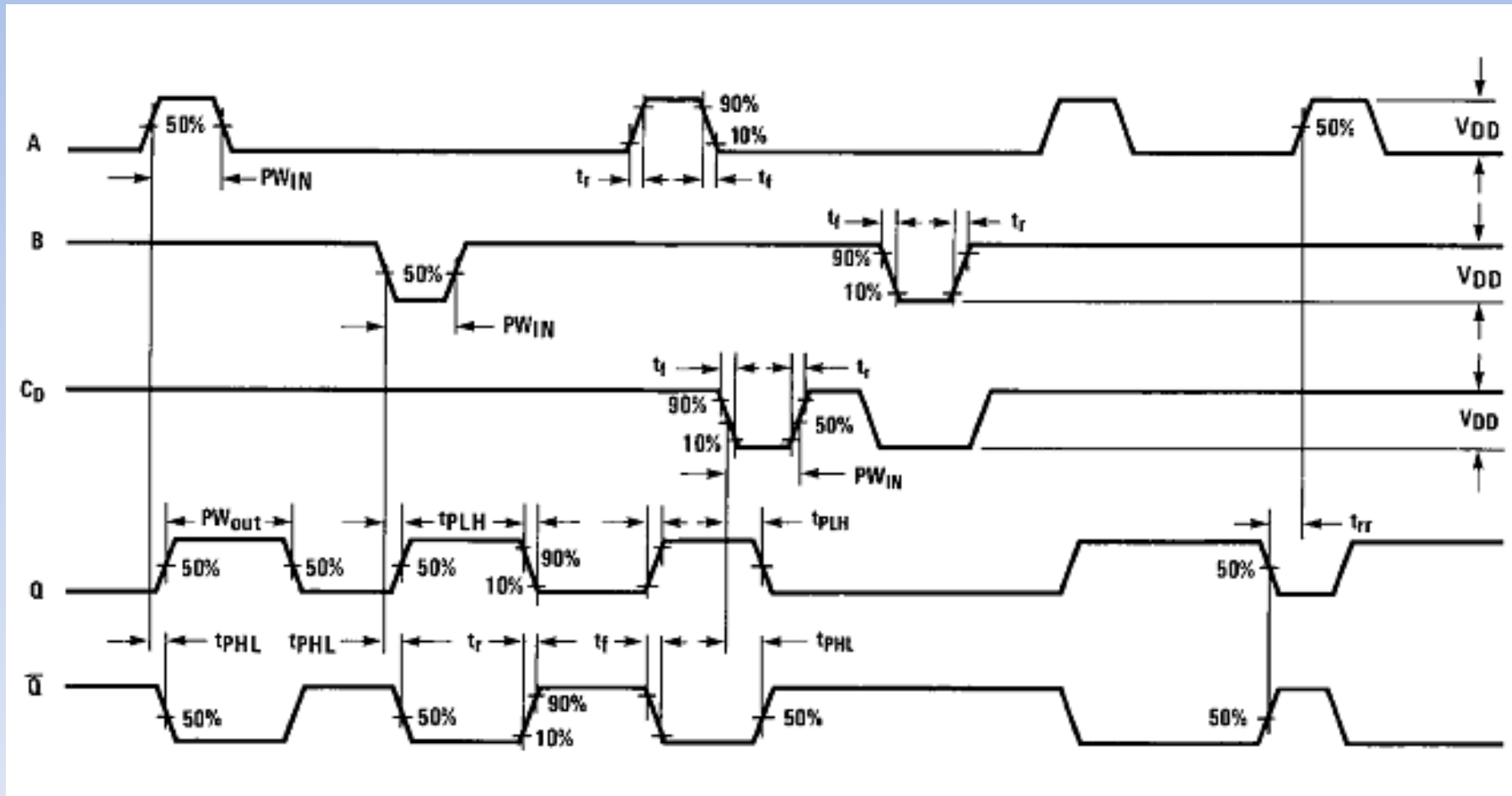


# 时间测量-----参数指标

Tr-----上升沿  
 Tf-----下降沿  
 Pulse Width-----脉冲宽度  
 Propagation Delay-----延迟  
 Period/Frequency-----周期/频率

