

Notes on using CPU for IO toggle

Questions:

Why is the first waveform frequency not accurate when using CPU to toggle IO port and simulate PWM output?

Answer:

Because codes are stored in Flash memory, CPU takes longer time to read and execute them, resulting in slower waveform frequency.

For AT32 series, it temporarily stores the code after execution into a fast cache. In this case, when a CPU intends to execute the same code again in a short time, there is no need for CPU to read Flash again, leads to shorter runtime and quicker waveform frequency.

To obtain the same frequency, there are two ways below:

1. Use PWM output of Timer
2. Place code in SRAM, and disable all interrupts and DMA during IO toggling period.

Type: MCU application

Applicable products: AT32 series

Main function: None

Other function: None

Document revision history

Date	Revision	Changes
2022.2.28	2.0.0	Initial release

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