## Relaxation Oscillator Values and Functions

$R_1 = 47.75k\Omega, \quad R_2 = 47.47k\Omega$

$R_3$ values: $21.75k\Omega, \quad 6.778k\Omega, \quad 2.199k\Omega, \quad .986k\Omega$

C values: 325nF, 45nF, 33.19nF, 4.5nF

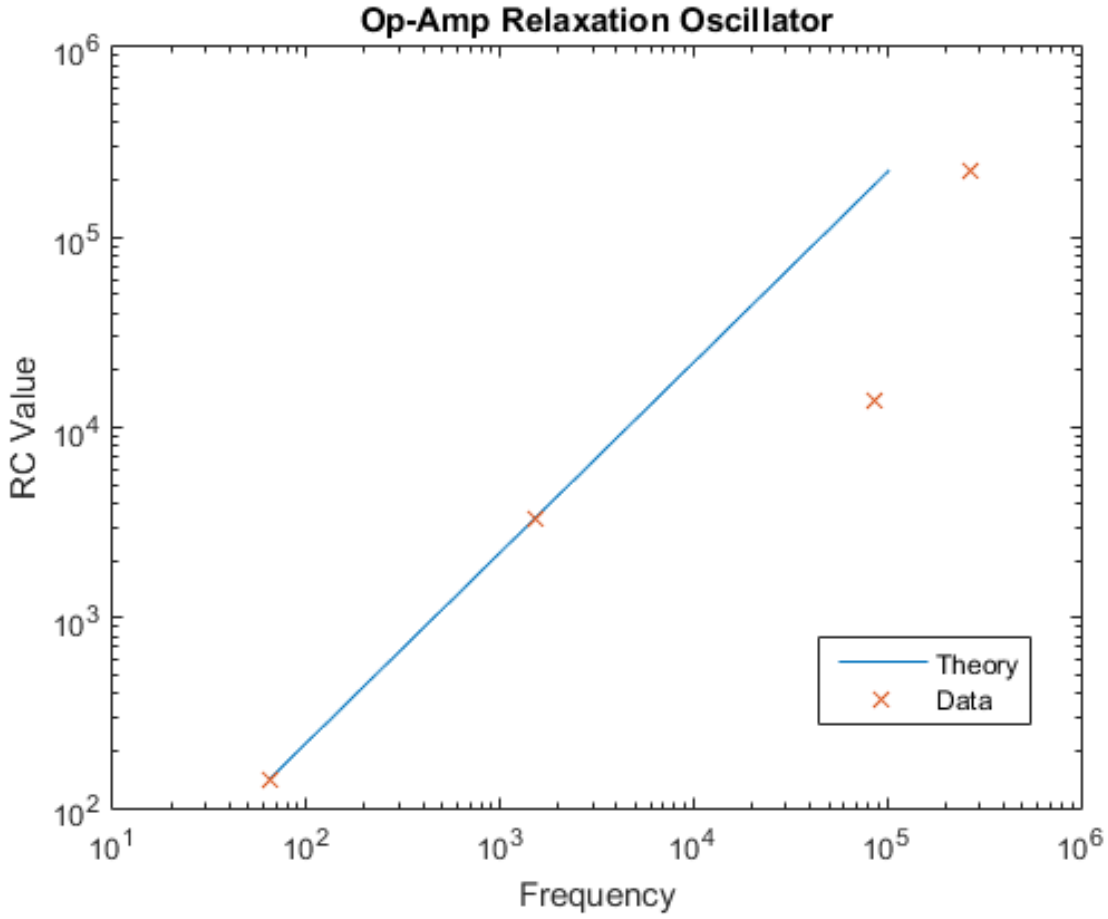
## Function Used

$f = \frac{1}{R_3 C}, \quad f = \frac{1}{2(\ln 3) R_3 C}$

## Measurement/Measured Data

F = 64.9 Hz, 1520 Hz, 85400 Hz, 272000 Hz

**Slew Rate:** $1.92 \frac{\text{Volts}}{\mu\text{s}}$



**555 Timer Values Part 1**

$R_1 = .98k\Omega$

$R_2$ values: $21.75k\Omega$, $6.778k\Omega$, $2.199k\Omega$, $.986k\Omega$

C values: 325nF, 45nF, 33.19nF, 4.5nF

