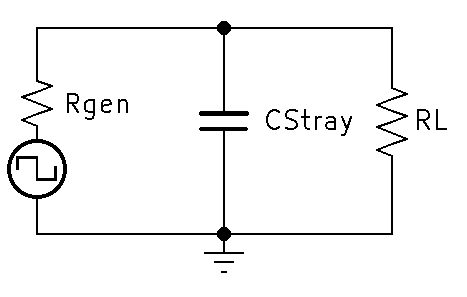
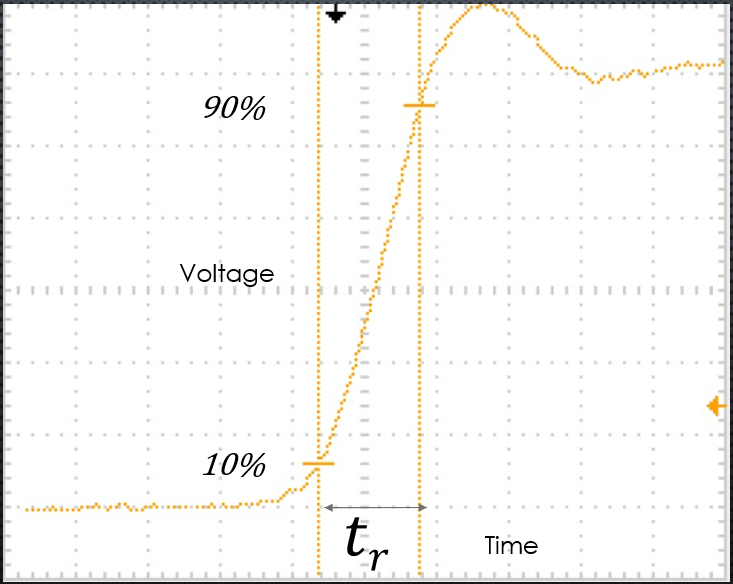
**High Frequency Distortion** is caused by **parallel capacitance** and results in an increase in the **Rise & Fall Times** of a square wave.

* Consider the following circuit



* Using Square-Wave analysis and a known rise time, we can calculate the circuits high critical frequency by dividing .35/(rise time).

**Deriving the High Critical Frequency Formula:**

**Givens:**

* *Rise Time is measured from 10% to 90%*

**Known Formulas from Second Semester:**

* Xc =

**Knowing that at Critical Frequency Xc is equal to R, we can derive the following**

* Xc =
* @ FCH, R = XC
* R =
* FCH =

**Rise time is the time measured from 10% to 90% of the waveform amplitude. Therefore, If you set the equation in terms of rise time we get the following**

* = .1

**And Therefore,**

* =
* =
* =
* -2.19722 =
* =

**We have solved for two formulas, now we can solve the final equation.**

* + = & *FCH* =
  + *FCH* =
  + *FCH* =
  + ***FCH* =** OR ***FCH* =**

**References**:

Bell, D. A. (1997). *Solid state pulse circuits*. Sarnia, ON: David A. Bell.