

Power Management
and Control

Entry Level

APM32F072x8/xB

Based on Arm® Cortex®-M0+ core, full speed USB2.0 interface, no external crystal vibration, support BCD and LPM, up to 24 capacitance sensing channels for proximity, touch key, linear or rotary sensors. It supports the HDMI CEC function, which can meet the advanced control requirements of audio and video intelligent terminal equipment, and has passed USB-IF certification.



System

- Arm® Cortex® -M0+
- Working frequency 48MHz
- Built-in RTC
- Built-in 7 channels DMA

Timer

- 16/32-bit universal timer: 5/1
- 16-bit advanced timer: 1
- 16-bit basic timer: 2
- Watchdog timer: 2
- System timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP48/64/100
- QFN48

Memory

- Flash: 64-128KB
- SRAM: 16KB

Analog Peripherals

- 12-bit ADC: 1, External channel: 16
- 12-bit DAC: 1, Dual-channel: 1
- Programmable analog comparator: 2
- Capacitance sensing channel: 24

Debug Mode

- SWD

Power Consumption

- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

I/O

- Up to 87 I/O
- Map to external interrupt vectors
- Up to 68 I/O with 5V input

Communication Peripherals

- USART : 4
- I2C : 2
- SPI : 2
- I2S:2
- USB2.0 : 1 , No external crystal oscillator
- CAN: 1
- HDMI CEC



E-Cigarette



Virtual Reality Glasses



Intelligent Robot



BMS



Computer External Device



Industrial Handheld Terminal



Entry Level APM32F051x6/x8

Based on Arm® Cortex®-M0+ core, it has the characteristics of high integration, good portability, wide compatibility, and strong extended control function. The new capacitive touch function TSC can accurately identify the touch input in complex working conditions, built-in HDMI CEC to meet the advanced control application requirements of intelligent terminal.



System

- Arm® Cortex®-M0+
- Working frequency 48MHz
- Built-in RTC
- Built-in 5 channels DMA

Memory

- Flash: 32-64KB
- SRAM: 8KB

Power Consumption

- Supply voltage 2.0V~3.6V
- Support PVD
- Support sleep, stop, and standby modes

Timer

- 16/32-bit universal timer: 5/1
- 16-bit advanced timer: 1
- 16-bit basic timer: 1
- Watchdog timer: 2
- System timer: 1

Analog Peripherals

- 12-bit ADC: 1, External channel: 10/16
- 12-bit DAC: 1
- Programmable analog comparator: 2
- Capacitance sensing channel: 18

I/O

- Up to 55 I/O
- Map to external interrupt vectors
- Up to 35 I/O with 5V input

Security

- 96-bit unique device ID (UID)
- CRC cells

Debug Mode

- SWD

Communication Peripherals

- USART : 2
- I2C : 2
- SPI : 2
- I2S: 1
- HDMI CEC

Package

- LQFP32/48/64
- QFN32/48



Intelligent Fingerprint Lock



Refrigerator Controller



POS



Computer Peripherals



Remote Control



Car T-BOX

Entry Level APM32F030xC

Based on Arm® Cortex®-M0+ core and the performance of APM32F030x6x8, it has been comprehensively optimized and upgraded. It improves the capacity of Flash and SRAM, increases UART interfaces, and widely upgrades peripherals and I/O to help customers expand innovative applications such as industrial control and smart home at a more economical cost.



System

- Arm® Cortex® -M0+
- Working frequency 48MHz
- Built-in RTC
- Built-in 5 channels DMA

Timer

- 16-bit universal timer: 5
- 16-bit advanced timer: 1
- 16-bit basic timer: 2
- Watchdog timer: 2
- 24-bit system timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP48/64

Memory

- Flash: 256KB
- SRAM: 32KB

Analog Peripherals

- 12-bit ADC: 1
- External channel: 10/16

Debug Mode

- SWD

Power Consumption

- Supply voltage 2.0V~3.6V
- Support sleep, stop, and standby modes
- Support power-on and power-down reset

I/O

- Up to 51 I/O
- Map to external interrupt vectors
- Up to 29 I/O with 5V input

Communication Peripherals

- U(S)ART : 6
- I2C : 2
- SPI : 2



Portable Vacuum Cleaner



Bluetooth Printer



Temperature Controller



Smart Speaker



Electronic Monitor



Drive Recorder

Entry Level

APM32F030x6/x8

Based on Arm® Cortex®-M0+ core, it fully upgrades in terms of reliability, stability, and power. The integration of enhanced real-time control capability and abundant peripherals can help customers obtain more complex and innovative product functions at a more economical cost.



System

- Arm® Cortex® -M0+
- Working frequency 48MHz
- Built-in RTC
- Built-in 5 channels DMA

Timer

- 16-bit universal timer: 5
- 16-bit advanced timer: 1
- 16-bit basic timer: 1
- Watchdog timer: 2
- System timer: 1

Security

- 96-bit unique device ID (UID)
- CRC cells

Package

- LQFP32/48/64
- QFN32
- TSSOP20

Memory

- Flash: 32-64KB
- SRAM: 4-8KB

Analog Peripherals

- 12-bit ADC: 1
- External channel: 10/16

Debug Mode

- SWD

Power Consumption

- Supply voltage 2.0V~3.6V
- Support programmable supply voltage detector
- Support sleep, stop, and standby modes

I/O

- Up to 55 I/O
- Map to external interrupt vectors
- Almost all I/O compatible 5V input

Communication Peripherals

- USART : 2
- I2C : 2
- SPI : 2



Smoke Alarm



Mouse



Microwave Oven



Set-Top Box



Forehead Thermometer



Medical Equipment

Entry Level

APM32F003x4/x6

Based on Arm® Cortex®-M0+ core, with the characteristics of wide temperature range, high precision and low-temperature drift, ESD level up to 8KV, strong anti-interference, and anti-static ability. It integrates a high-speed internal oscillator with a full range accuracy of $\pm 3\%$ and can reach $\pm 1\%$ after user calibration. It supports TSSOP20, SOP20, and highly compact 3x3mm miniaturized package QFN20, which is conducive to improving system integration and reducing BOM material costs.



