32-bit microcontroller

MCU Low Power Mode Debug Instructions

Suitable

series	Product number	series	Product number
HC32L110	HC32L110C6UA HC32L110C6PA HC32L110C4UA HC32L110C4PA HC32L110B6PA HC32L110B4PA	**HC32F030**	HC32F030E8PA HC32F030F8UA HC32F030F8TA HC32F030J8TA HC32F030K8TA
HC32F003	HC32F003C4UA HC32F003C4PA	**HC32L136**	HC32L136J8TA HC32L136K8TA
HC32F005	HC32F005C6UA HC32F005C6PA HC32F005D6UA	**HC32L130**	HC32L130E8PA HC32L130F8UA HC32L130J8TA

content

1 Summary

This application note mainly introduces the method of debugging programs in low power consumption mode of Huada Semiconductor MCU*.

This application note mainly includes:

ÿ Introduction of working mode

ÿ How to debug programs in low power mode

Notice:

- This application note is a supplementary material for the application of Huada Semiconductor MCU*, and cannot replace the user manual.

  Please refer to the user manual for the operation of the device and other related matters.

2 Introduction to working mode

This series of MCUs has three working modes:

1) Operation mode (ActiveMode): The CPU is running, the on-chip peripherals are running normally, and the SWD interface is running normally.

2) Sleep Mode (SleepMode): The CPU stops, the on-chip peripherals run normally, and the SWD interface runs normally.

3) Deep Sleep Mode (DeepSleepMode): CPU stops, most of the on-chip peripherals stop running, and the SWD interface stops.

stop running.

* See the cover for supported models.

3 Methods of Debugging Programs in Low Power Mode

Since the SWD interface stops working in the deep sleep mode, you can only use the sleep mode to debug and work in the deep sleep mode.

code below.

3.1 How to debug a program in sleep mode

1. Set a breakpoint on the line where the __WFI() function is located.

2. Set a breakpoint on the next line of the __WFI() function.

3. When the program runs to the line where the __WFI() function is located, select [Full Speed Execution] in the IDE.

4. When an interrupt occurs, the interrupt signal wakes up the MCU, and the program automatically executes to the next line of the __WFI() function.

Notice:

- Requires SWD interface enable (SYSCTRL1.SWD_USE_IO=0).

- When executing the __WFI() function, it must be executed at full speed; single-step execution is not allowed.

3.2 How to debug programs in deep sleep mode

1. The previous line of the __WFI() function writes SCB_SCR = 0x00.

2. Debug the function of the program according to the method in 3.1 Debugging the program in sleep mode.

3. After the function debugging is completed, modify the previous line of the __WFI() function to SCB_SCR = 0x01<<2.

Notice:

- Requires SWD interface enable (SYSCTRL1.SWD_USE_IO=0).

- When executing the __WFI() function, it must be executed at full speed; single-step execution is not allowed.

4 Summary

The above chapters briefly introduce the method of debugging programs in low power consumption mode.

Refer to this example to debug the program.

5 Additional information

Technical support information: www.hdsc.com.cn

6 Version Information & Contact Information

date	Version revision record	
2018/10/18	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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