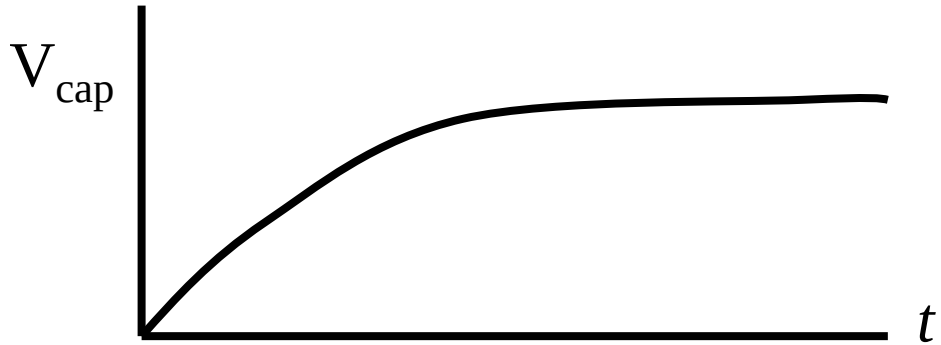
$$I = \frac{dQ}{dt} = C\frac{dV}{dt}$$

Gives differential equation
Solution is an exponential



We also get the AC response (impedance, Z)

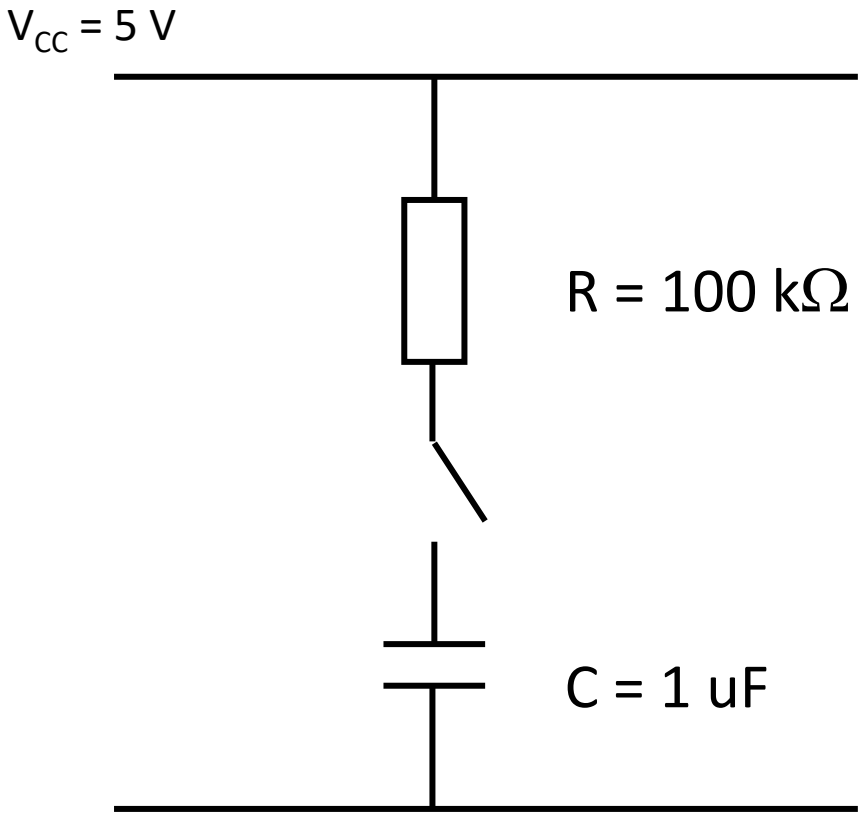
$$v = A\sin(\omega t) \longrightarrow i = A\omega C\cos(\omega t)$$

