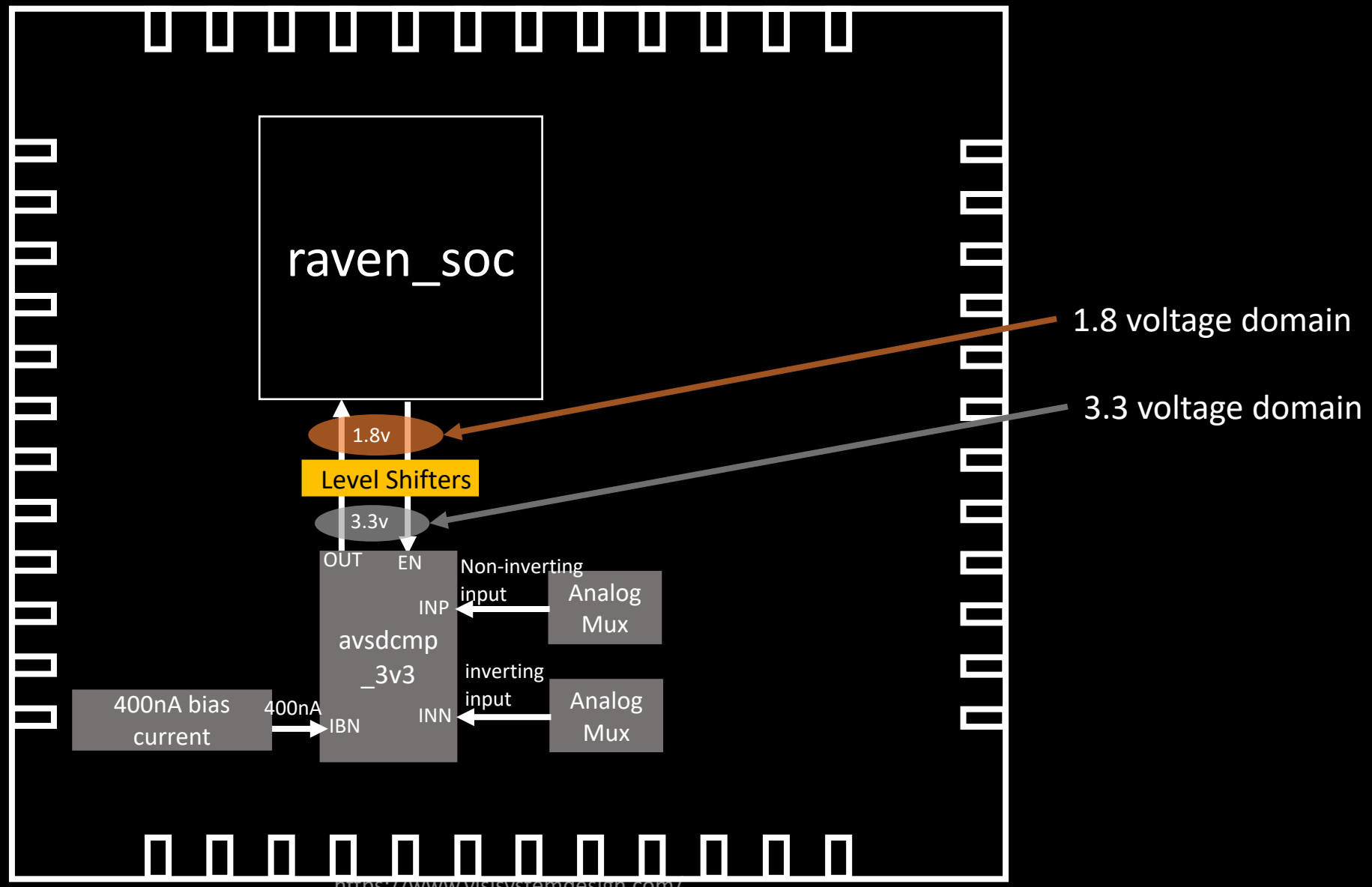
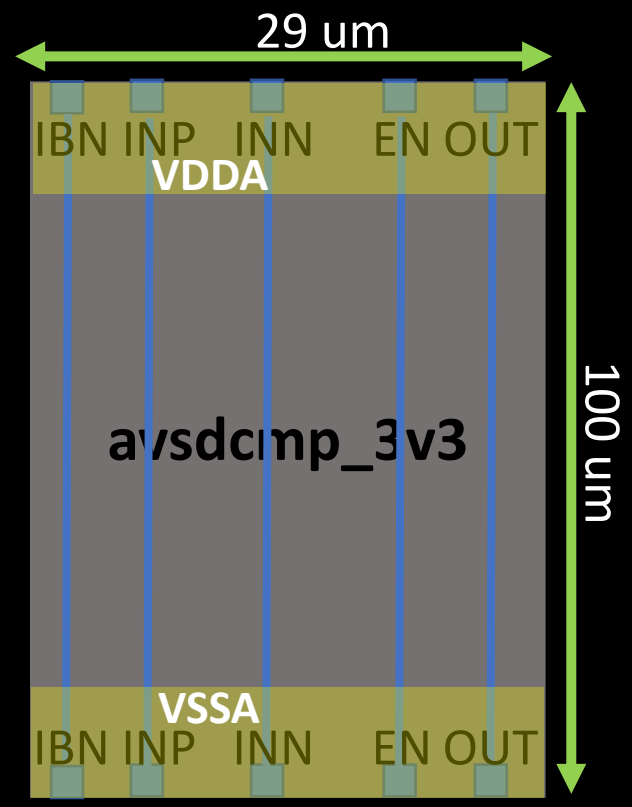
Comparator (avsdcmp_3v3) spec sheet for 180nm tech node