System

- Arm® Cortex®-M0+
- Working frequency 48MHz

Memory

- Flash: 16/32KB
- SRAM: 2/4KB

Power Consumption

- Supply voltage 2.0V~5.5V
- Support sleep, stop, and standby modes
- Support power on / power off reset

Timer

- 16-bit universal timer: 1
- 16-bit advanced timer: 2
- 16-bit basic timer: 1
- Watchdog timer: 2
- System timer: 1

Analog Peripherals

- 12-bit ADC: 1
- External channel: 8
- Support differential input

I/O

- Up to 16 I/O
- Map to external interrupt vectors

ESD Level

- HBM: 8KV
- CDM: 2KV
- MM: 550V
- LU: 200mA

Debug Mode

- SWD

Communication Peripherals

- USART: 3
- I2C: 1
- SPI: 1

Security

- 96-bit unique device ID (UID)

Package

- QFN20, TSSOP20, SOP20



Wireless Charger



Motor Control



Electronic Toys



Small Household Appliance



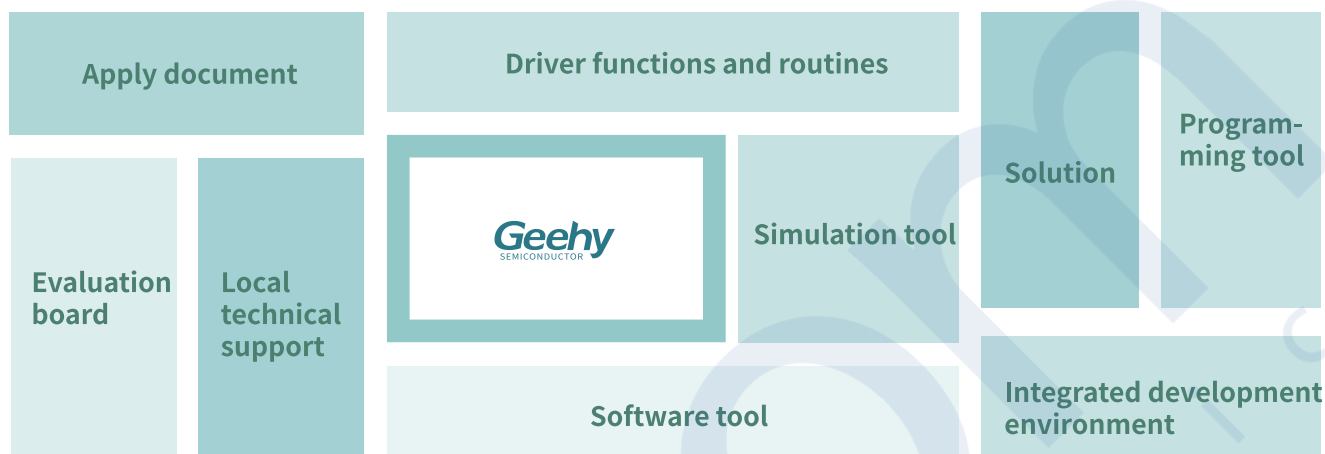
Smart Locks



Temperature Transducer

APM32 Development Tool

Abundant software and hardware development tools offer flexible, convenient and easy to use features help engineers accelerate product development



Development & Design

IDE:

MCAL:

SDK:

Reliability Test:

Security Library:

Technical Support

Selection Tools:

Technical Doc:

Samples:

Services Support:

Official Tools

Programming:

Debug:

MINI Board:

TINY Board:

EVAL Board:

ISP:

Partner Tools

Ecological Platform

Geehy Ecology:

Hackster:

ACC:

Github:

Training & Promotion

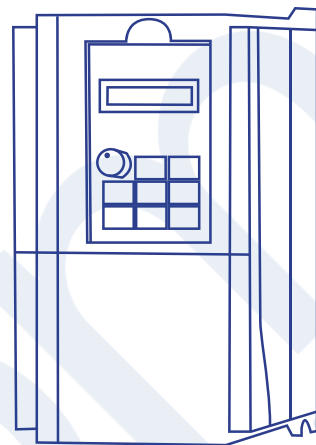
- Webinar
- Online Live
- Offline Training

Campus Ecology

- Graduate Training
- Briefing Session
- Design Competition

APM32 MCU Inverter Solution

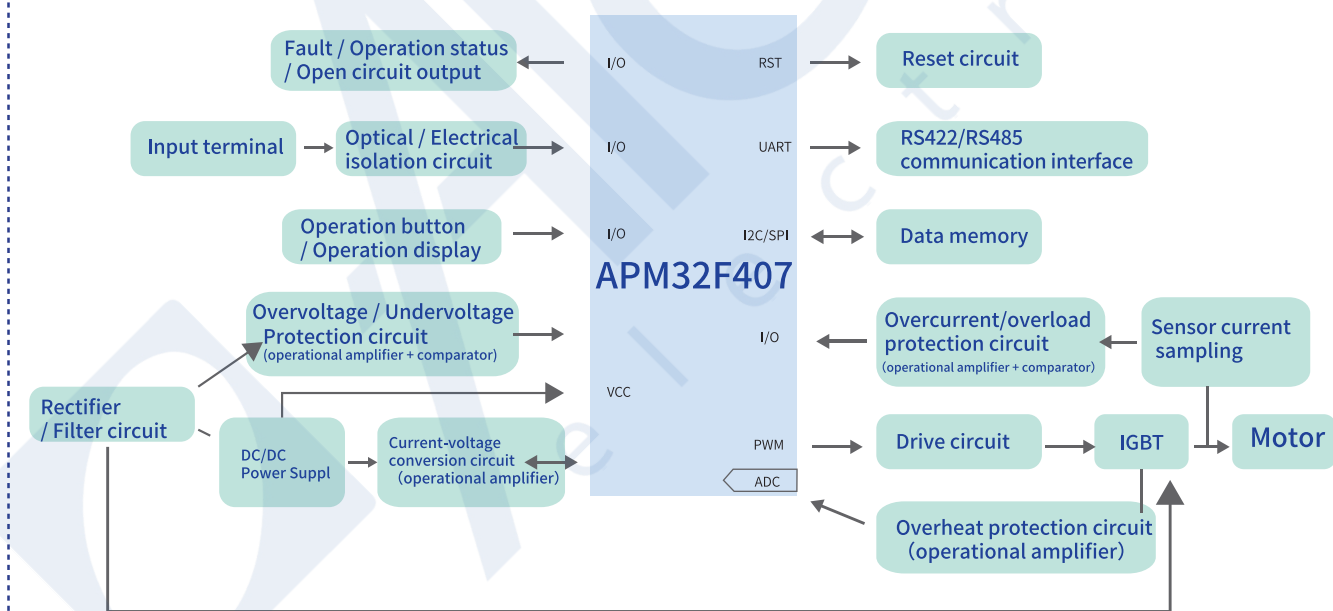
The inverter is an electrical control device that controls AC motor by changing the frequency of motor power supply by applying frequency conversion technology and microelectronics technology. According to the actual needs of the motor, it can provide the required power supply voltage to achieve the purpose of energy-saving and speed control.



