GD32系列Cortex®-M3 MCU：打造价值出众的智能创新平台

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About GigaDevice

- Founded in 2005
- The Largest Volume Fabless SPI NOR Flash Supplier, World Wide
- The 1st GD32 ARM® Cortex®-M3 MCU in China
- Gigadevice Innovation: The 1st 8-pin SPI NAND Flash in the World

Sales Office Worldwide

- London, UK
- Seoul, Korea
- Yokohama, Japan
- Beijing, HQ
- Shanghai
- Hong Kong
- Taiwan
- CA, USA
- TX, USA
- Shenzhen
With GigaDevice rich memory and controller IC design experiences...

- 2005 – SRAM
- 2008 – SPI NOR Flash
- 2013 – 32-bit Cortex®-M3 MCU

GD32 series of 32-bit MCUs
- Latest 32-bit ARM® Cortex®-M3 core
- 10 complete product lines
- Excellent performance & real-time response
- Optimized active power consumption
- Outstanding ESD & EMC level
- Rich peripherals & interface combination
- Comprehensive IDE & software compatible
GD32 MCU Product Trend

- Standard ARM® Cortex® -M core
- Multiple integrated peripherals
- Complete product lines for selection
- IDE & software compatible

All Series Compatible

- Scalable architecture
- Fit for simple to complex application
- Same development experiences
- Consolidated development costs
GD32 MCU Road Map (Y13-Y16)

Cortex-M3

Mainstream 108MHz
Flash (KB) : 16-128
SRAM (KB) : 4-128

Basic 56MHz
Flash (KB) : 16-128
SRAM (KB) : 4-16

Connectivity 108MHz, Ethernet MAC
Flash (KB) : 128-1024
SRAM (KB) : 96

Connectivity 108MHz, USB OTG FS
Flash (KB) : 64-1024
SRAM (KB) : 64-96

Performance 120MHz
Flash (KB) : 256-3072
SRAM (KB) : 128-256

Mainstream 108MHz
Flash (KB) : 256-3072
SRAM (KB) : 48-96

Value Line

Value 72MHz
Flash (KB) : 16-64
SRAM (KB) : 4-8

Value 48MHz
Flash (KB) : 16-64
SRAM (KB) : 4-8

5V Value 72MHz
Flash (KB) : 16-64
SRAM (KB) : 4-8

5V Value 48MHz
Flash (KB) : 16-64
SRAM (KB) : 4-8

LQFP176  LQFP144  LQFP100  LQFP64  LQFP48  QFN36  QFN32  QFN28  TSSOP20
GD32 M3 Portfolio ~200P/N

Value
- GD32F130: 50 DMIPS
- GD32F150: 74 DMIPS
- GD32F170: 74 DMIPS
- GD32F190: 74 DMIPS

Mainstream
- GD32F103: 110 DMIPS
- GD32F105: 110 DMIPS
- GD32F107: 110 DMIPS

High Performance
- GD32F205: 150 DMIPS
- GD32F207: 150 DMIPS

Frequencies:
- GD32F130: 48MHz
- GD32F150: 72MHz
- GD32F170: 48MHz
- GD32F190: 72MHz
- GD32F103: 56MHz
- GD32F105: 108MHz
- GD32F107: 108MHz
- GD32F205: 120MHz
- GD32F207: 120MHz
GD32F2 Configuration

**GD32F207 Performance Line**
- 120 MHz Frequency
- Up to 3 MB Flash
- Up to 256KB SRAM
- CAN 2.0B
- USB 2.0 FS OTG
- Ethernet MAC
- SDIO
- LCD TFT
- SDRAM
- Camera
- Crypto Hash

**GD32F205 Performance**
- 120 MHz Frequency
- Up to 3 MB Flash
- Up to 256KB SRAM
- CAN 2.0B
- USB 2.0 FS OTG
- SDIO
- LCD TFT
- SDRAM
GD32F1x0 Value Line

GD32F1x0 Value line Cortex®-M3 MCU
◆ Same cost with Cortex®-M0+ MCU by optimized IC design method & process
◆ Same system development experience with Cortex®-M0+ MCU
◆ Replace Cortex®-M0+ MCU with more cost-effective way

GD32F130/150 VS GD32F170/190 Series:
◆ More flexible & easy use
◆ Hardware Pinout compatible
◆ Software Register compatible
### GD32F1x0 Advantage

