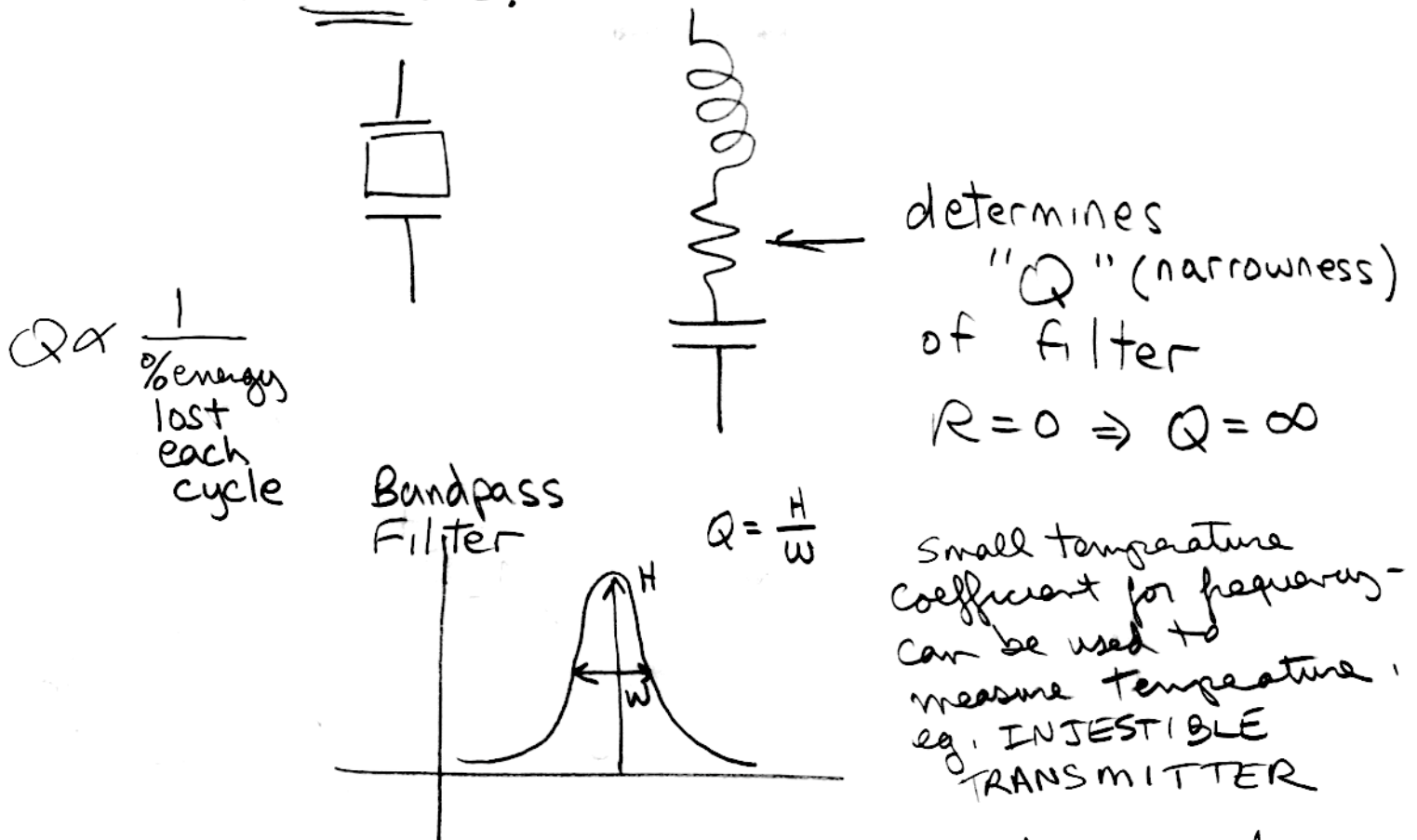


Piezoelectric crystal electro-mechanical tuning fork accurate!