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$t_r$	Output Rise Time	$t_r = (3.0 \text{ ns/pF}) C_L + 30 \text{ ns}, V_{DD} = 5.0\text{V}$ $t_r = (1.5 \text{ ns/pF}) C_L + 15 \text{ ns}, V_{DD} = 10.0\text{V}$ $t_r = (1.1 \text{ ns/pF}) C_L + 10 \text{ ns}, V_{DD} = 15.0\text{V}$		180 90 65	400 200 160	ns
$t_f$	Output Fall Time	$t_f = (1.5 \text{ ns/pF}) C_L + 25 \text{ ns}, V_{DD} = 5.0\text{V}$ $t_f = (0.75 \text{ ns/pF}) C_L + 12.5 \text{ ns}, V_{DD} = 10\text{V}$ $t_f = (0.55 \text{ ns/pF}) C_L + 9.5 \text{ ns}, V_{DD} = 15.0\text{V}$		100 50 35	200 100 80	ns
$t_{PLH}$ $t_{PHL}$	Turn-Off, Turn-On Delay A or B to Q or $\bar{Q}$ Cx = 15 pF, Rx = 5.0 k $\Omega$	$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 240 \text{ ns}, V_{DD} = 5.0\text{V}$ $t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 8 \text{ ns}, V_{DD} = 10.0\text{V}$ $t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 65 \text{ ns}, V_{DD} = 15.0\text{V}$		230 100 65	500 250 150	ns
	Turn-Off, Turn-On Delay A or B to Q or $\bar{Q}$ Cx = 100 pF, Rx = 10 k $\Omega$	$t_{PLH}, t_{PHL} = (1.7 \text{ ns/pF}) C_L + 620 \text{ ns}, V_{DD} = 5.0\text{V}$ $t_{PLH}, t_{PHL} = (0.66 \text{ ns/pF}) C_L + 257 \text{ ns}, V_{DD} = 10.0\text{V}$ $t_{PLH}, t_{PHL} = (0.5 \text{ ns/pF}) C_L + 185 \text{ ns}, V_{DD} = 15.0\text{V}$		230 100 65	500 250 150	ns

# 时间测量-----时序图



# TMU Module----- Basic Settings

1. Select Operation
  - Time Mode
    - RiseTime
    - PulseWidth
    - Delay
    - Period Mode
    - Frequency Mode
    - Duty Mode
2. Select Impedence
  - Loz---50ohm
  - Hiz---1Mohm
3. Input Terminal
  - A/B
4. Input Filter
  - 10Mhz
  - 1Mhz
  - 100Khz
  - None
5. Trigger Voltages
  - Ragnes
  - Loz low voltage
6. Select Slope
  - Pos
  - Neg

