fast PWM mode

Set up WGM1 [3: 0] = 5 , 6 , 7 , 14 or 15 When the timer counter 1 Enter the fast PWM Mode, the maximum count TOP Respectively 0xFF , 0x1FF , 0x3FF , ICR1 or OCR1A , It can be used to generate high frequency PWM Waveform. fast

PWM Patterns and other PWM Except that it is a one-way mode operation. From the counter BOTTOM To accumulate TOP Then came back BOTTOM Re-count. When the count value TCNT1 Arrives TOP or BOTTOM , The output signal of the comparison OC1x It will be set or cleared, depending on the comparison output mode COM1 Setting, as detailed register description. Since the one-way operation, fast PWM Operating frequency of the phase correction mode is employed bi-directionally operable PWM Double mode. It makes the fast frequency

PWM Mode is suitable for power regulation, rectification and DAC application. High-frequency signal can be reduced external components (capacitors, inductors) in size, thereby reducing system cost.

When the count value reaches TOP When the timer counter overflow flag TOV1 It will be set, and the updated buffer value comparison value to the comparator. If enabled, can be updated in the interrupt service routine OCR1A register.

Set up OC1x Pin data direction register as an output a comparison signal to obtain an output OC1x Waveform. Frequency of the waveform following formula can be calculated:

$$f_{oc1xfpwm} = f_{sys} / (N * (1 + TOP))$$

among them, N It represents the prescale factor (1 , 8 , 64 , 256 or 1024).

when TCNT1 with OCR1x Compare match, the waveform generator to set (clear) OC1x Signal, when TCNT1 When cleared, the waveform generator will be cleared (set) OC1x Signal in order to produce PWM wave. thus OCR1x The extremes will produce special PWM Waveform. when OCR1x Set as 0x00 , The output of PWM For each (1 + TOP) There is a clock count of a narrow spike. when OCR1x Set as TOP Waveform, the output is continuously high or low. If you use OCR1A As a TOP And set COM1A = 1 , The comparator output signal OC1A It will have a duty cycle of 50% of PWM wave.

Phase correction PWM mode

When set WGM0 [3: 0] = 1 , 2 , 3 , 10 or 11 When the timer counter 1 Enter phase correction PWM Max mode, counting TOP Respectively 0xFF , 0x1FF , 0x3FF , ICR1 or OCR1A . Bidirectional counter operation by BOTTOM

Increments to TOP And then descending to BOTTOM , Then repeat this operation. Count reaches TOP with BOTTOM Have to change direction when the count value TOP or BOTTOM On average only stay a count clock. In the process increments or decrements the count value

TCNT1 versus OCR1x Match, the comparison signal output OC1x It will be set or cleared, depending on the comparison output mode COM1 setting. Compared with the one-way operation, bidirectional operation obtainable maximum operation frequency, but its excellent symmetry is more suitable for motor control.

Phase correction PWM Mode, when the count reaches BOTTOM When set TOV1 Flag when the count reaches TOP When the buffer is updated to compare the value of the comparison value. If enabled, the interrupt service routine can be updated relatively buffer OCR1x Register.

Set up OC1x Pin data direction register as an output a comparison signal to obtain an output OC1x Waveform. Frequency of the waveform following formula can be calculated:

$$f_{oc1xcpcpwm} = f_{sys} / (N * TOP * 2)$$

among them, N It represents the prescale factor (1 , 8 , 64 , 256 or 1024).

In up-counting process, when TCNT1 versus OCR1x Match, the waveform generator will be cleared (set) OC1x signal. in