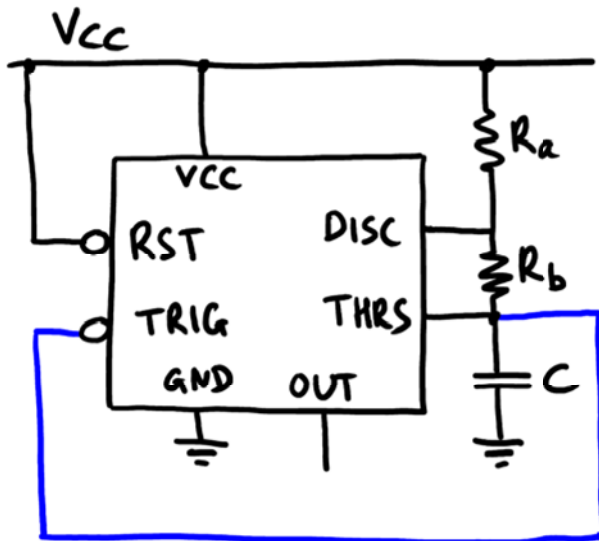


PHYS 3360 / AEP 3630  
Lecture 31

Oscillator configuration of 555

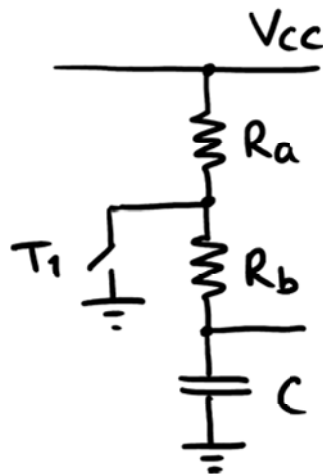


step 1) assume  $v_c = 0$  @  $t = 0$

$$v_{\text{trig}} = 0$$

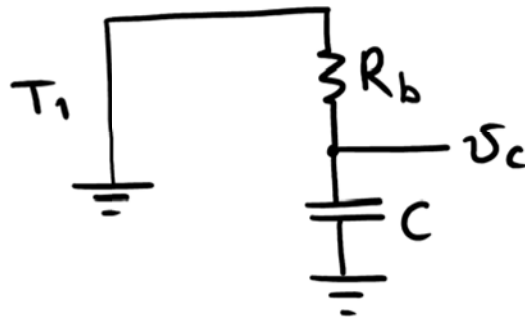
$$v_{\text{th}} = 0$$

$\Rightarrow C$  charges to \_\_\_\_\_ thru \_\_\_\_\_



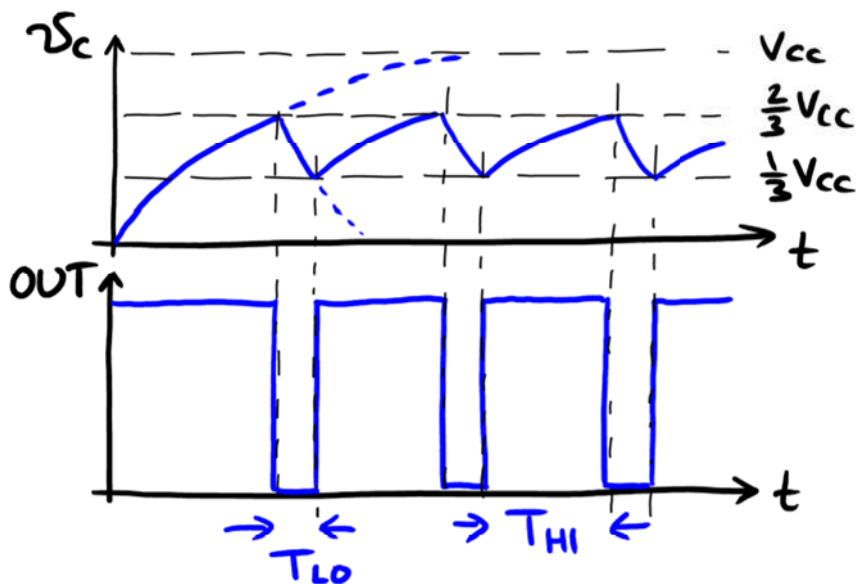
step 2) when  $v_c > \frac{1}{3}V_{cc}$

step 3) when  $v_c \geq \frac{2}{3}V_{cc}$



step 4) when  $v_c < \frac{2}{3}V_{cc}$

step 5) when  $v_c < \frac{1}{3}V_{cc}$



$$f = \frac{1}{T_{HI} + T_{LO}}$$

- \*  $f$  does not depend on  $V_{CC}$
- \*  $f$  is stable ( $< 1\%$ )

Q: what if want  $T_{HI} < T_{LO}$ ?

1)

2)

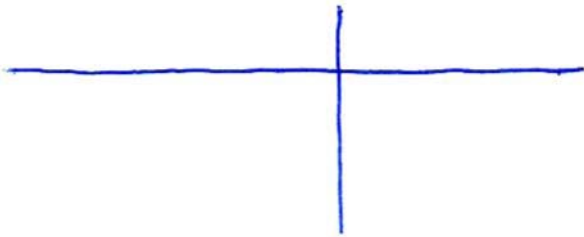
3)

PHYS 3360/AEP 3630

①

Lecture 32

TTL (and variants) family of one-shots



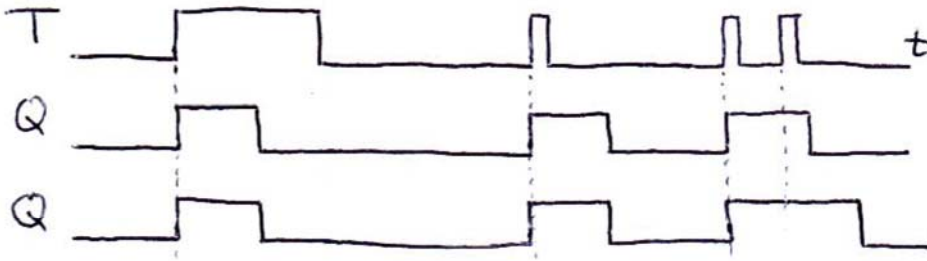
-

-

## 74x123 retriggerable one-shot

(2)

other families



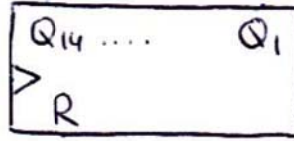
Application: missing pulse monitor

### Use of one-shots

- convenient
- can be issues

③

Most functionality can be achieved with  
\_\_\_\_\_ and \_\_\_\_\_



### Precision clocks

- 555 oscillator has limited accuracy
- often require much better accuracy

# Quartz Crystal oscillators

④

uses Piezo effect :

