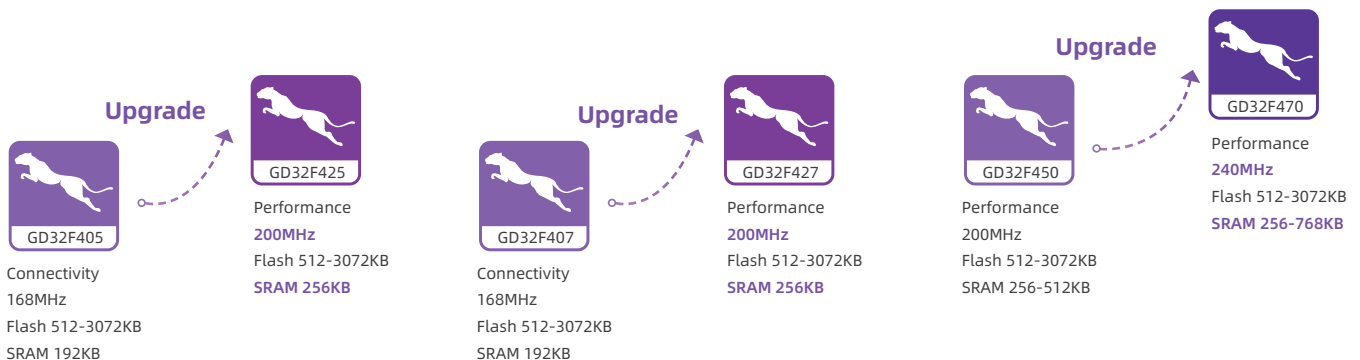# GD32F470/F427/F425 High Performance Line

The Most Powerful ARM® Cortex®-M4 Core-Based Product in the GD32 MCU Product Family

The newly launched GD32F470/F427/F425 series of high-performance microcontrollers expands the GD32F4 product family. The new series offers a large memory capacity and high core frequency. It inherits the rich peripheral interfaces and enhanced security functions of the GD32F4 series. It is fully compatible with GD32F450/F407/F405 products, providing customers with improved performance. The GD32F470x MCU series are available in high-volume quantities to meet market demand.

Advanced Manufacturing Technology Reduces Power Consumption while Achieving Better Cost-Effectiveness

The 40nm advanced process can meet the sophisticated requirements of the increasing MCU control system. It achieves lower power consumption, effectively extending the life of the end device while enhancing system reliability & safety and reducing the silicon area of a single chip to achieve better cost-effectiveness.

Performance Optimization while Providing Full Hardware / Software Compatibility

GD32F405
Connectivity
168MHz
Flash 512-3072KB
SRAM 192KB

Upgrade

GD32F425
Performance
200MHz
Flash 512-3072KB
SRAM 256KB

GD32F407
Connectivity
168MHz
Flash 512-3072KB
SRAM 192KB

Upgrade

GD32F427
Performance
200MHz
Flash 512-3072KB
SRAM 256KB

GD32F450
Performance
200MHz
Flash 512-3072KB
SRAM 256-512KB

Upgrade

GD32F470
Performance
240MHz
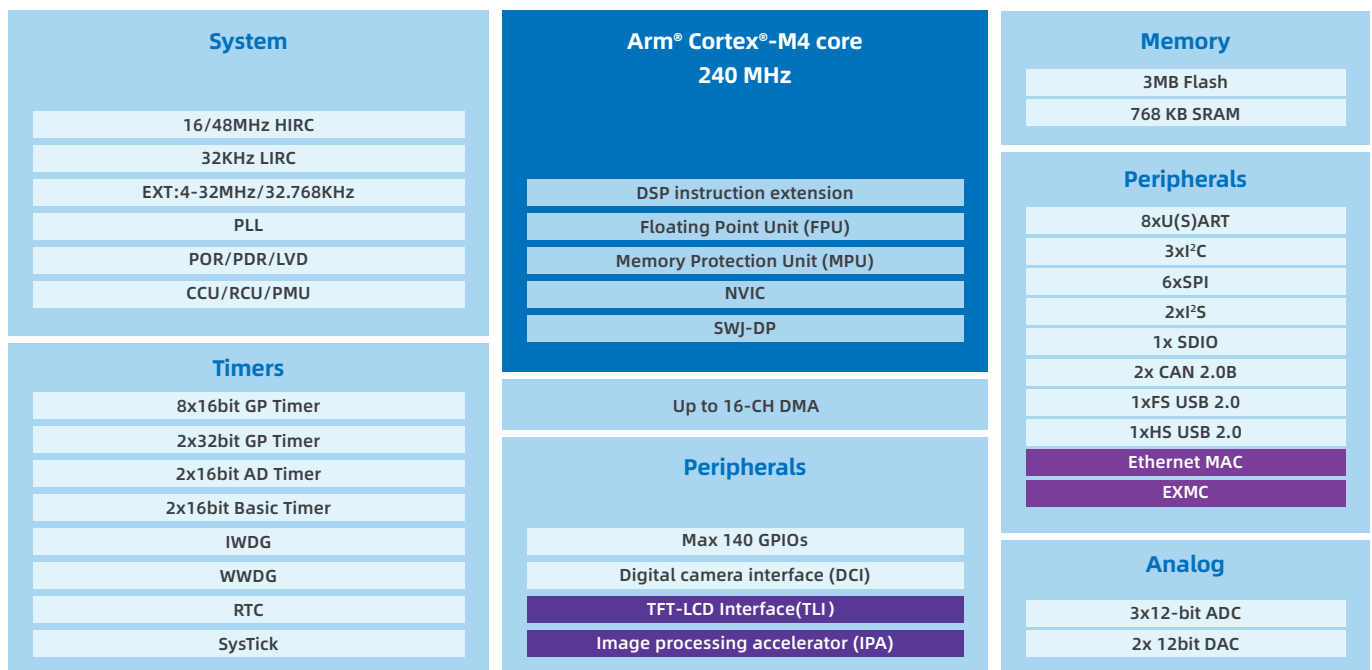Flash 512-3072KB
SRAM 256-768KB

