

FAQ0070

Frequently Asked Questions

How to shorten AT32F403 Flash bank erase time?

Questions:

How to shorten Flash bank erase time of AT32F403?

Answer:

Flash mass erase can be done by FLASH_CTRL register or unlocking Flash access protection.

In most cases, the FLASH_CTRL register is used to perform bank erase operation. Select bank erase by setting the bit 2 to 1 in the FLASH_CTRL register, and activate erase operation by setting its bit 6 to 1.

If Flash size is 512 KB or smaller, erase bank1 through the FLASH_CTRL register;

If Flash size is larger than 512 KB but less than or equal to 1024 KB, erase bank1 and bank2 through the FLASH_CTRL and FLASH_CTRL2 registers, respectively.

For AT32F403 series, its bank erase time is as follows:

PN	Typical mass erase value
AT32F403xC	5S
AT32F403xG	20S

Unlocking Flash access protection can trigger bank erase. The access protection is unlocked through the flash_fap_enable(FALSE), with the procedures as follows:

- Erase the whole user system data area, the Flash access protection code (FAP) is changed to 0xFF, but the access protection is still active;
- Write a correct FAP code 0xA5 to unlock memory protection. This operation will trigger user Flash bank erase operation
- Perform reset to reload user system data (and new FAP code), then the access protection is unlocked.

The table below lists the time to be spent on unlocking AT32F403 access protection:

PN	Typical time value to unlock access protection
AT32F403xC	2S
AT32F403xG	3S

Comparing these two tables, the time for unlocking access protection is shorter, and thus it is a better way to erase the entire Flash memory.

Type: MCU applications

Applicable products: AT32F403

Main function: FLASH

Minor function: None

Document revision history

Date	Revision	Changes
2022.2.16	2.0.0	Initial release

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