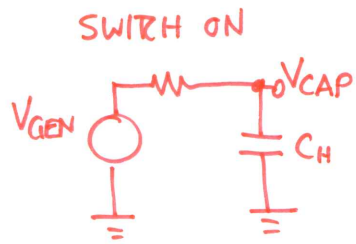


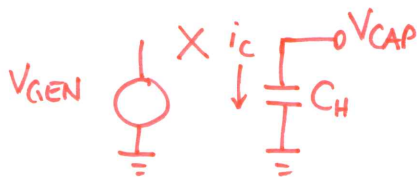
P3. Sample-and-hold

$V_{GATE} = 1$   $V_{CAP} = V_{GEN}$  SAMPLE (TRACK)  $V_{GEN}$  INPUT  
 $0$   $V_{CAP}$  HOLDS VALUE FROM  $\downarrow$   $V_{GATE}$



$V_{CAP} \approx V_{GEN}$

SWITCH OFF



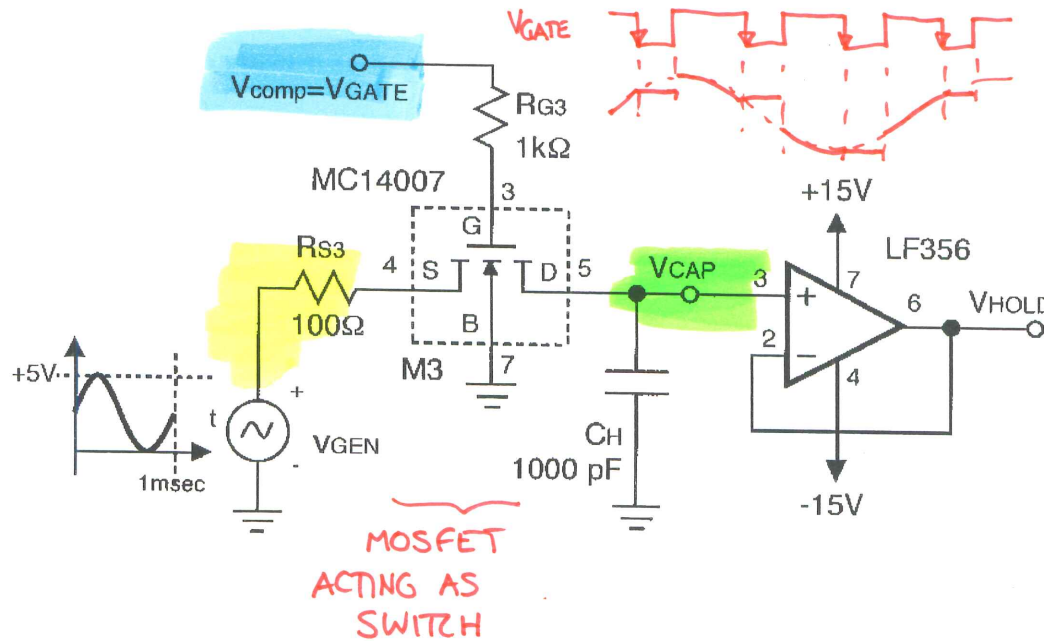
CAPACITOR CURRENT

$i_c = 0$

FOR  $C_H$

$i_c = C_H \frac{dV_C}{dt}$   
 $\underbrace{\quad}_{=0} = \underbrace{C_H}_{\neq 0} \underbrace{\frac{dV_C}{dt}}_{=0}$

NO CHANGE IN CAPACITOR VOLTAGE  
 HOLDS VOLTAGE  $C_H$  HAD WHEN SWITCH TURNS OFF



CONTINUOUS TIME  
 $\Rightarrow$  DISCRETE TIME  
 $\downarrow$  DEFINE SAMPLE TIMES  
 $V(t) \rightarrow V[n]$