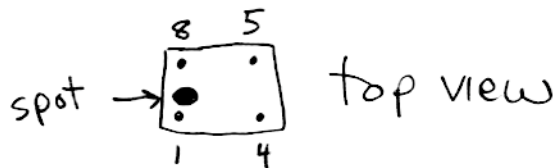
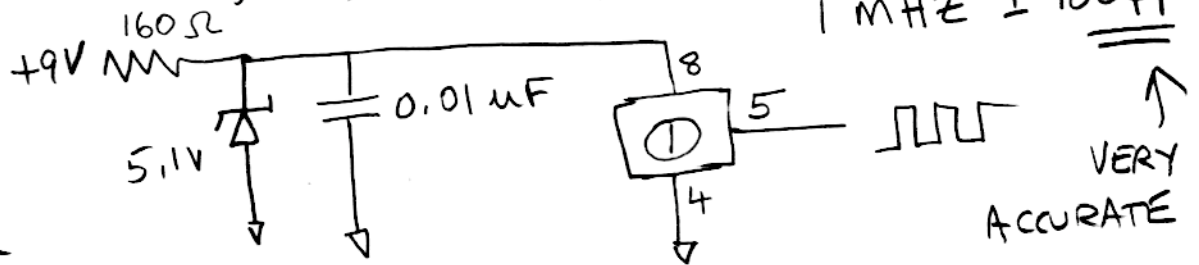


also used as electromechanical transducer in ultrasound

NICE
CHEAP
1 MHz
OSCILLATOR

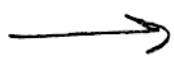
① ECS-2100
1 MHz crystal oscillator

$5V \pm 0.25$
 25 mA
 $1 \text{ MHz} \pm 100 \text{ ppm}$

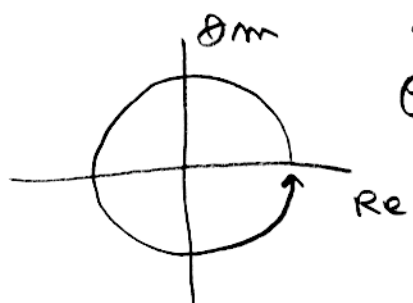


RESONANCE + GAIN \Rightarrow OSCILLATION

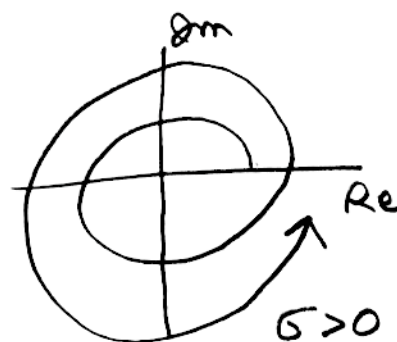
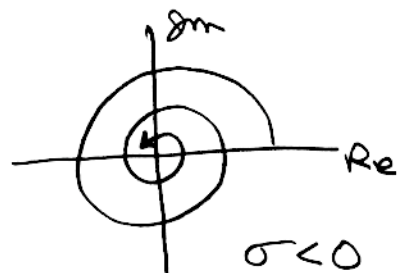
FOURIER
(ANY STABLE)
SIGNAL



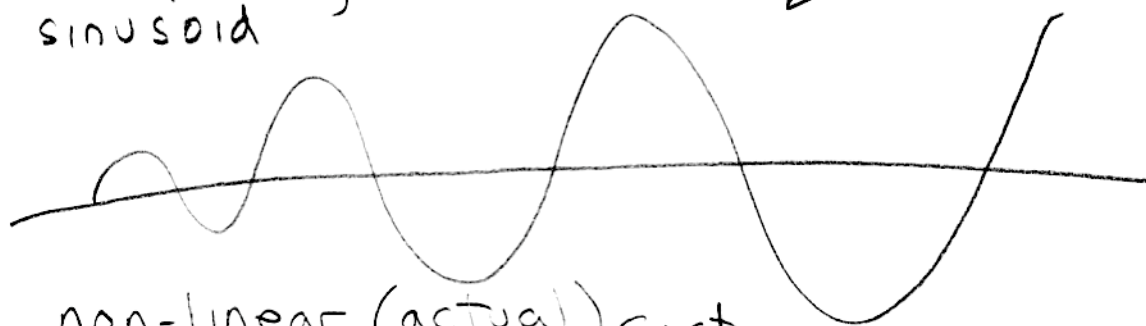
LAPLACE
(ANY LINEAR
DIFF. EQ.)



$$e^{j\omega t} \rightarrow e^{(\sigma + j\omega)t}$$



In linear system
ever expanding
sinusoid



In non-linear (actual) system
becomes limited and stable