Ohm's law for AC ccts

$$v = iZ \longrightarrow Z = \frac{1}{j\omega C}$$

NB $j = \sqrt{-1}$

$$\sin(\omega t) = \frac{e^{j\omega t} - e^{-j\omega t}}{2j}$$

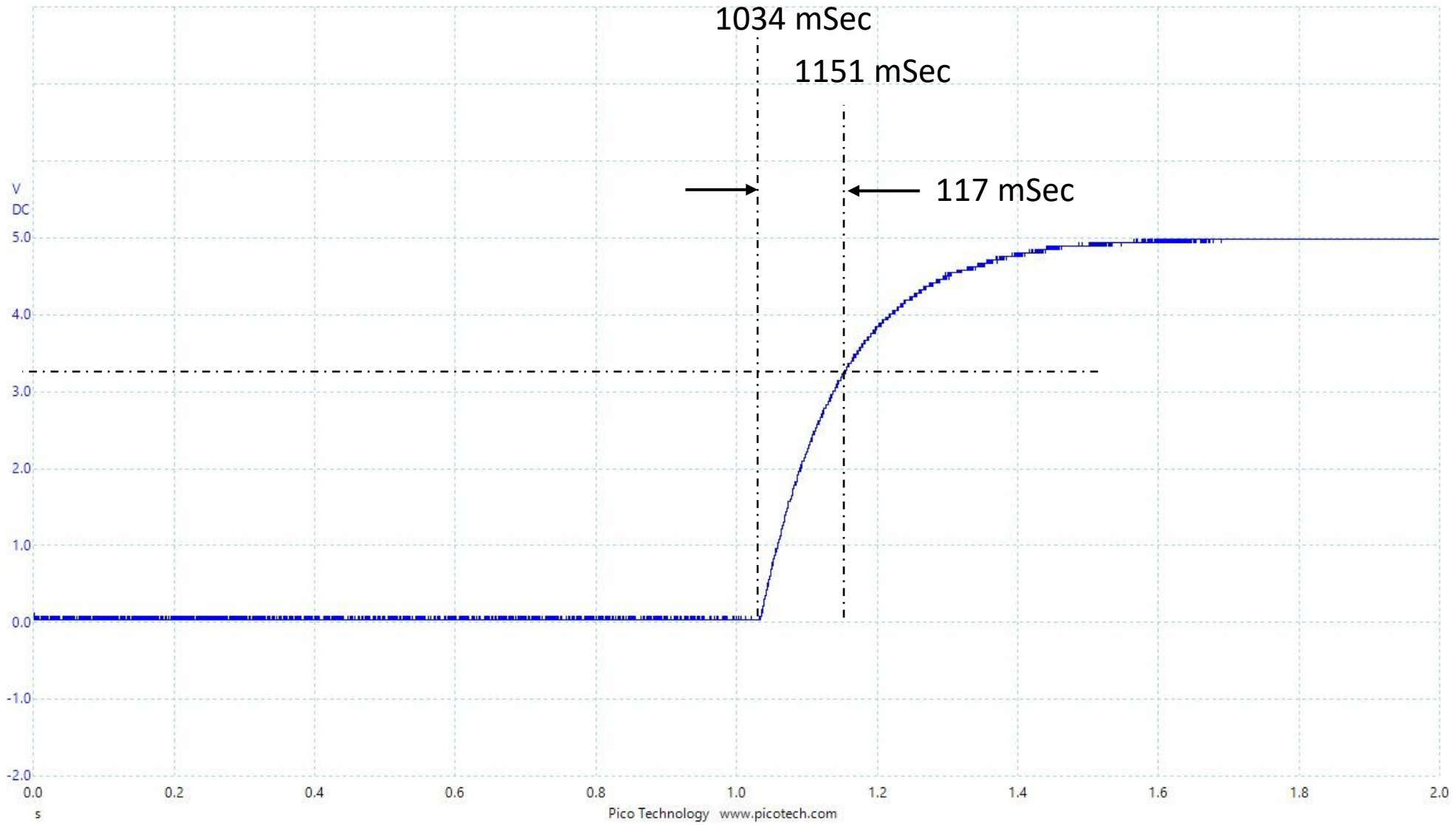


