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32-bit microcontroller

HC32L110 / HC32F003 / HC32F005

Abnormal switching of the system clock of the series

Suitable

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

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1 Summary

This application note mainly introduces the clock monitoring module of HC32L110 / HC32F003 / HC32F005 series.

This application note mainly includes:

ÿ Abnormal monitoring of external low-speed or high-speed crystal oscillator

ÿ Exception handling when external crystal oscillator is used as system clock

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

HC32L110 / HC32F003 / HC32F005 series monitor mode is mainly used to select a stable clock source as a reference time

It monitors the abnormal state of the system working clock under the set clock cycle. When only external 32M can be selected in monitoring mode

clock or external 32K clock as the monitored clock.

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3 Clock Monitor Mode

3.1 Abnormal monitoring of external low-speed or high-speed crystal oscillator

ÿ Select reference clock

ÿ Select external low-speed or high-speed crystal oscillator for the monitored clock

ÿ Monitoring interval time setting (reference clock count time)

ÿ Set the monitored overflow time (note: the overflow time must be less than the monitoring interval)

ÿ Monitoring function is enabled

ÿ Enable interrupt

ÿ Start monitoring

During the monitoring process, if the monitored external low-speed or high-speed crystal oscillator counter still does not overflow after the monitoring time expires, it will

A crystal failure flag is generated and an interrupt is triggered. The user can handle the abnormal state caused by the failure of the external crystal oscillator according to this mark.

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3.2 Exception handling when external crystal oscillator is used as system clock

When an external crystal oscillator is used as the system clock, if an abnormality occurs, in addition to the above steps, it is necessary to

SYSCTTL1.CLOCL_FAULT_EN The clock failure detection enable control bit is turned on. After the crystal oscillator fails, the system will automatically

The system clock is switched to the internal 4M to avoid the risk of system crash due to crystal failure.

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4 Reference samples and drivers

Through the above introduction, together with the user manual of HC32L110 / HC32F003 / HC32F005 series, we

The MCU's external crystal oscillator monitoring function and operation method have been further mastered.

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 Sample reference: ~/HC32L110_DDL/example/trim

~/HC32F003_DDL/example/trim

~/HC32F005_DDL/example/trim

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

~/HC32F003_DDL/driver/…/trim

~/HC32F005_DDL/driver/…/trim

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5 Summary

The above chapters briefly introduce the basic functions of the clock monitoring module of the HC32L110 / HC32F003 / HC32F005 series.

In the actual application development process, if you need to have a deeper understanding of the use method and operation matters of this module, you should use the corresponding

The user manual shall prevail. The samples and driver libraries mentioned in this article can be used as further experiments and learning by users, or

Direct application in actual development.

6 Other information

Technical support information: www.hdsc.com.cn

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7 Version Information & Contact Information

date	Version revision record	
2018/6/1	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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