Solution Characteristic

APM32F407	Work frequency 168MHz	Support FPU and DSP
External memory expansion	PWM output / dead-band protection	Timing trigger voltage sampling
Supports vector control and V/F control		

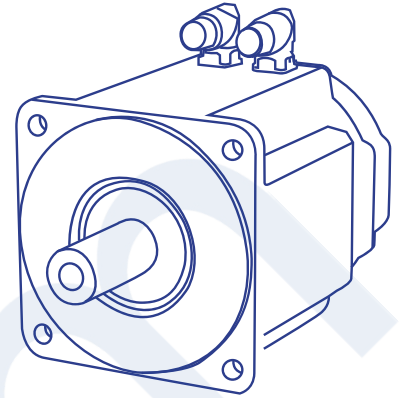
Solution diagram



Part No.	Frequency	FLASH	SRAM	SDRAM	ADC	Peripherals
APM32F407	168MHz	1MB	192KB	16MB(Optional)	12-bit ADC: 3 External channel:24	U(S)ART : 6 I2C : 3 SPI : 3 I2S:2 USB OTG : 3 CAN: 2 SDIO:1 Ethernet: 1 EMMC1 DCMI:1

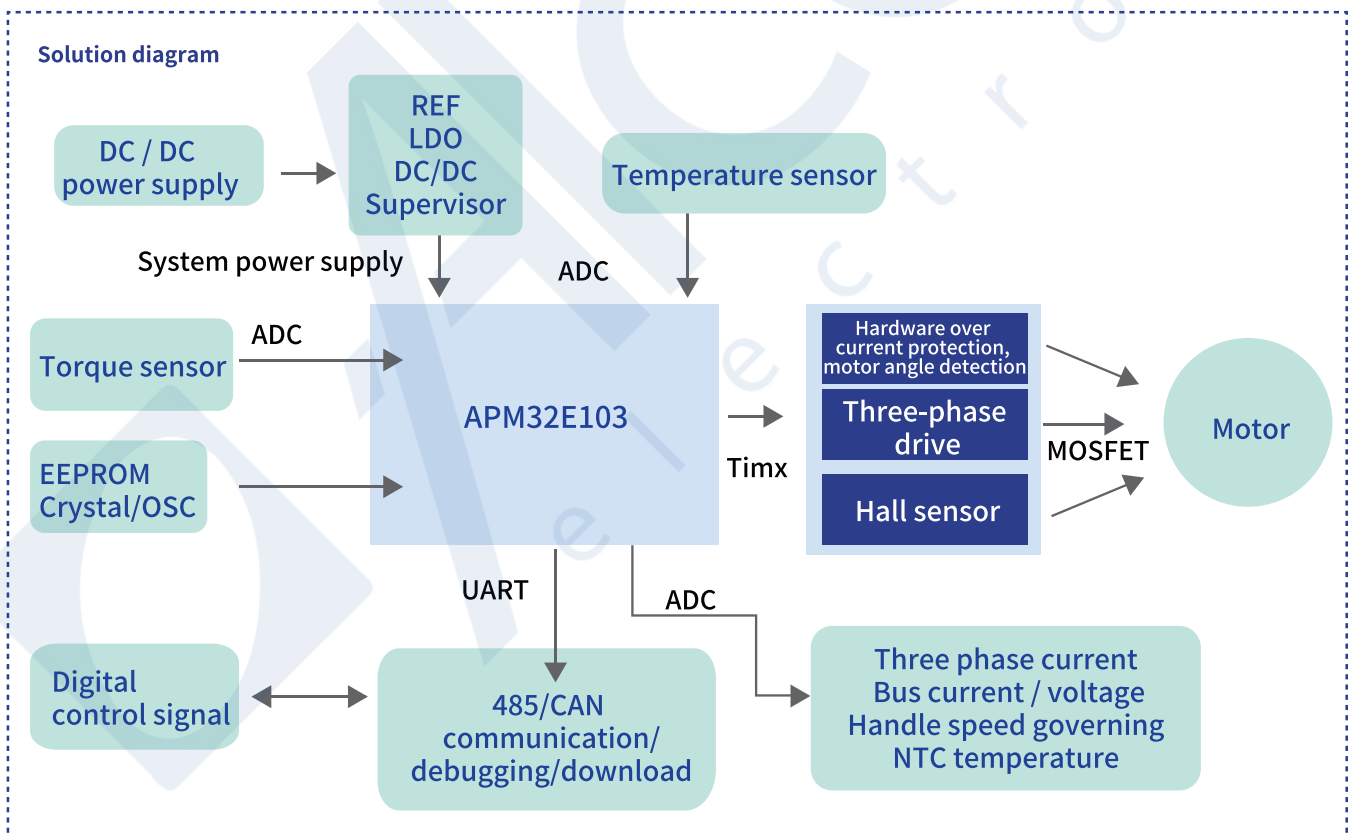
APM32 MCU Motor Control Solution

The motor controls the starting, accelerating, running, decelerating, and stopping of the motor. It achieves fast starting, fast response, high efficiency, high torque output, and high overload capacity of the motor. APM32E103 equip with the enhanced external memory controller EMMC, which has strong signal processing ability and fast operation speed. It helps to obtain the motor operation status efficiently, control the three-phase output power supply, and effectively guarantee the continuous operation of the motor.



