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**GigaDevice Semiconductor Inc.**

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

**应用笔记**

**AN031**

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## 1. 简介

本文基于 GD32F105xx / GD32F107xx 与 GD32F205xx / GD32F207xx 的差异，在下文中做简要描述。

## 2. 系列差异

### 2.1. 资源差异

#### 2.1.1. 系统资源差异

系统资源差异如下表所示。

表 2-1. 系统资源差异

系统资源	GD32F1xxx	GD32F2xxx
系统最高主频	108MHz	120MHz
Flash 容量	3MB	3MB
SRAM 容量	96KB	256KB

#### 2.1.2. 外设资源差异

外设资源差异如下表所示。

表 2-2. 外设资源差异

外设资源	GD32F1xxx	GD32F2xxx
GPIO	112 I/Os	140 I/Os
DMA	2	2
TIMER	13	14
ETH	1(仅 107)	1(仅 207)
ADC	2	3
I2C	2	3
UART	5	8
EXMC	1	1
SDIO	--	1
DCI	--	1(仅 207)
TLI	--	1
CAU	--	1(仅 207)
HAU	--	1(仅 207)
TRNG	--	1(仅 207)

## 2.2. 外设差异

### 2.2.1. GPIO 差异

F2 系列相较于 F1 系列增加部分模块，为了多个模块能够分时复用，增加了部分 GPIO 的重映射功能，具体可以参考 F2 的用户手册 AFIO\_PCF2、AFIO\_PCF3、AFIO\_PCF4、AFIO\_PCF5 章节的寄存器描述。如果不使用到新增的功能，二者可以完全兼容。

### 2.2.2. DMA 差异

F1 的 DMA1 有 5 个通道，F2 的 DMA1 有 7 个通道，F2 相较于 F1，DMA 拥有更多的通道，可支持更多的外设。

### 2.2.3. ADC 差异

F1 系列仅支持 12 位分辨率，F2 系列支持 12 位、10 位、8 位和 6 位分辨率。12 位分辨率下，F1 系列 ADC 最高转换率可达 1 MSPS，F2 系列为 2 MSPS。F2 系列有 3 路 ADC，支持 ADC2，F1 系列仅有 2 路 ADC，不支持 ADC2。

### 2.2.4. I2C 差异

F2 系列有 3 路 I2C，支持 I2C2，F1 系列仅有 2 路 I2C，不支持 I2C2。

### 2.2.5. USART 差异

F1 系列发送两字节数据之间会存在 IDLE 位，F2 系列不存在该现象。F2 系列最高速率可达 7.5Mbits/s，F1 系列最高速率可达 6.75Mbits/s。F2 系列与 F1 系列相比，支持更多的功能，如数据收发前的数据高低位和反转位配置、超时等，具体参见寄存器 USART\_CTL3、USART\_RT、USART\_STAT1。

### 2.2.6. EXMC 差异

F2 系列和 F1 系列的 EXMC 基本相同，但增加了支持 SDRAM。

### 3. 版本历史

表 3-1. 版本历史

版本号.	说明	日期
1.0	首次发布	2021 年 11 月 30 日

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