**For ICG signal**

**Clock Characteristics (Ta = 25°C) (3.0 V ≤ VAD = VDD < 4.0 V)**

1: For best performance, the device should be used within the Recommended Operating Conditions.

| Characteristic | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|
| Master clock pulse frequency | $f_{\phi M}$ | 0.8 | 2.0 | 2.4 | MHz |
| Data rate | fDATA | 0.2 | 0.5 | 0.6 | MHz |

At $F_{DATA}$ = 500Khz data rate (This is considering the typical value)

3694 pixels x 1/500Khz = 7388 us read out time

Rounding up = 7500 us

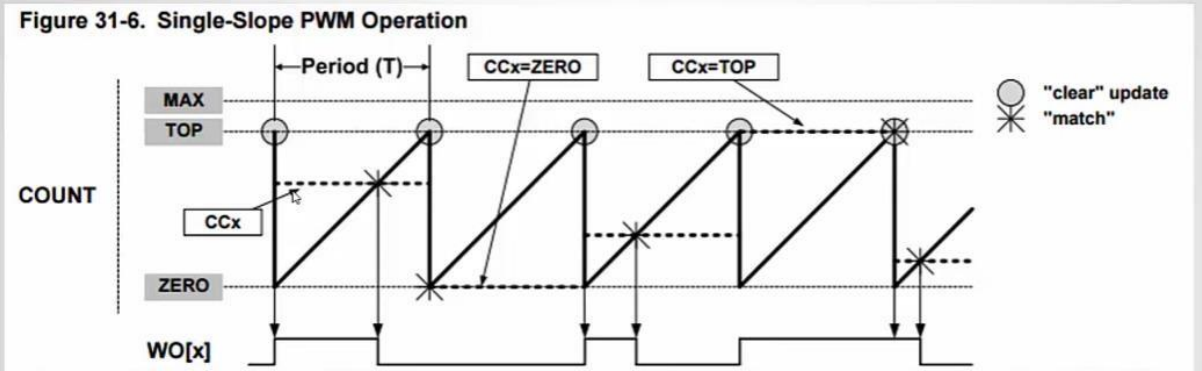
For the MKR1000 freq = 48MHZ

Period = 20.833ns

Frequency for ICG = 1/7500us = 133.3Hz

Duty cycle = 10us/7500us = 0.133%

The ICG value remains the same regardless of the integration time



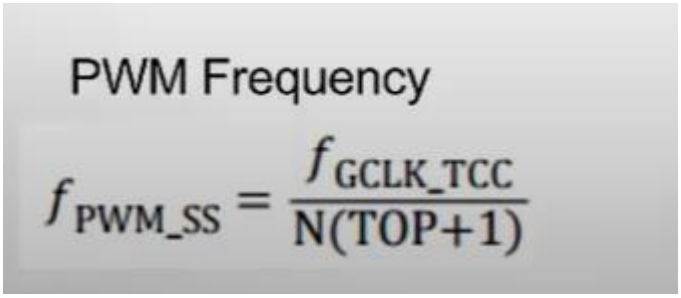

To calculate the wper for the ICG signal

We use the below formula wper = (48Mhz/133.33)-1 = 360008 (well have to use a prescaler because this value will need a 32 bit timer)

And the ccx value will be 360008 x (0.133/100)

**For SH signal**

The ccx register for SH signal, taking signal as 48Mhz with prescaler set to 1 Using the below formula to calculate the wper value or the top value




However for the SH signal the guy in the following video

https://www.youtube.com/watch?v=HUR3rHimIv0&t=351s

mentioned that the ccx will always count to 336 so 336 x 11.9ns = 3998.4 us $T_{ON}$ here $T_{ON}$ will always remain same which is for his case

so for our case the $T_{ON}$ will always be 3998.4us regardless of the period

so the duty cycle will be 3998.4us/integration time

but the frequency can be calculated based on the integration time

freq = 1/Integration time