- Specs released under APACHE LICENSE 2.0
- Please contact Kunal at kunalpghosh@gmail.com in case of any doubts

Application Note for comparator (avsdcmp_3v3)



avsdcmp_3v3 preferred dimensions, pin locations and metal layers



Signal pins – metal2 (0.38um x 0.8um)

VDDA pins on metal3 (29um x 5um)

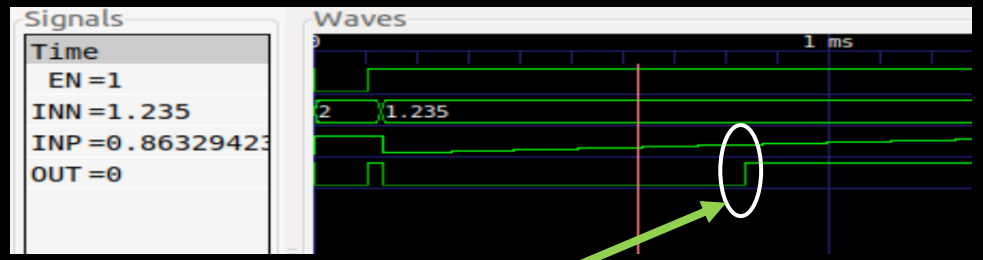
VSSA pins on metal1 (29um x 5um)

avsdcmp_3v3 operating modes

Logic '1'
Logic '0'
3.3v
IDD = 1.7uA for IBN = 0.2uA
IDD = 6.4uA for IBM = 0.8uA
EN = '1'

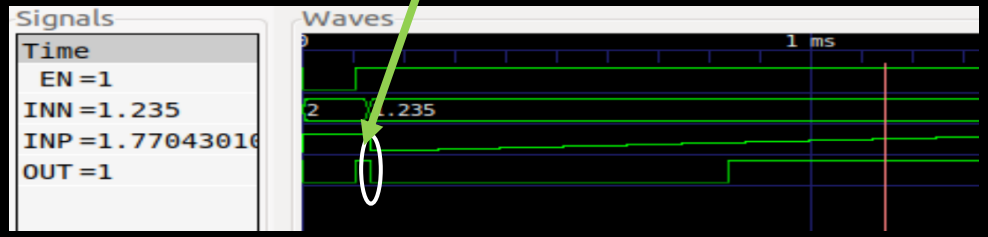
IBN INP INN EN OUT
VDDA
avsdcmp_3v3
VSSA
IBN INP INN EN OUT