The new GD32F470/F427/F425 series closely follows the broader market demand, covering an extended range of differentiated market applications with high performance, real-time processing, and high storage capacity.
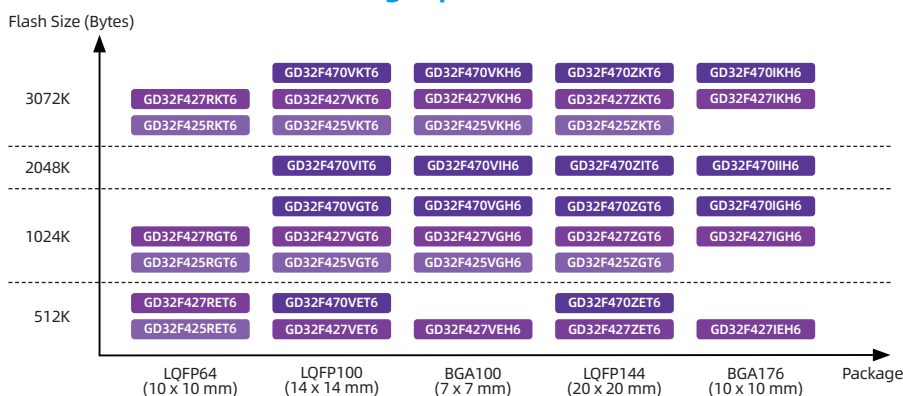
GD32F470/F427/F425 Block Diagram

Notes: GD32F470 provides the highest performance and the most comprehensive peripheral interfaces.

Available on GD32F427/F470
Available on GD32F470 only

System

- 16/48MHz HIRC
- 32KHz LIRC
- EXT:4-32MHz/32.768KHz
- PLL
- POR/PDR/LVD
- CCU/RCU/PMU

Timers

- 8x16bit GP Timer
- 2x32bit GP Timer
- 2x16bit AD Timer
- 2x16bit Basic Timer
- IWDG
- WWDG
- RTC
- SysTick

Arm® Cortex®-M4 core
240 MHz

- DSP instruction extension
- Floating Point Unit (FPU)
- Memory Protection Unit (MPU)
- NVIC
- SWJ-DP

Up to 16-CH DMA

Peripherals

- Max 140 GPIOs
- Digital camera interface (DCI)
- TFT-LCD Interface(TLI)
- Image processing accelerator (IPA)

Memory

- 3MB Flash
- 768 KB SRAM

Peripherals

- 8xU(S)ART
- 3xI²C
- 6xSPI
- 2xI²S
- 1x SDIO
- 2x CAN 2.0B
- 1xFS USB 2.0
- 1xHS USB 2.0
- Ethernet MAC
- EXMC

Analog

- 3x12-bit ADC
- 2x 12bit DAC

GD32F470/F427/F425 High-performance Portfolio

Flash Size (Bytes)

	LQFP64 (10 x 10 mm)	LQFP100 (14 x 14 mm)	BGA100 (7 x 7 mm)	LQFP144 (20 x 20 mm)	BGA176 (10 x 10 mm)
3072K	GD32F427RKT6 / GD32F425RKT6	GD32F470VKT6 / GD32F427VKT6 / GD32F425VKT6	GD32F470VKH6 / GD32F427VKH6 / GD32F425VKH6	GD32F470ZKT6 / GD32F427ZKT6 / GD32F425ZKT6	GD32F470IKH6 / GD32F427IKH6
2048K		GD32F470VIT6	GD32F470VIH6	GD32F470ZIT6	GD32F470IIH6
1024K	GD32F427RGT6 / GD32F425RGT6	GD32F470VGT6 / GD32F427VGT6 / GD32F425VGT6	GD32F470VGH6 / GD32F427VGH6 / GD32F425VGH6	GD32F470ZGT6 / GD32F427ZGT6 / GD32F425ZGT6	GD32F470IGH6 / GD32F427IGH6
512K	GD32F427RET6 / GD32F425RET6	GD32F470VET6 / GD32F427VET6	GD32F427VEH6	GD32F470ZET6 / GD32F427ZET6	GD32F427IEH6

Development tools

GD32470I-EVAL / GD32470Z-EVAL

A full-featured evaluation board based on the GD32F470IKH6 / GD32F470ZKT6, respectively. Supports software development, debugging, and demonstrates the complete functional capabilities of the device.

GD32F470V-START / GD32F427H-START / GD32F427V-START / GD32F427R-START

Entry-level learning boards based on the GD32F470VKT6 / GD32F427VKH6 / GD32F427VKT6 / GD32F427RKT6, respectively. These correspond to different package types to support simpler application development and debugging.