

OCR1A Double buffering characteristics would be more suitable for this application.

#### Input Capture Mode

Input capture to capture external events and give them a time stamp indicating the time the event occurs, may be performed in front of the counting mode, but used to remove ICR1 As the count value TOP Waveform value generation patterns.

External trigger event occurs by pin ICP1 Input may be realized by an analog comparator unit. When the pin ICP1 Logic level on the output is changed, or the analog comparator ACO Level is changed, and this change in level is input to the capture unit captures input capture is triggered, then 16 Bit count value TCNT1 Data is copied into the input capture register ICR1 While input capture flag ICF1 Set, if ICIE1 Bit "1" , Input Capture Flag generates an Input Capture interrupt.

By setting the Analog Comparator Control and Status Register ACSR The analog comparator input capture control bit ACIC To select the input capture trigger source ICP1 or ACO . It should be noted that the change may cause a trigger source input capture, and therefore must be changed after the trigger source ICF1 To conduct a clearing operation to avoid erroneous results.

Capture Input selection control signal after an optional noise suppressor edge detector, based on the input capture ICES1 Configuration, see whether or not the detected edge trigger condition is met. Noise suppressor is a simple digital filtering, the input signal 4 Samples only when 4 When samples are equal the output value will be the edge detector. By the noise suppressor TCCR1B Register ICNC1 Bit control their enabled or disabled.

When using the input capture function, when ICF1 After being set, should be read as early as possible ICR1 Value of the register, because the next time capture after the event ICR1 The value will be updated. Recommended enable input capture interrupt at any input capture mode, the change count is not recommended during operation TOP value.

Input captured timestamp other features may be used to calculate the frequency and the duty ratio signal, as a trigger event and create a log. Measuring the duty cycle required external signal each time after the capture trigger edge is changed, so read ICR1 After the value of the edge-triggered signal to be changed as soon as possible.

#### PWM Automatically shutdown and restart of output

When set TCCR1C Register DOC1x Bit is high, PWM When auto-off feature is enabled, the trigger condition is met, the hardware clears the corresponding output COM1x Bits, PWM output signal OC1x And its output pin is disconnected, the switching to a common IO Output achieved PWM Automatically shut down the output. At this time, the state of the output pin by a general IO To control the output.

PWM Off automatically after the output is enabled, which also need to set the trigger conditions from TCCR1D Register DSX1n Bits to select trigger source. Triggered by an analog comparator interrupt, external interrupt, the interrupt pin change and the timer overflow interrupt, please refer to the specific circumstances TCCR1D Register description. Or when a certain trigger source is selected as the trigger condition, in which the interrupt flag is set at the same time, the hardware will be cleared COM1x Bit to close PWM Output.

In the event of a triggering event closed PWM After the output, the timer module is no corresponding interrupt flag, the software needs to know the trigger and the trigger event by source interrupt flag read.

when PWM When the output is automatically switched off and the need to restart output again, the software only needs to be reset COM1x Position to switch