<table>
<thead>
<tr>
<th>GD32F1x0 series of value line Feature</th>
<th>Advantage</th>
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<tbody>
<tr>
<td>◆ ARM® Cortex-M3® 32-bit Core</td>
<td>Brings valued high-performance with higher real-time response speed</td>
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<td>◆ Flash access Zero wait-state</td>
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<td>◆ 7 Channel DMA</td>
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<tr>
<td>◆ 5 x 16-bit GP. Timer with PWM output</td>
<td>Best choice for industrial control</td>
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<tr>
<td>◆ 1 x 32-bit GP. Timer with PWM output</td>
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<tr>
<td>◆ 1 x Adv. Timer for 3-phase complementary output</td>
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<tr>
<td>◆ 1 x Basic counting Timer</td>
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<tr>
<td>4.5Mbit/s USART, 18Mbit/s SPI, 400KHz I2C</td>
<td>Basic communication interface integrated</td>
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<td>◆ 12-bit ADC</td>
<td>Advanced analog peripherals integrated</td>
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<td>◆ 12-bit DAC</td>
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<td>◆ OP-AMP, Comparator, I_{REF}/V_{REF}, etc.</td>
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<tr>
<td>2 * Watchdog, Calendar RTC</td>
<td>System cost down</td>
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<td>POR/PDR/LVD, PLL, HSI/LSI</td>
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<tr>
<td>Lowest Price down to U$0.30/ea</td>
<td>BOM cost down for 8-bit &amp; 16-bit upgrade</td>
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GD32F130/150 Portfolios

- GD32F130 and GD32F150 value line
- 16K-64K Flash, 4K-8K SRAM
- 2.6-3.6V supply; 5V tolerance I/Os
- -40°C to +85°C industrial level operating temperature
- Series pin to pin compatible and flexible S/W compatible

<table>
<thead>
<tr>
<th>Flash Size</th>
<th>GD32F130F4P6</th>
<th>GD32F130F8P6</th>
<th>GD32F130G4U6</th>
<th>GD32F130G6U6</th>
<th>GD32F130G8U6</th>
<th>GD32F130K4U6</th>
<th>GD32F130K6U6</th>
<th>GD32F130K8U6</th>
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<tbody>
<tr>
<td>16K</td>
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<td>32K</td>
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<td>64K</td>
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Edition: 11
GD32F170/190 Portfolios

- GD32F170 and GD32F190 5V value line
- 16K-64K Flash, 4K-8K SRAM
- 2.5-5.5V supply; 5V tolerance I/Os
- -40°C to +85°C industrial level operating temperature
- Series pin to pin compatible and flexible S/W compatible

Outstanding ESD protection capability
- \( V_{HBM} \) up to ±8KV, ESD Level 3B
- \( V_{CDM} \) up to ±2KV

Advanced Analog:
- ADC + DAC
- 3 x OP-AMP
- 2 x COMP
- 2 x CAN 2.0B
- 1 x CAN PHY
Simply entry with the best price!

- Cortex®-M3 Core @ 48 MHz
- Flash from 16 KB to 64 KB
- SRAM from 4 KB to 8 KB
- Up to 18KB ISP loader ROM
- Up to 2 x USART (9Mbit/s)
- Up to 2 x SPI (30Mbit/s)
- Up to 2 x I2C (400Kbit/s)
- 1 x 12bit, 1M SPS ADC (up to 9 chs),
- Three Power saving mode
- Battery supply for RTC and backup register
- Standby Current @ 1uA

Price US$0.30
MCU is IoT “Node”

- High performance
- Cost-effective
- Easy use
GD32 MCU IOT End-Product

Intelligent Home
- Health gateway
- Intelligent lighting
- Intelligent socket
- Drone
- Hoverboard
- Vacuum Robert

Embedded WIFI module
- BLE Module
- RFID label
- OBD

Industry Connectivity
- Barcode scanning
GD32 Development Eco-system

GD32 MCU full function Eval-board (16 P/Ns)
- For on-chip function fully evaluation, including interfaces, external memory bus and LCD, etc.
- Extension header for available I/Os for quick connection to prototyping board and easy probing with onboard GD-link.

GD32 MCU learning starter kit (12 P/Ns)
- Based on GD32 series MCU entry level starter kit, extension header for all package pins for quick connection to prototyping board and easy probing with onboard GD-link or other compatible simulators.
- Support Arduino compatible interface in selected model

Build GD32 development environment with H/W and S/W compatible

![KEIL, IAR, USB, J-link, SEGGER, Weillon, SUPERPRO, ZLG, Elnec, PE, micro]
GD32 Development Tools

Software Support
- GD32 MCU ISP Programmer
- GD32 MCU DFU Tool
- GD32 MCU Multi-Port Download Tool

GD-Link 3-in-1 Tool
- GD-Link on-line Debugger
- GD-Link on-line Programmer
- GD-Link off-line Programmer
GD32 Handle Industry Challenges Easily

- Multiplex products
- Best peripherals
- Series compatible
- Easy to use
- Eco-system
- Sufficient Capacity
- Fast lead time
- High Performance
- Cost-effective
- Quality
Thanks!

Outstanding Value
Innovation Choice