# TMU Module----- Other Settings

## 7. Pre-Scaler

- Cycles to be measure

## 8. Start Hold Off

## 9. Pre-Counter/Event-Counter

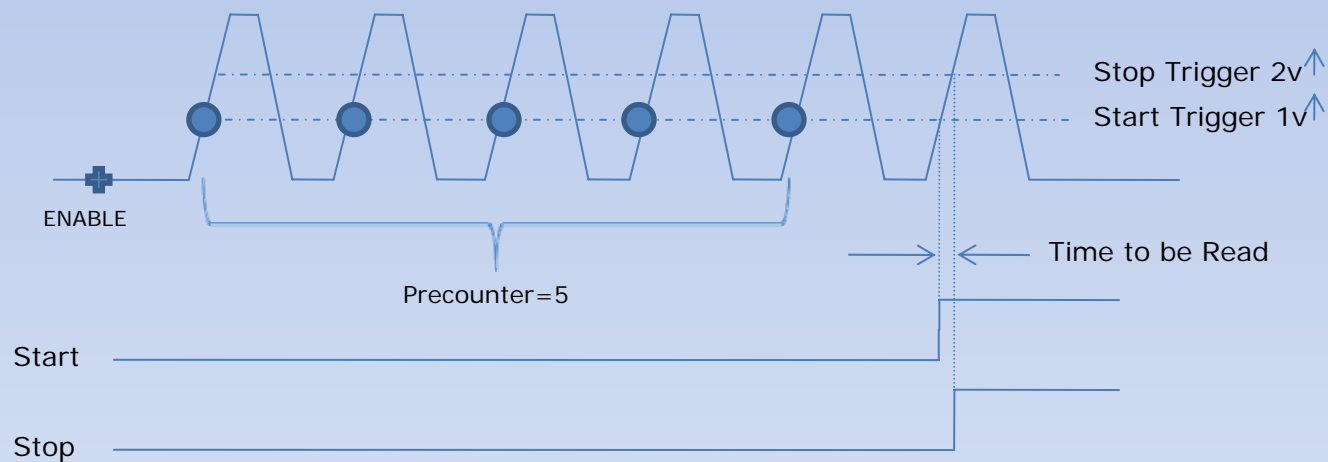
## 10. Starting/Completing Measurement

## 11. TimeOut

# TMU Module----- Program example

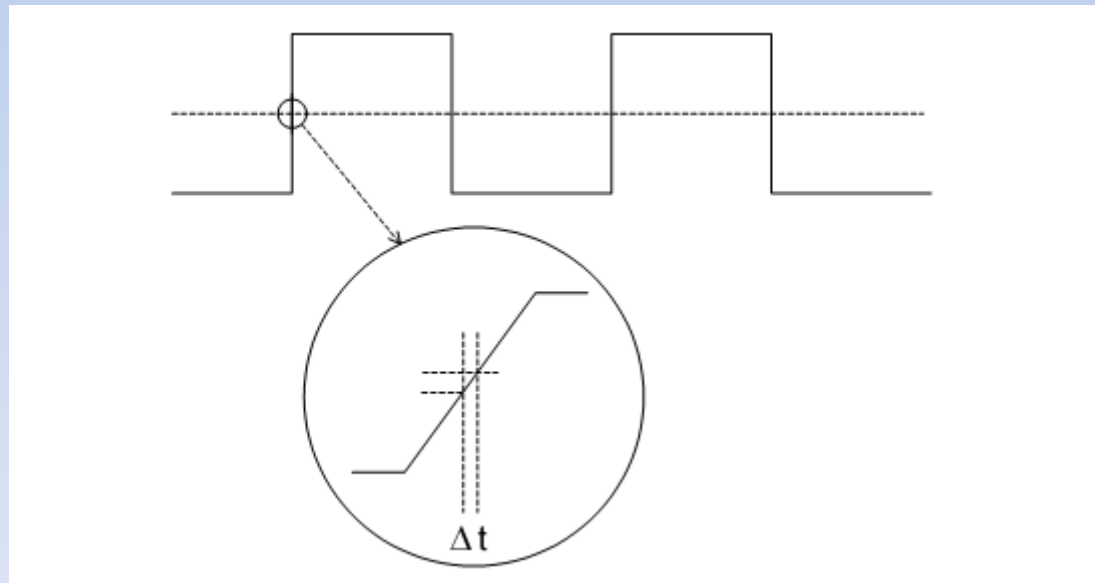
```
double ex_time ;
      :
      :
1.   set time imp=hiz ;
2.   Set time filter=none ;
      :
      :
3.   Set time imp=loz,tout=100ms → Set of impedance/timeout
4.   Set time stch=a,spch=b ;    → Set of start/stop channels
5.   Set time st=1v,sp=2v ;      → Set of trigger level
6.   Set time stsl=+,spsl=+ ;    → Set of start/stop slopes
7.   Set time hold=none ; [NOTE 2] → Hold off condition to add to a
                                     start
8.   Set time prec=5 ; [NOTE 2]    → Set of start pre-counter
9.   Set time filter=10meghz ; [NOTE 2] → Set of input filter
10.  Wait 3ms ; [NOTE 1]          → Time required for secure relay
                                     operation
11.  Set time enable ;
12.  Settings to lead signals to the time module
     set cbit on=1 ;
     set power on ;
     wait **s ; etc.
13.  ex_time=read_time();
14.  test var(ex_time),dlo=12.70ms,dhi=12.90ms,fbin=10;
```