τ = RC = 100 mSec

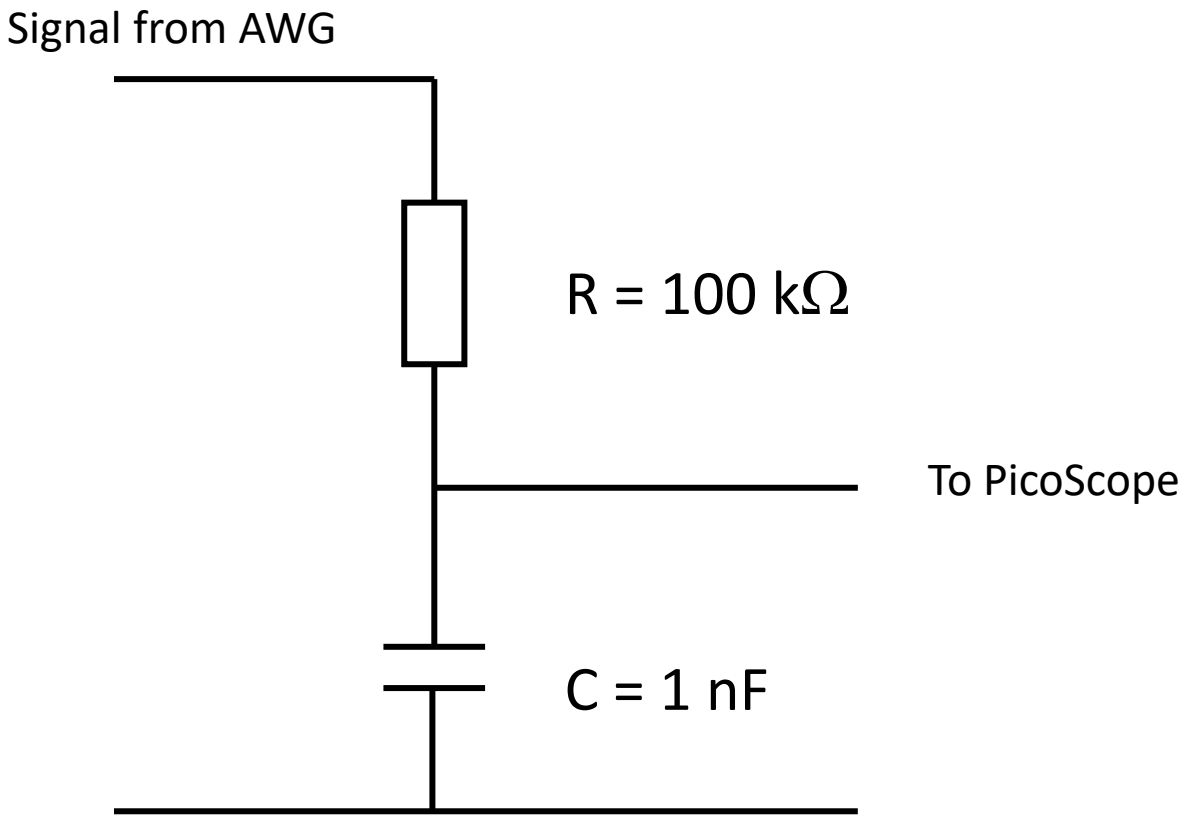
τ = Measured time from V = 0

V = 0.632 V_{CC}

0.63 x 5
= 3.16 V



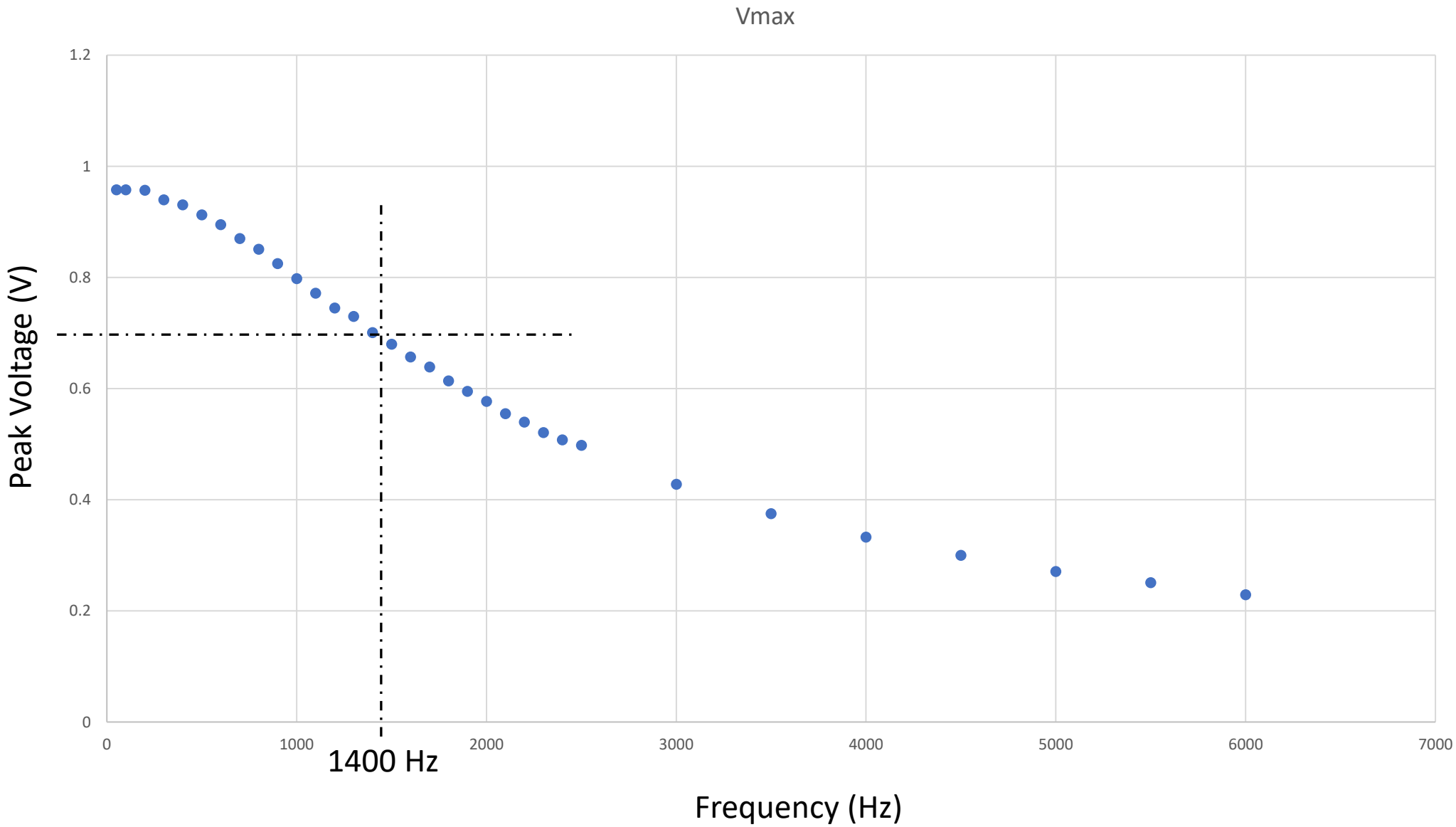
Interesting observation, Cap only charges to 4.6 V when probe is on x 1



$f_{3dB} = 1/(2\pi RC)$

= 1.6 kHz

Should be at 0.7 Vpk



Errors? Tolerance of components? Parasitics?