Solution Characteristic

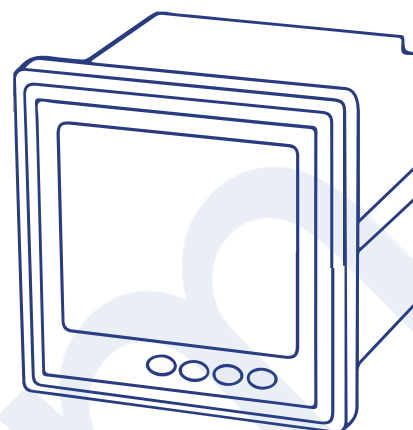
APM32E103	Hall/encoder/comparator/ADC	Support main FOC algorithm library
FOC sine wave control	Built-in FPU	Floating-point trigonometric function operations



Part No.	Frequency	FLASH	SRAM	FPU	ADC	I/O	Peripherals
APM32E103	120MHz	512KB	128KB	Yes	12-bit ADC:3 External channel:21	112	U(S)ART:5 I2C:2 SPI:3 I2S:2 USB:1 CAN:2 SDIO:1

APM32 MCU HMI Solution

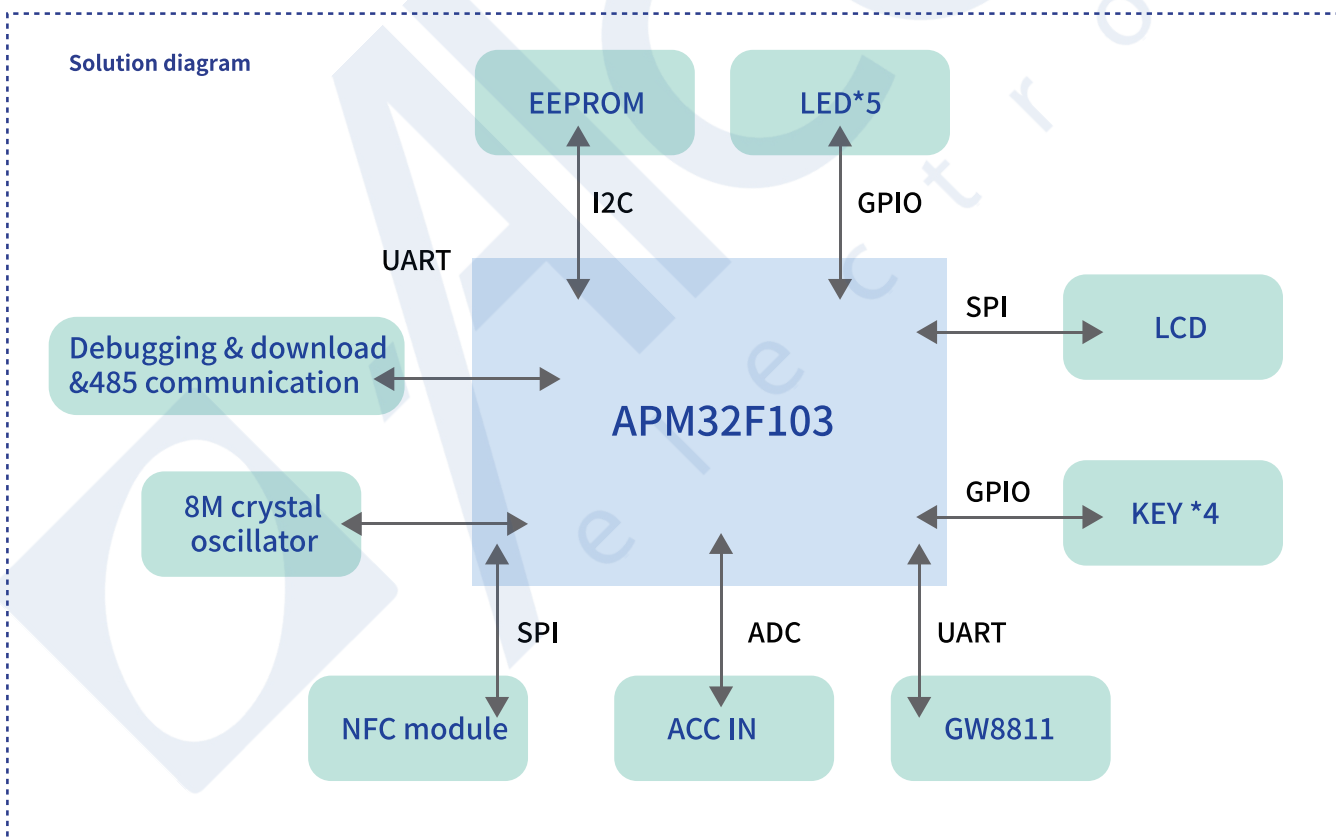
The HMI human-machine interface is a medium for interaction and information exchange between system and users. It consists of hardware and software. The hardware part includes processor, display unit, input unit, communication interface, data memory unit, etc. APM32F103 has good reliability and extended control function, can meet HMI Bluetooth communication, power adjustment, and diverse communication.



Solution Characteristic

APM32F103	Support FPU	CRC/RTC/DMA channel
Incremental encoder / decoder	UART supports the Debug interface	UART supports Bluetooth module interface

Solution diagram



Part No.	Frequency	FLASH	SRAM	FPU	I/O	ADC	Peripherals
APM32F103	96MHz	16-512KB	6-128KB	Yes	26/37/51/80/112	12-bit ADC:2/3 External channel:16/21	U(S)ART:3/5 I2C:2 SPI:2/3 USB:1 CAN:1/2

APM32 MCU Automobile Diagnostic Instrument Solution

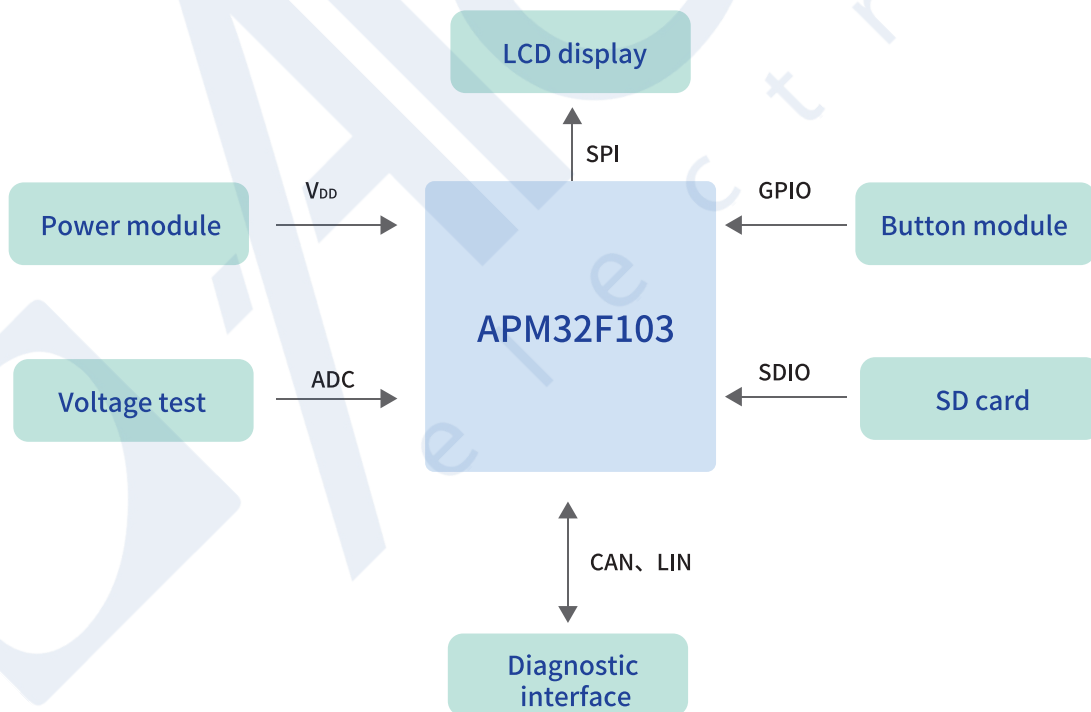
Automobile diagnostic instrument, also known as automobile decoder, is a professional automobile detector of vehicle fault self-test terminal. It supports reading/clearing fault code, reading data stream, reading frozen frame, action test, and other special functions, and can detect vehicle performance and fault information in real-time. It is a necessary intelligent tool for vehicle detection.



