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| --- | --- |
| Cg  = Cox WL | Cox is a constant  W = width  L = length of channel |
| Qchannel = Cg  (Vgs – Vds/2 - Vt) |  |
| Time, t = L^2 / µVds |  |
| Current, I = charge, Q / time, t  Ids  = =  Ids = µ Cox (Vgs - Vt – Vds/2 ) Vds  Beta, β = µ Cox  Vgs - Vt = VGT  Linear equation:  Ids = β (VGT – Vds/2 ) Vds…………………………….equation 1  Saturation Equation:  VGT  = Vds 🡪 replace Vds by VGT  in equation 1 gives  Ids = β (VGT – VGT  /2 ) VGT  Ids = β (VGT  /2 ) VGT  Ids = (β/2)VGT^2 ……………equation 2 | |
| Qchannel = Cg  V  V = Vgc - Vt  Vgc = Vgs – Vds/2 | Vgs = voltage difference between gate and source  Vds = voltage difference between Drain and source  Vgd = voltage difference between gate and drain  Ids = current from drain to source  Vt = Threshold voltage |
| Time = distance/speed  Time = 300km/100km/h = 3 hrs  Time, t = L/v  Velocity, v = µVds/L | L = length of channel  V = velocity |
| Time, t = L^2 / µVds |  |