# TMU Module----- Program example

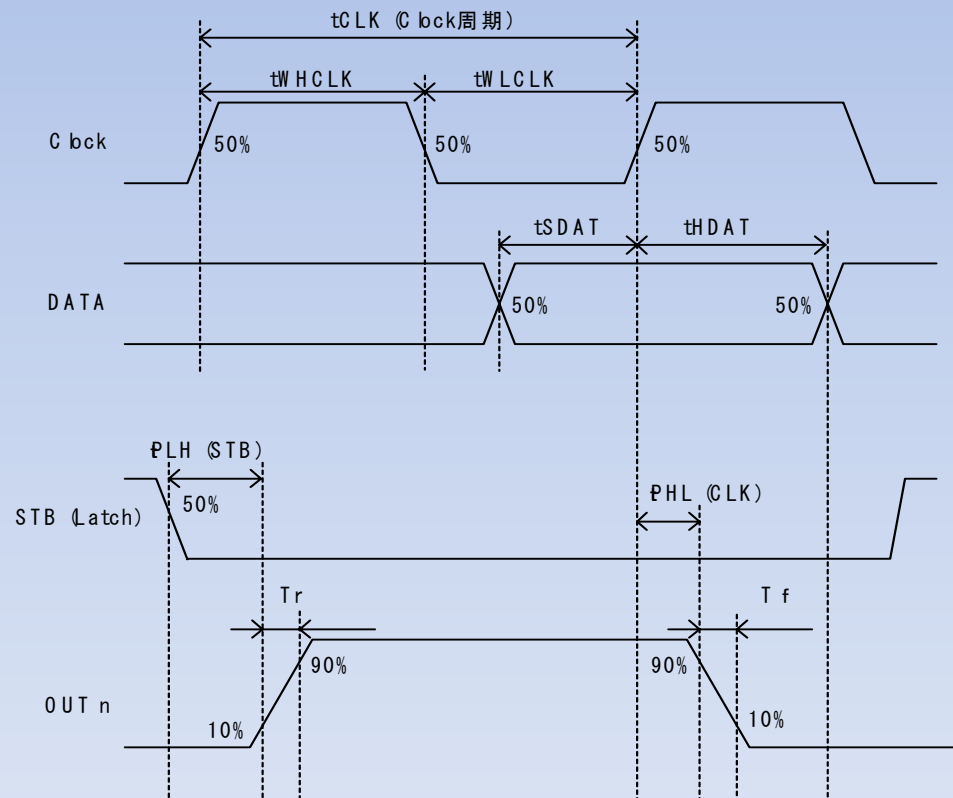


# TMU Module-----Period

Set Time ...  
Set Period ...

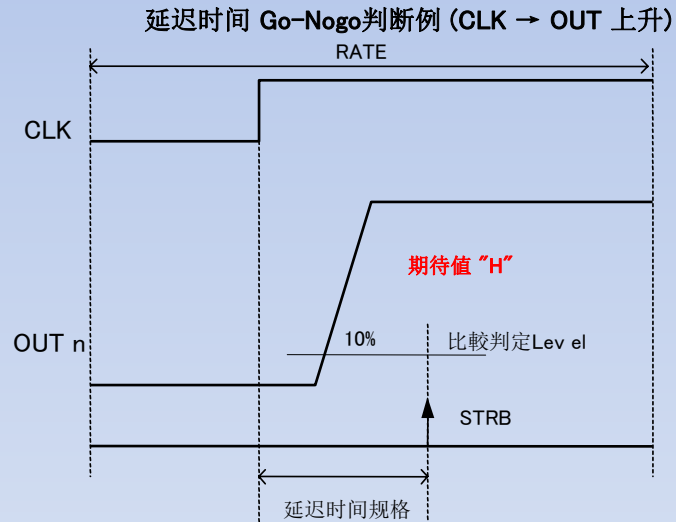


# 数字管脚的时间测量



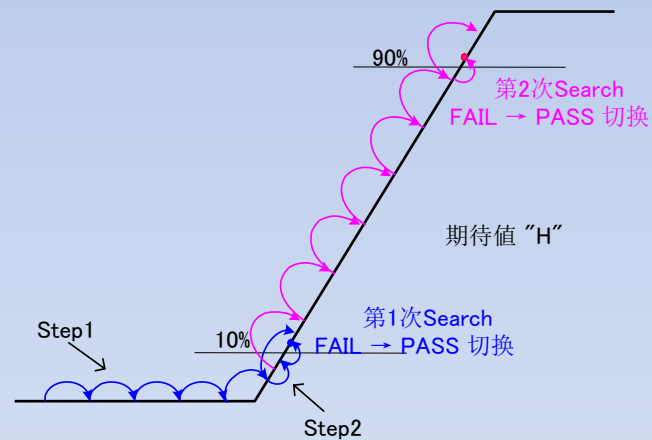


# 数字管脚的时间测量



将STRB设定为STRB= CLK 上升沿 + 延迟时间规格值  
期待值为“H”，若规定时间内波形完成上升则PASS

使用STRB Sweep (Search功能) 测试时间



对STRB进行Sweep,测试从10%和90%的FAIL到PASS的时间  
上升时间用( $T_r$ ) = 第2次的Search时间(90%) - 第1次的Search时间(10%)来计算

谢谢!