Solution Characteristic

APM32F103	One key to read fault information	Real-time detection, easy to carry
Built-in EMMC, SDIO	High accuracy of data diagnosis	Support USB and CAN working at the same time
Has passed IEC61508 certification		

Solution diagram



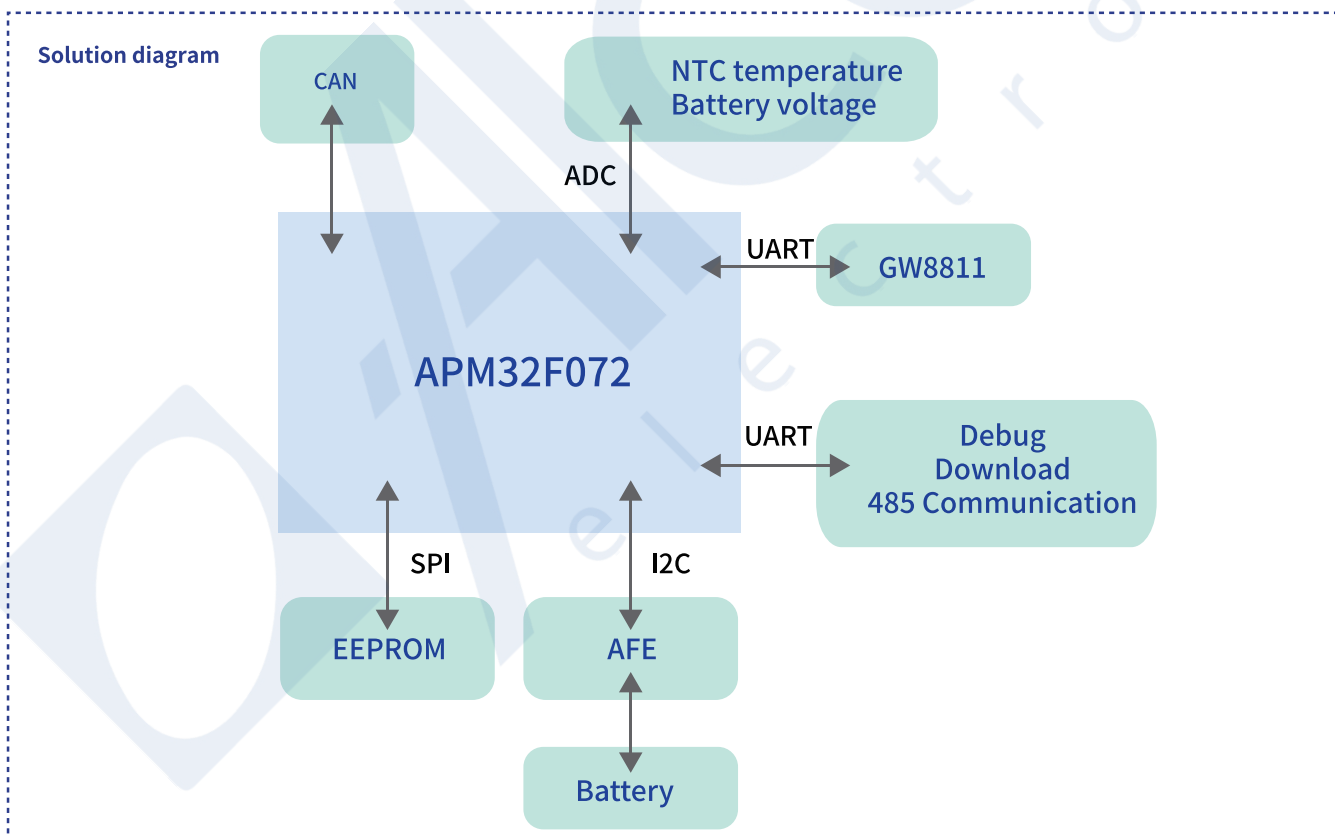
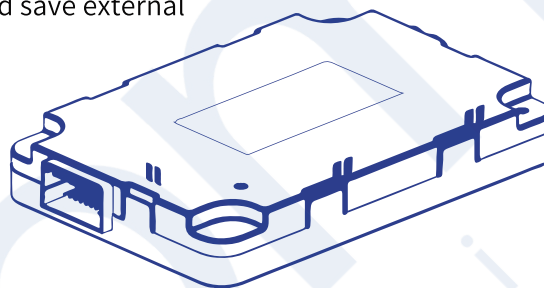
Part No.	Frequency	FLASH	SRAM	FPU	ADC	I/O	Peripherals
APM32F103	96MHz	16-512KB	6-128KB	Yes	12-bit ADC:2/3 External channel:16/21	26/37/51/80/112	U(S)ART:3/5 I2C:2 SPI:2/3 USBD:1 CAN:1/2

APM32 MCU BMS Solution

The BMS is an important link between vehicle power battery and electric vehicle. It supports real-time monitoring of physical battery parameters, battery state estimation, online diagnosis and early warning, charge/discharge, and precharge control. APM32F072 has the characteristics of low-power, high reliability, and high security. It can achieve ultra-low power consumption and faster Flash erasure speed. It supports the full-speed USB2.0 and CAN interface at the same time. It supports high cost-effective USB solution without the external crystal oscillator, which helps to simplify the design and save external circuits.