**555 Timer Values Part 2 (Duty Cycle)**

$R_2 = 21.75k\Omega$

$R_1$ values: $.98k\Omega$, $10k\Omega$, $47.41k\Omega$, $400k\Omega$

C = 3.256nF

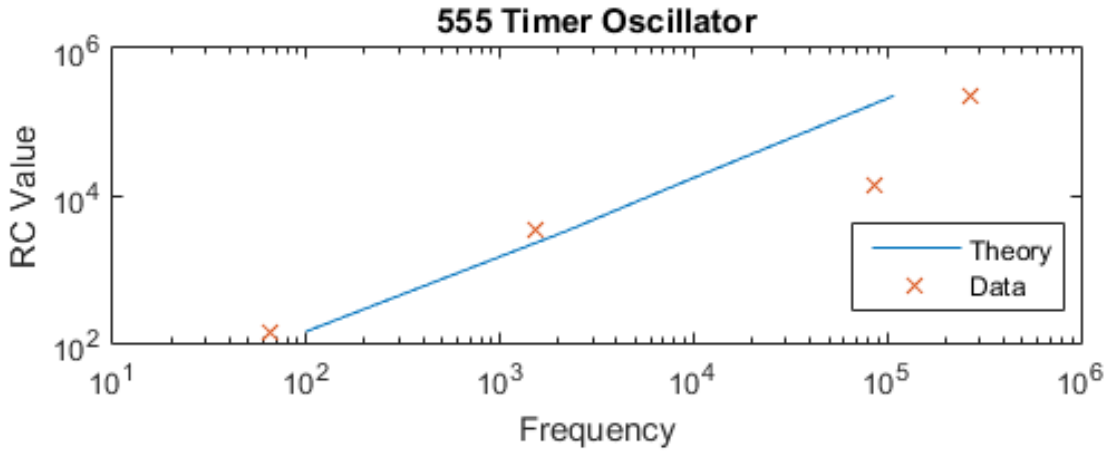
**Function Used**

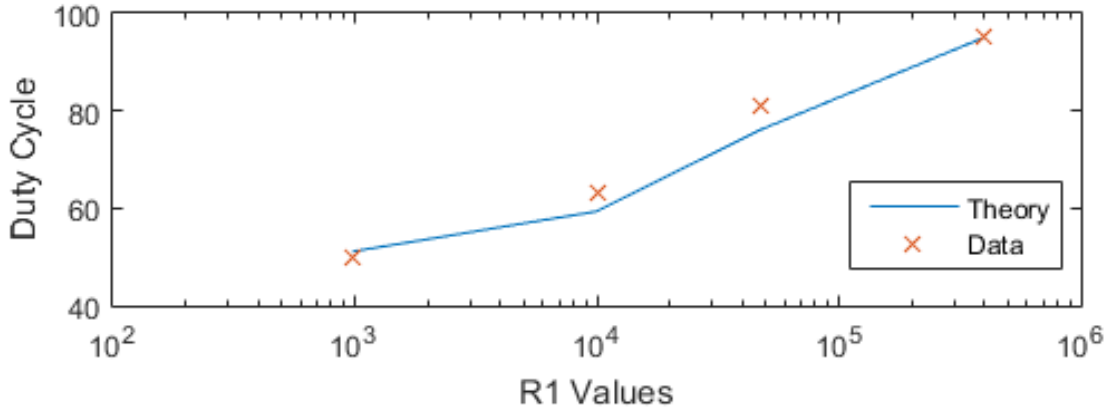
$f = \frac{1}{R_3 C}$, $f = \frac{1.44}{(R_1+2R_2)C}$, DC $= \frac{R_1+R_2}{R_1+2R_2}$

**Measurement/Measured Data**

F = 64.9 Hz, 1520 Hz, 85400 Hz, 272000 Hz

DC = 50%, 63%, 81%, 95%



## 555 VCO

$R_1 = 47k\Omega, \quad R_2 = 47.3k\Omega$

C = 9.8 nF

### Measurement/Measured Data

Voltage Values: .5 V, 1.5 V, 2.5 V, 3.5 V, 4.5 V

Frequency: 2599.069 Hz, 2000.003 Hz, 1421.25 Hz, 950.05 Hz, 518.607 Hz

DC: 15%, 35%, 55%, 70%, 88%