APM32F103x8

Errata Sheet

Version: V 2.2

Contents

1 Introduction

This Manual mainly introduces the limitations of the APM32F103x8 series products during use. If you encounter the application scenarios described in the manual during the use of the product, please use the product according to the solutions provided in the manual; if no solution is provided, please avoid this application scenario.

2 Errata List

Table 1 Errata List

Category	Introduction	Product version		
		A1	A2	B1
GPIO	AC characteristics of GPIO	●	×	×
	GPIO output	●	●	●
System	Impact of system clock on power consumption	●	●	●
Clock	HSE serves as the clock source	●	●	●
Wake-up in Standby Mode	Operations before entering Standby mode	●	●	●

Note: "●" indicates that this errata description is involved in this version; the 'X' indicates that it is not involved in this version.

3 GPIO

3.1 AC characteristics of GPIO

Problem description

PA8 and PC8 are equipped with an external 50pF load capacitor. At 2V low voltage, the output rate is 10MHz square wave, and the output duty cycle is high, ranging from 60% to 70%.

Solutions

It is recommended to avoid the simultaneous occurrence of low-voltage and low-speed (e.g. 2V, 10MHz) conditions when this pin is used.

The I/O speed is related to the configuration, normal at high speed and abnormal at low speed . For example, if I/O is configured to 50MHz mode and outputs 10M at 2V, the duty cycle is normal.

3.2 GPIO output

Problem description

When the GPIO port is configured as multiplexing push-pull output, the output voltage may be affected by external interference and is unable to output accurate levels; when configured as floating input to read the external I/O input values, it may be affected by external interference and is unable to read accurate values.

Solutions

It is suggested that when configured as multiplexing push-pull output, an external pull-up resistor should be connected; when configured as floating input, an internal pull-up resistor should be connected externally or it should be configured as a pull-up input.

4 System

4.1 Impact of system clock on power consumption

Problem description

After the tick clock is initialized, turn off and then turn on the peripheral clock, and the operating power consumption will increase. Normally it is 2.9mA, and after it increases, it becomes 5.6mA.

Solutions

In the above state, adjust the wait cycle from 0 to 1~3, and it can return to normal.

5 Clock

5.1 HSE serves as the clock source

Problem description

When the timeout value of the software that sets the HSE startup time is too small (e.g. 0x0500), external clock startup ready timeout may occur, which may result in the failure of using HSE as the clock source.

Solutions

To ensure normal startup of the crystal oscillator, it is recommended to modify the external clock wait time timeout value to at least 0x3200.

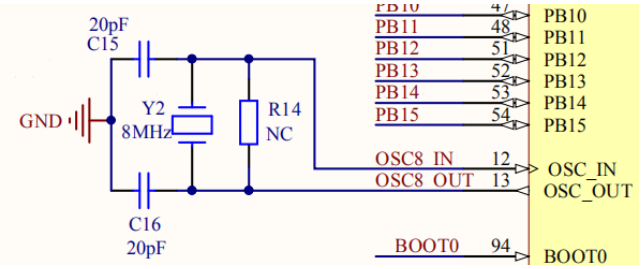
The macro definition of HSE_STARTUP_TIMEOUT can be modified. For the V3.x version library functions, the macro definition is in XXX32F10x.h;

For the library before V3.0, the macro definition is in XXX32f10x_RCC.c.

The recommended crystal oscillator circuit is shown below (the capacitance value should match the crystal oscillator model):

#define HSE_STARTUP_TIMEOUT ((uint16_t)0x3200) (recommended 0x3200, maximum 0xffff).

Figure 1 Crystal Oscillator Circuit



5.2 PLL frequency multiplication

Problem description

After doubling to 24MHz using PLL, the frequency output through the PA8 pin is unstable.

Solutions

Choose either of the following solutions:

- When using PLL multiplication, first use a large multiplication coefficient to increase the frequency of the VCO, and then output at a lower frequency. For example, increase the PLL frequency to 48MHz and then divide its frequency to 24MHz through an AHB prescaler.
- Related problems can be solved by migrating the B1 version.

6 Wake-up in Standby Mode

Problem description

In Standby mode, the system supports multiple wake-up sources. These signals are combined (using a logical OR) before reaching the rising edge detector. When a valid edge is detected, a wake-up flag (WUEFLG) is generated. To ensure the MCU enter and stay in Standby mode, you must clear the WUEFLG flag first; otherwise, it will wake up immediately. Note that if any active wake-up source stays high while clearing the flag (setting the WUFLGCLR bit), the detector's input also stays high. As a result, it cannot detect new level changes, which masks future wake-up events and prevents the MCU from waking up properly.

Solution 1

To prevent this issue, follow these steps before entering Standby mode:

(1) Disable all used wake-up sources.

(2) Clear all related wake-up flags.

(3) Reenable all used wake-up sources.

Solution 2

Keep only one wake-up source before entering Standby mode (for example, turn off the RTC alarm and leave only the PA0 WKUP function on).

7 Revision history

Table2 Document Revision History

Date	Version	Revision History
August 2024	1.0	● Initial release
August 2025	2.1	● Add Chapter 6.2
April 2026	2.2	● Delete Chapter 2: Product Version and Silk Screen Printing Instructions ● Add Chapter 6: Wake-up in Standby Mode

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8. Scope of Application

The information in this document replaces the information provided in all previous versions of the document.