Solution Characteristic

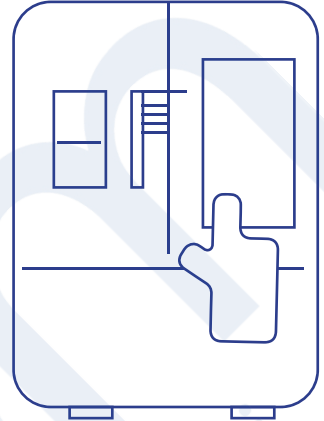
APM32F072	Low-power module	Charging / Discharging / Power off protection
Wide range voltage charger	Support remote control	Full USB-IF certification



Part No.	Frequency	FLASH	SRAM	ADC	I/O	Peripherals
APM32F072	48MHz	64-128KB	16KB	12-bit ADC:1 External channel: 16	37/51/87	USART :4 I2C : 2 SPI : 2 I2S: 2 USB:1 CAN: 1 HDMI CEC

APM32 MCU Household Electric Touch Panel Solution

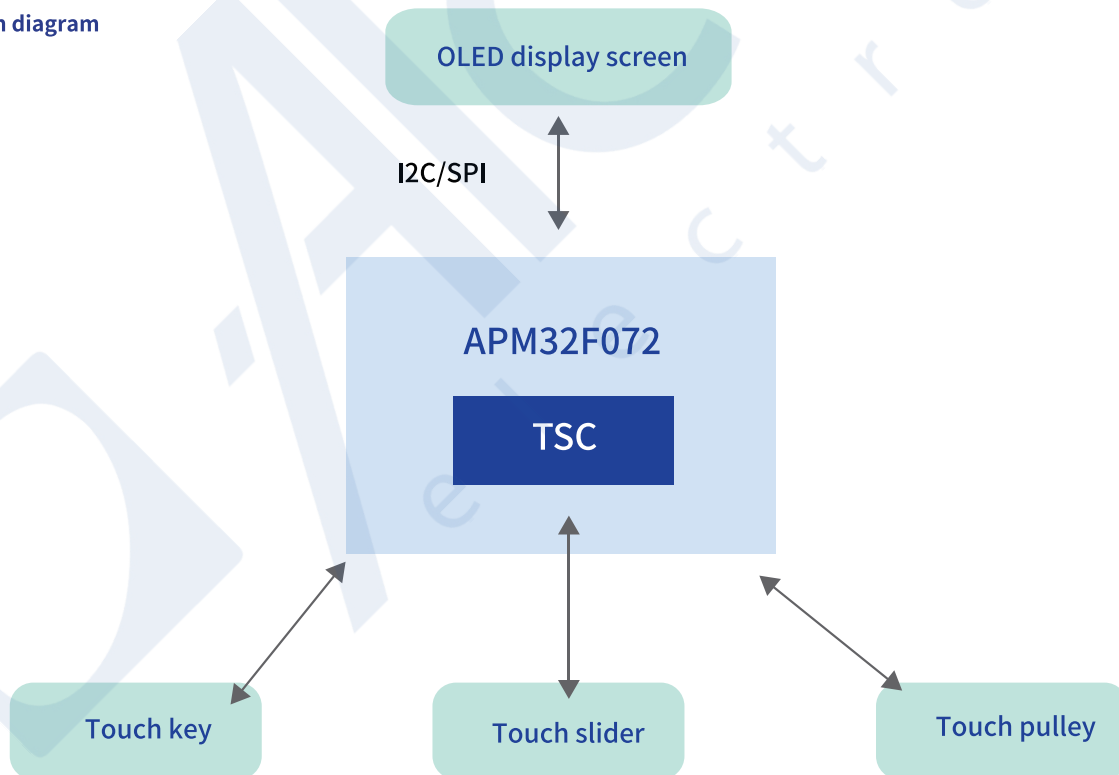
The capacitive touch panel solution is a resistance-capacitance network composed of resistance and capacitance CX of induction electrodes. Through its charging / discharging time, it can detect the changes brought by human touch to the sensor to identify the operation action and carry out corresponding response processing. At present, it can support touch modes such as pressing keys, sliding bars, and pulleys.



Solution Characteristic

APM32F072	Support key/ slider/pulley touch	Quick response
Waterproof and anti-noise	Support remote control	Software adjustment sensitivity

Solution diagram



Part No.	Frequency	FLASH	SRAM	ADC	I/O	Peripherals
APM32F072	48MHz	64-128KB	16KB	12-bit ADC:1 External channel: 16	37/51/87	USART :4 I2C : 2 SPI: 2 I2S: 2 USB:1 CAN: 1 HDMI CEC

