GigaDevice

GD32G5 series Cortex®-M33 high-performance MCU, unleashing innovation potential in industrial applications

The GD32G5 series MCUs, featuring exceptional processing performance, a wide range of digital and analog interface resources, and enhanced security capabilities, can be widely applied across diverse scenarios such as digital power systems, charging stations, energy storage inverters, frequency converters, servo motors, and optical communication.

High Performance

- Arm® Cortex®-M33 @216MHz
- DSP Extension, Floating Point Unit (FPU)
- Trigonometric Math Unit(TMU), Filter Arithmetic Accelerator(FAC), Fast Fourier Transform (FFT)

Large Memory

- Up to 512KB Dual-bank Flash,
- 128KB SRAM, including 32KB TCMRAM
- Support Flash/SRAM with ECC
- 2KB I-Cache, 512B D-Cache

Communication Interfaces

- 5xU(S)ART, 4xI^2C, 3xSPI, 1xQSPI
- 3xCAN-FD communication interfaces
- Integrated Trigsel, CLA module
- HPDF 8chs/4 filter, Σ-Δ Modulators

Timers

- HR Timer with 16 Channels, up to 145ps high resolution
- Enhancing AD Timer with 8 Channels

Analog Resources

- 4x12bit ADC, up to 5.3MSPS
- 8x12bit DAC Channels
- 8xComparator

Functional Safety

- IEC61508 SIL2

Security

- Secure Boot & Secure OTA
- Cryptographic Acceleration Unit: AES-128/192/256, DES, TDES
- True Random Number Generator (TRNG)

For more information on GD32 MCU products and solutions, visit **GD32MCU.com/en**

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GD32G5 Block Diagram

System
- 4-48MHz HXTAL
- 32.768KHz LXTAL
- 32KHz/8MHz IRC
- PLL
- Clock Monitor

Arm® Cortex®-M33 core 216MHz
- DSP Extension
- Floating Point Unit (FPU)
- SW/JTAG Debug
- HW Accelerator: TMU, FAC

Memory
- Up to 512KB Flash
- Up to 128KB SRAM

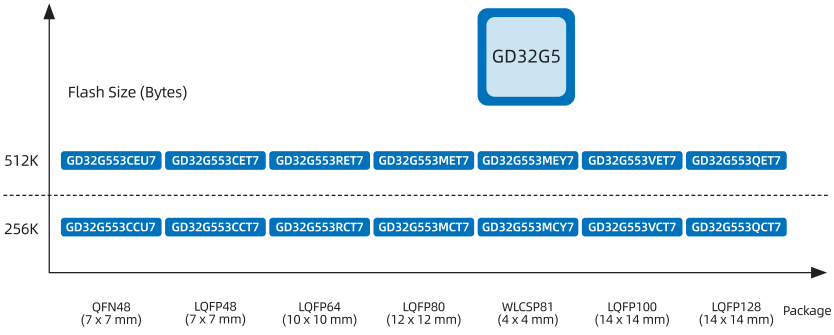
Peripherals
- 5xU(S)ART
- 4xI²C
- 3xSPI
- 1xQSPI
- 3xCAN-FD
- 1xFMC, 1xEXMC
- 1xTRIGSEL, 4xCLA

Timers
- 5x16bit GP Timer
- 2x32bit GP Timer
- 1x16bit HR Timer
- 1x16bit LP Timer
- 3x16bit AD Timer
- 2x16bit Basic Timer
- IWDG, WWDG
- RTC

Security
- Dual Bank Flash with ECC
- AES-128/192/256
- DES, TDES
- CRC
- TRNG

Analog
- 4x12bit ADC
- 8x12bit DAC
- 8xComparator

GD32G5 Portfolio



Development Tools

Type	Part Number	Package
Evaluation Boards	GD32G553Q-EVAL	LQFP128
Evaluation Boards	GD32G553R-EVAL	LQFP64
Starter Kit	GD32G553V-START	LQFP100
Starter Kit	GD32G553M-START	WLCSP81
Starter Kit	GD32G553C-START	LQFP48

The full-featured evaluation board is based on the LQFP128/64 package and supports complete functional demonstration, development and debugging.
The entry-level starter kit corresponds to various packages and pins, which is convenient for function evaluation, development and debugging.

GD32G5 Ecosystem

The GD32 development ecosystem is rapidly expanding, with GigaDevice providing a free development environment. The GD32 Embedded Builder IDE, along with debugging and downloading tools like GD-LINK and the all-in-one programming tool, GD32 All-In-One Programmer is now available for the new GD32G5 series high-performance microcontrollers.
Major embedded tool vendors in the industry, such as Arm® KEIL, IAR, and SEGGER, will also offer comprehensive support for the GD32G5 series, including development, compilation, and debugging tools.
Documentation, software libraries, ecosystem documents, and tools for the series are now available on the website, providing customers with extensive development references. We also provide a series of solutions for energy storage inverters, DC charging piles, digital power supplies and other applications, providing users with rich design references.

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