32 -bit microcontroller

GPIO module for **HC32L110/HC32F003/HC32F005** series

Applicable object

series	Product number
HC32L110	HC32L110C6UA HC32L110C6PA HC32L110C4UA HC32L110C4PA HC32L110B6PA HC32L110B4PA
HC32F003	HC32F003C4UA HC32F003C4PA
HC32F005	HC32F005C6UA HC32F005C6PA HC32F005D6UA

content

1 Summary

This application note mainly introduces the GPIO modules of the HC32L110 / HC32F003 / HC32F005 series.

This application note mainly includes:

ÿ GPIO module introduction

ÿ Reset pin is multiplexed as input port

ÿ SWD port multiplexing as I/O function

ÿ The crystal oscillator port is multiplexed as IO function

Notice:

- This application note is an application supplement for the HC32L110 / HC32F003 / HC32F005 series and is not intended to replace the user manual.

  Please refer to the user manual for specific functions and register operations.

2 Function introduction

GPIO is a general-purpose input and output module. The MCU can set an IO to analog mode as ADC input; set it as a digital input

Input and output, or peripheral ports, are used by specific peripherals. Before using the port function, you need to control the clock of the GPIO module first.

function is on.

3 GPIO modules

3.1 Reset pin multiplexing as input port

The Reset pin can be multiplexed as input port P0.0.

If you want to use Reset as the input port P0.0, the process is as follows:

1. The GPIO module clock control function is turned on: PERI_CLKEN.GPIO is set to 1

2. Reset_USE_IO clock control bit of system control register: SYSCTRL1. RES_UIO enable

Notice:

- In the peripheral circuit design when the Reset pin is reused, make sure that the pin cannot be low level (Low Level), otherwise the program cannot run.
- Similarly, even if it is not multiplexed, it is only used as a Reset pin, and this pin cannot be left floating.

3.2 SWD port multiplexing as I/O function

SWCLK and SWDIO pins can be multiplexed as I/O pins.

The multiplexing I/O function process is as follows:

1. The GPIO module clock control function is turned on: PERI_CLKEN.GPIO is set to 1

2. The SWD_USE_IO clock control bit (SYSCTRL1. SWD_UIO) of the system control register is enabled

3. P27_SEL.SEL and P31_SEL.SEL are set to 0

4. P2DIR.P27 and P3DIR.P31 are set as input (1) or output (0)

Notice

- When the SWD port is multiplexed as the I/O function, the online debugging and download function through SWD will be invalid.
- During user debugging, other programs without multiplexing SWD can be downloaded through the serial port to resume SWD online debugging and download function, or add a wait signal before multiplexing the SWD port (refer to the sample in the driver library).

3.3 The crystal oscillator port is multiplexed as an I/O port

When the external high-speed crystal oscillator and low-speed crystal oscillator are not used, the following ports can be multiplexed as I/O functions.

X32MOUT ÿ P0.1

X32MIN ÿ P0.2

X32KOUT ÿ P1.5

X32KIN ÿ P1.4

The multiplexing I/O function process is as follows:

1. The GPIO module clock control function is turned on: PERI_CLKEN.GPIO is set to 1.

2. P0.1 and P0.2, P1.5 and P1.4 need to be configured as digital ports: the related bits of P0ADS and P1ADS are configured as 0.

3. The function configuration register is selected as GPIO function: P01_SEL, P02_SEL, P15_SEL, P14_SEL are set to 0.

4. Select the input and output direction: set the relevant bits of P00DIR and P1DIR (0: output, 1: input)

3.4 Other GPIO function configuration

For other function configuration, please refer to the user manual of this series.

4 Reference samples and drivers

Through the above introduction and with the user manual of HC32L110 / HC32F003 / HC32F005 series, we can understand

Methods and precautions for multiplexing Reset pin, SWD pin, and external crystal pin as input and output pins.

Huada Semiconductor (HDC) officially provides the application sample and driver library of this module at the same time. Users can open the sample by opening the

The project is further intuitively familiar with the application of the module and the driver library, and can also directly refer to the sample and use in the actual development

Driver library to quickly implement the operation of this module.

ÿ Example reference: ~/HC32L110_DDL/example/gpio

~/HC32F003_DDL/example/gpio

~/HC32F005_DDL/example/gpio

ÿ Driver library reference: ~/HC32L110_DDL/driver/…/gpio

~/HC32F003_DDL/driver/…/gpio

~/HC32F005_DDL/driver/…/gpio

5 Summary

The above chapters briefly introduced some port multiplexing functions of the GPIO modules of the HC32L110 / HC32F003 / HC32F005 series.

Yes, in the actual application development process, if the user needs to have a deeper understanding of the usage and operation of this module,

The corresponding user manual shall prevail. The samples and driver libraries mentioned in this article can be used as user's further experiments and learning.

It can also be directly applied in actual development.

6 Other information

Technical support information: www.hdsc.com.cn

7 Version Information & Contact Information

date	Version revision record	
2018/5/31	The first version of Rev1.0 is released.	

If you have any comments or suggestions in the process of purchasing and using, please feel free to contact us.

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