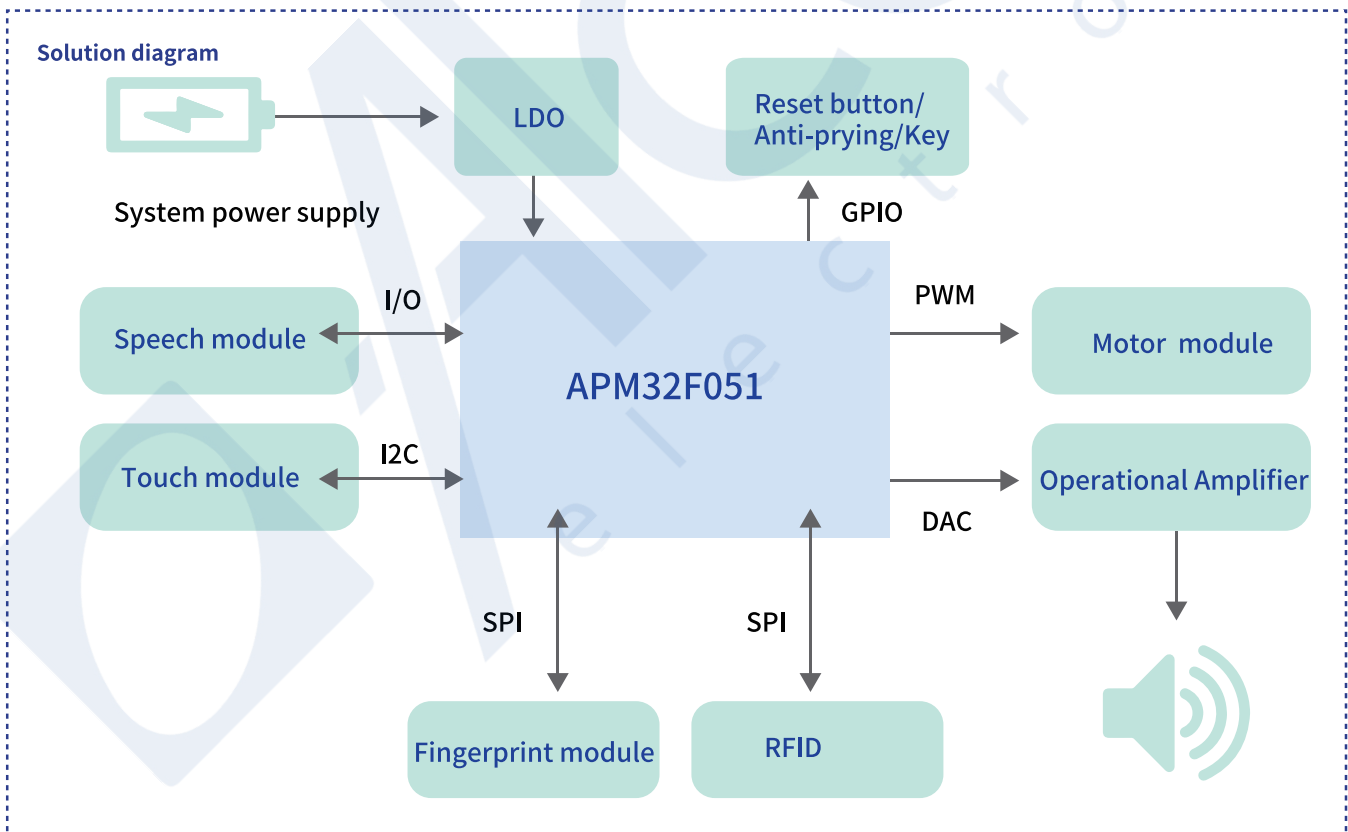
APM32 MCU Smart Fingerprint Lock Solution

The fingerprint lock is an intelligent lock that uses advanced unlock authentication methods like fingerprint passwords, RFID cards, keys to unlock your door. It can collect, store, and identify fingerprints through the fingerprint identification sensor to identify the unlocking person accurately. At the same time, it can store the unlocking secret and RFID card information on the main control chip, identify the identity through password input and card swiping, and drive the clutch to unlock.



Solution Characteristic

APM32F051	Function modularization	Abundant peripheral
Support external NFC / Bluetooth	Multiple unlocking methods	Built-in HDMI CEC



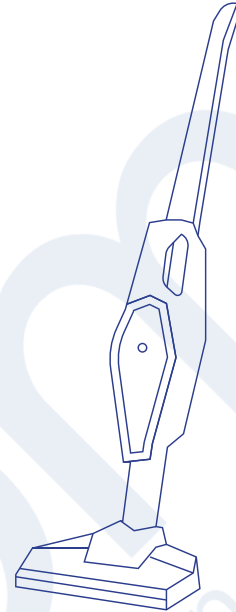
Part No.	Frequency	FLASH	SRAM	ADC	I/O	Peripherals
APM32F051	48MHz	32-64KB	8KB	12-bit ADC:1 External channel: 16	55	UART : 2 I2C : 2 SPI : 2 I2S : 1 HDMI CEC

APM32 MCU Handheld Vacuum Cleaner Solution

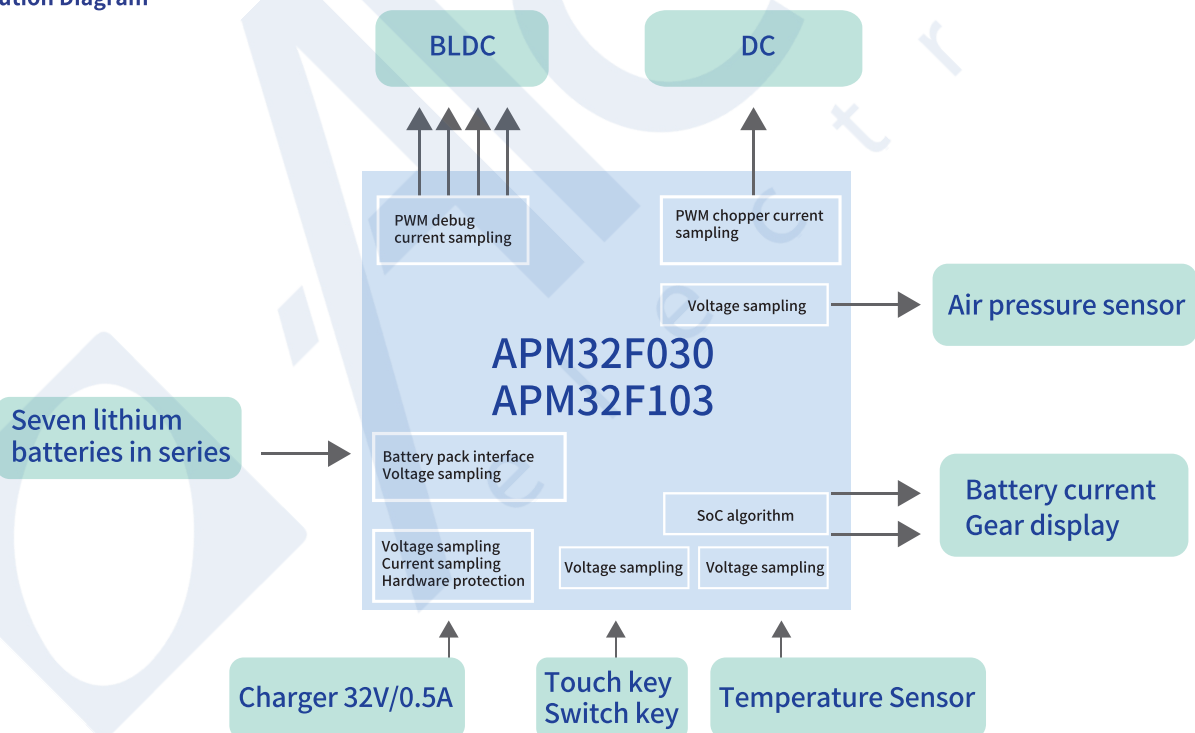
Based on gyroscope, ultrasonic sensor, proximity switch sensor and dual CPU control system composed of DSP and MCU, according to the requirements of intelligent vacuum cleaner to detect unknown environment in real time, it supports automatic tracking, obstacle avoidance, dust collection and other functions to realize automatic indoor environment. clean.

