fast PWM mode

Set up WGM2 [2: 0] = 3 or 7 When the timer counter 2 Enter the fast PWM Mode, can be used to generate high frequency PWM Waveform, the counter maximum value TOP Respectively MAX (0xFF)or OCR2A . fast PWM Patterns and other PWM Except that it is a one-way mode operation. Counter from the minimum 0x00 To accumulate TOP Then came back BOTTOM Re-count. When the count value TCNT2 Arrivals OCR2x or BOTTOM , The output signal of the comparison OC2x It will be set or cleared, depending on the comparison output mode COM2x 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 the maximum value, the timer counter overflow flag TOV2 It will be set, and the updated buffer value comparison value to the comparator. If enabled, the interrupt service routine can be updated relatively buffer OCR2x register. Set up OC2x Pin data direction register as an output a comparison signal to obtain an output OC2x Waveform. Frequency of the waveform following formula can be calculated:

$$f_{oc2xfpwm} = f_{sys} / (N * (1 + TOP))$$

among them, N It represents the prescale factor (1 , 8 , 64 , 256 or 1024). when TCNT2 with OCR2x Compare match, the waveform generator to set (clear) OC2x Signal, when TCNT2 When cleared, the waveform generator will be cleared (set) OC2x Signal in order to produce PWM wave. thus OCR2x The extremes will produce special PWM Waveform. when OCR2x Set as 0x00 , The output of PWM For each (1 + TOP) There is a clock count of a narrow spike. when OCR2x When set to the maximum value, the output waveform for sustained high or low.

Phase correction PWM mode

When set WGM2 [2: 0] = 1 or 5 When the timer counter 2 Enter phase correction PWM Max mode, counting TOP Respectively MAX (0xFF)or OCR2A . 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 TCNT2 versus OCR2x Match, the comparison signal output OC2x It will be set or cleared, depending on the comparison output mode COM2x 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 TOV2 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 OCR2x register. Set up OC2x Pin data direction register as an output a comparison signal to obtain an output OC2x Waveform. Frequency of the waveform following formula can be calculated:

$$f_{oc2xpcpwm} = f_{sys} / (N * TOP * 2)$$

among them, N It represents the prescale factor (1 , 8 , 64 , 256 or 1024). In up-counting process, when TCNT2 versus OCR2x Match, the waveform generator will be cleared (set) OC2x signal. In the process of counting down, when TCNT2 versus OCR2x When the match is set to the waveform generator (clear) OC2x signal. thus OCR2x The extremes will produce a special PWM wave. when OCR2x When set to the maximum or minimum value, OC2x Output signal will remain low or high.

In order to ensure that the output PWM Wave symmetry of both sides of the minimum value, a compare match does not occur, there will be two cases flipping OC2x signal. The first case is when OCR2x Value by the maximum value 0xFF When changes to other data. when OCR2x The maximum value, the count value reaches the maximum, OC2x The same output result of the comparison in the previous match count in descending, i.e. holding OC2x constant. At this value will be updated relatively new OCR2x The value of the (non 0xFF), OC2x The value will remain until