

**GigaDevice Semiconductor Inc.**

**Arm<sup>®</sup> Cortex<sup>®</sup>-M3 32-bit MCU**

**Application Note  
AN031**

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## 1. Introduction

In this article, basing on the difference between GD32F105xx / GD32F107xx series and GD32F205xx / GD32F207xx series, several differences are briefly introduced as follows.

## 2. Series difference

### 2.1. Resource difference

#### 2.1.1. System resource difference

System resource difference is shown as below.

**Table 2-1. System resource difference**

System resource	GD32F1xxx	GD32F2xxx
System Frequency	108MHz	120MHz
Flash Capacity	3MB	3MB
SRAM Capacity	96KB	256KB

#### 2.1.2. Peripheral resource difference

Peripheral resource difference is shown as below.

**Table 2-2. Peripheral resource difference**

Peripheral resource	GD32F1xxx	GD32F2xxx
GPIO	112 IOs(maximum)	140 IOs(maximum)
DMA	2	2
TIMER	13	14
ETH	1(only 107)	1(only 207)
ADC	2	3
I2C	2	3
UART	5	8
EXMC	1	1
SDIO	--	1
DCI	--	1(only 207)
TLI	--	1
CAU	--	1(only 207)
HAU	--	1(only 207)
TRNG	--	1(only 207)

## 2.2. Peripheral difference in detail

### 2.2.1. GPIO difference

Comparing to F1 series, F2 series add some new modules. Considering that IOs are in time division multiplexing mode, which is used by multiple peripherals, GPIO add some remap functions, refer to the register description about AFIO\_PCF2、AFIO\_PCF3、AFIO\_PCF4 and AFIO\_PCF5. without new modules of F2 series, both are fully compatible.

### 2.2.2. DMA difference

There are 7 channels in DMA1 for F2 series, and 5 channels in DMA1 for F1 series. Compared to F1 series, more channel of DMA1 support more peripherals.

### 2.2.3. ADC difference

F1 series only support 12 bits resolution, while F2 series support 12 bits、 10 bits、 8 bits and 6 bits resolution. In 12 bits' resolution, the ADC maximum conversion rate of F1 series is 1MSPS, and F2 series is 2 MSPS. There is 3 ADCs for F2 series, support ADC2, while F1 series only support 2 ADCs, not support ADC2.

### 2.2.4. I2C difference

There is 3 I2Cs for F2 series, support I2C2, while F1 series only support 2 I2Cs, not support I2C2.

### 2.2.5. USART difference

In the interval of sending two bytes, there is IDLE bit for F1 series, while not for F2 series. The UART highest rate of F2 series is 7.5Mbits/s, while F1 series is 6.75Mbits/s. Comparing to F1 series, F2 series support more functions, such as LSB/MSB configuring, data invert configuring and timeout, refer to the register description about USART\_CTL3、 USART\_RT and USART\_STAT1.

### 2.2.6. EXMC difference

The EXMC of F2 series is similar to F1 series, while F2 series additional support SDRAM.

### 3. Revision history

**Table 3-1. Revision history**

Revision No.	Description	Date
1.0	Initial Release	Nov.30 2021

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