Solution Characteristic

APM32F030MCU	Over temperature, over charge,over current, over discharge	Power prompt,fault alarm,key shifting
Power 90-500W, operating current <15Ma, speed 150,000 rpm	System operating noise < 90dB, air volume > 28L/s, running time > 500H	



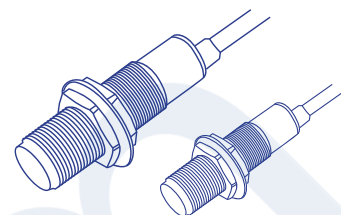
Solution Diagram



Part No.	Frequency	FLASH	SRAM	ADC	I/O	Peripherals
APM32F030	48MHz	32~64KB	4~8KB	12-bit ADC:1 External channel:10/16	55	USART:2 I2C:2 SPI:2

APM32 MCU Sensor Solution

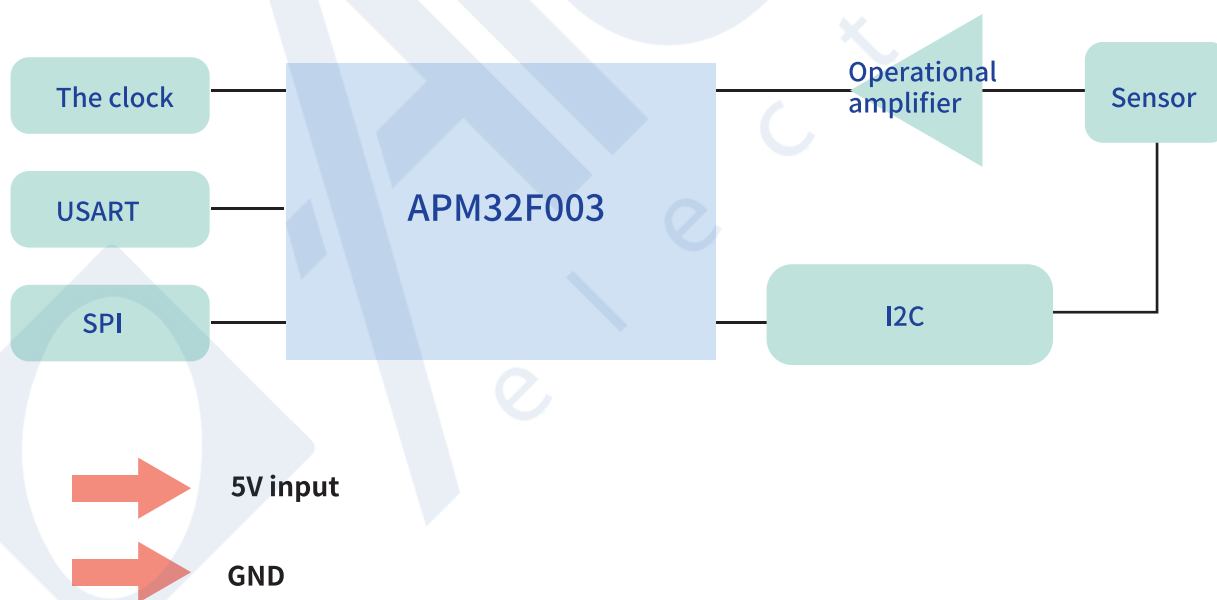
The sensor is a kind of detection device that can capture the measured information and transform it into an electrical signal or other output forms according to certain rules. It can meet the requirements of information transmission, memory, display, recording, and control. APM32 series MCU has high frequency, large capacity, wide temperature range, and high precision, which can meet the application requirements of sensor miniaturization, systematization, digitization, and intellectualization. Through the modular development of the MCU+ sensor, a large number of parameters can be monitored, collected, and processed efficiently.



Solution Characteristic

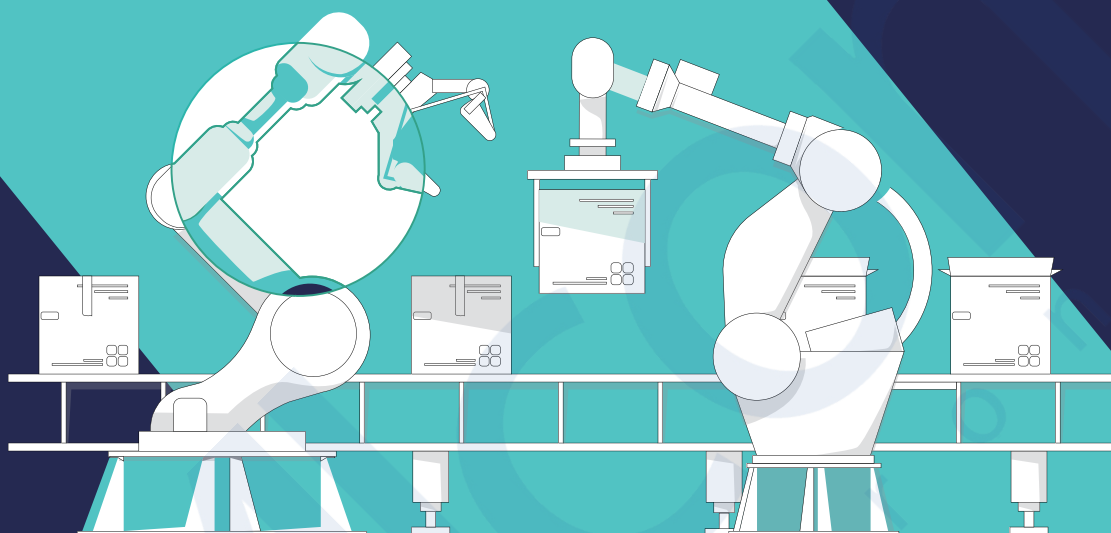
APM32F003	ESD level up to 8KV	3x3mm miniaturized package
High-precision dynamic real-time sampling	USART supports LIN/ unidirectional communication	Integrated HSI, full range accuracy is $\pm 3\%$

Solution Diagram



Part No.	Frequency	FLASH	SRAM	ADC	I/O	Peripherals
APM32F003	48MHz	16/32KB	2/4KB	12-bit ADC:1 External channel: 8	16	USART:3 I2C: 1 SPI: 1

TECHNOLOGY INSPIRED.



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