INP < INN, OUT = 0



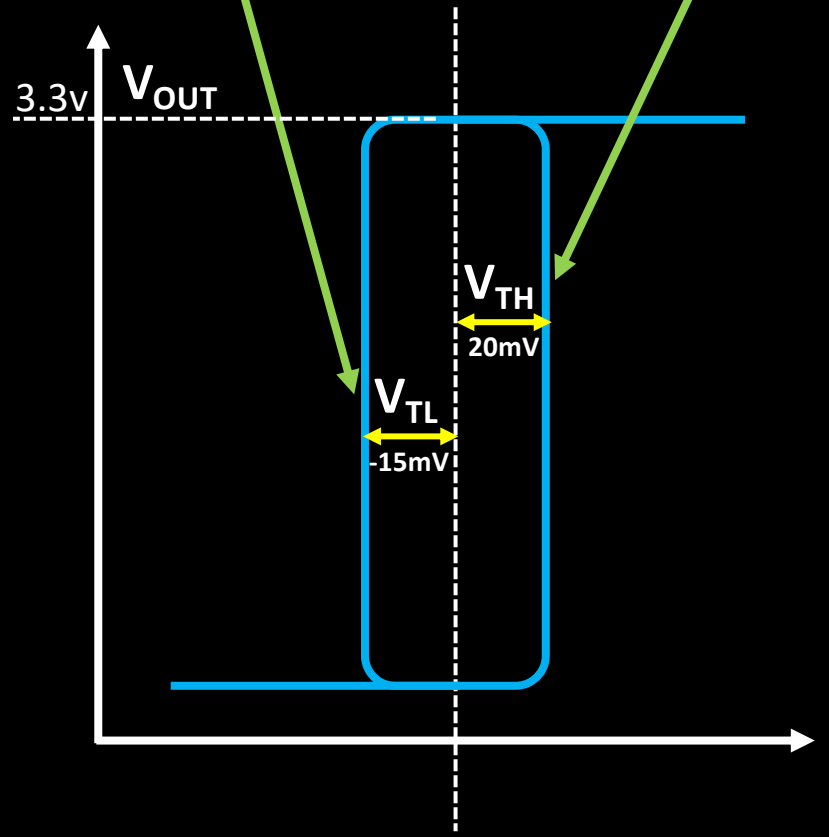
Input offset voltage = 3mV

INP > INN, OUT = 1



Hysteresis requirement:

Min = 0.2uA
Max = 0.8uA



avsdcmp_3v3 operating modes

Logic '1'
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3.3V
IDD = 1.7uA for IBN = 0.2uA
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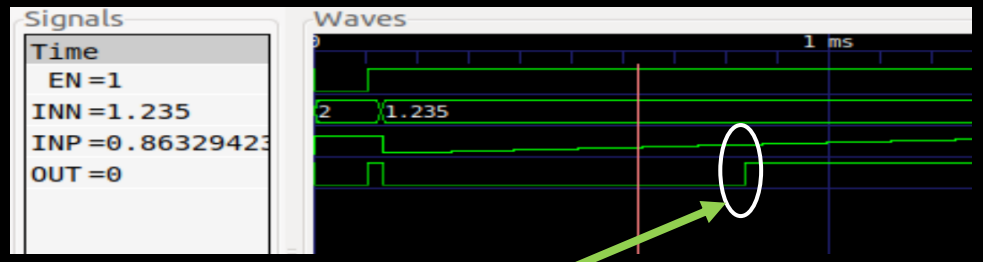
EN = '1'

IBN INP INN EN OUT
VDDA
avsdcmp_3v3
VSSA
IBN INP INN EN OUT

Propagation Delay requirement:

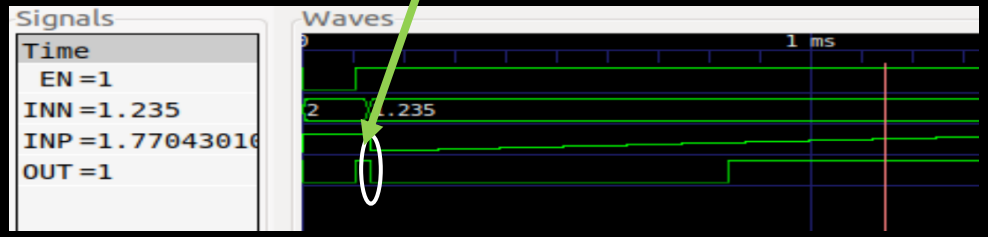
Min = 0.2uA **Max = 0.8uA**

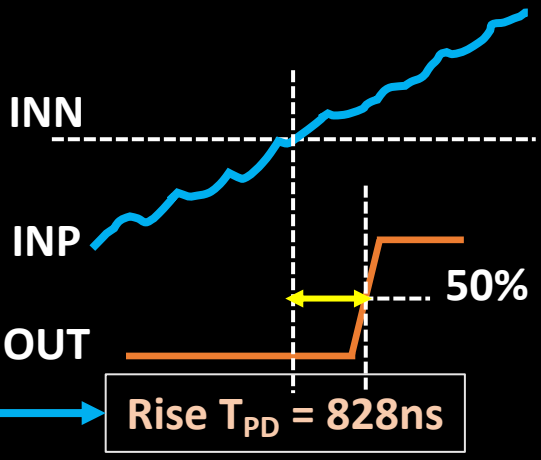
INP < INN, OUT = 0



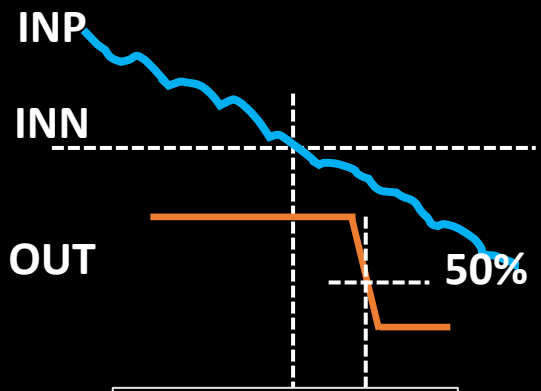
Input offset voltage = 3mV

INP > INN, OUT = 1



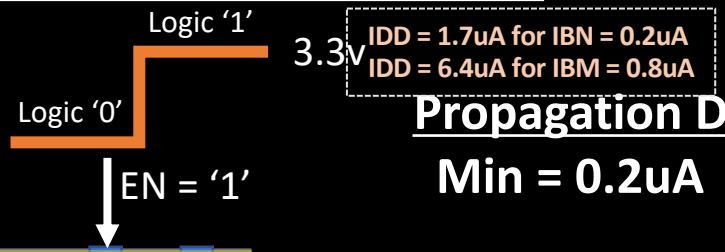


Rise T_{PD} = 828ns



Fall T_{PD} = 881ns

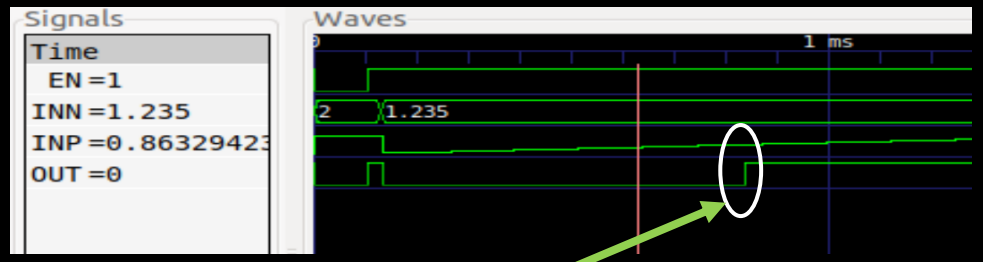
avsdcmp_3v3 operating modes



Propagation Delay requirement:

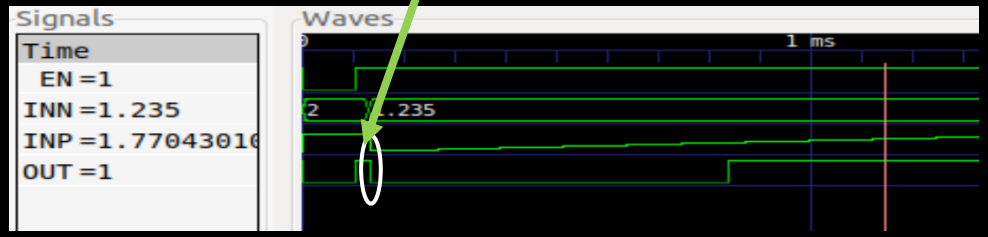
Min = 0.2uA **Max = 0.8uA**

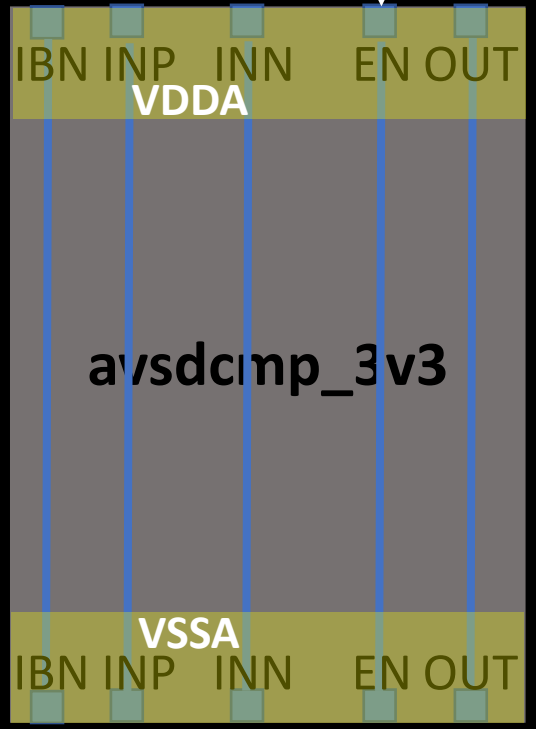
INP < INN, OUT = 0

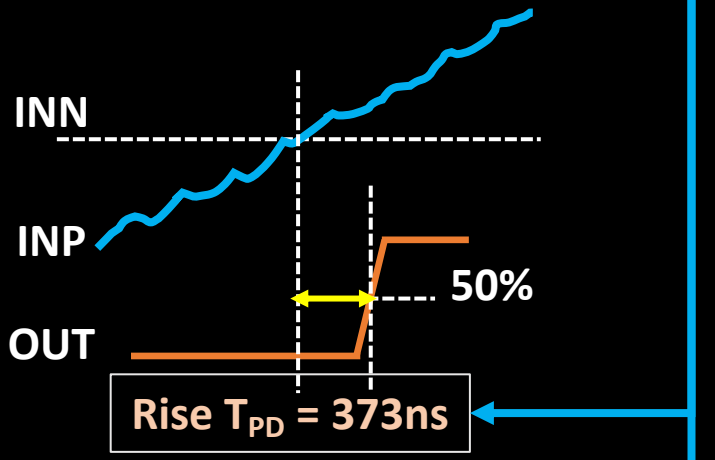


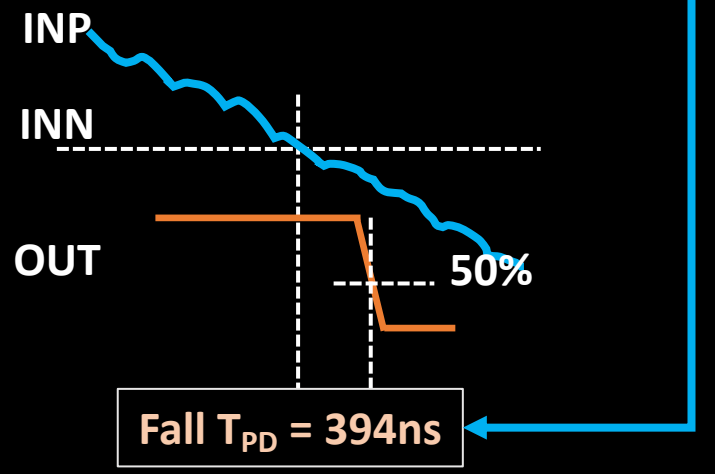
Input offset voltage = 3mV

INP > INN, OUT = 1

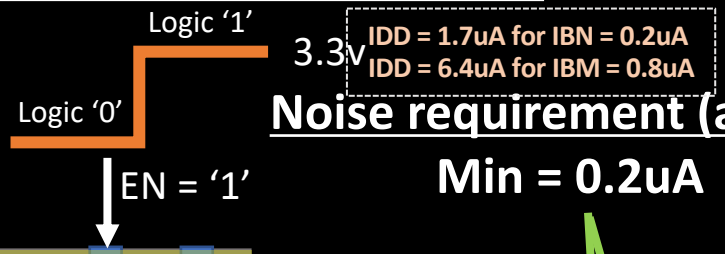








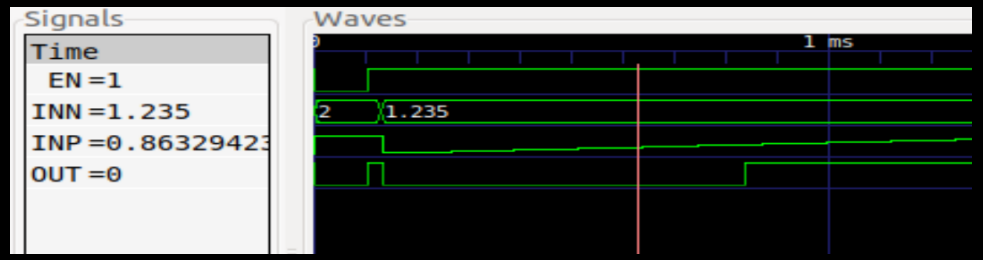
avsdcmp_3v3 operating modes



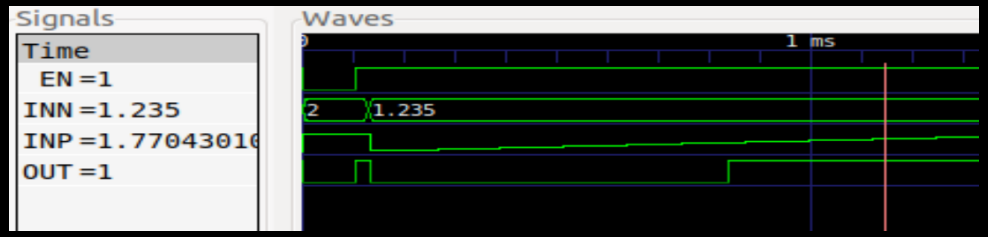
Noise requirement (at output load of 10MΩ):

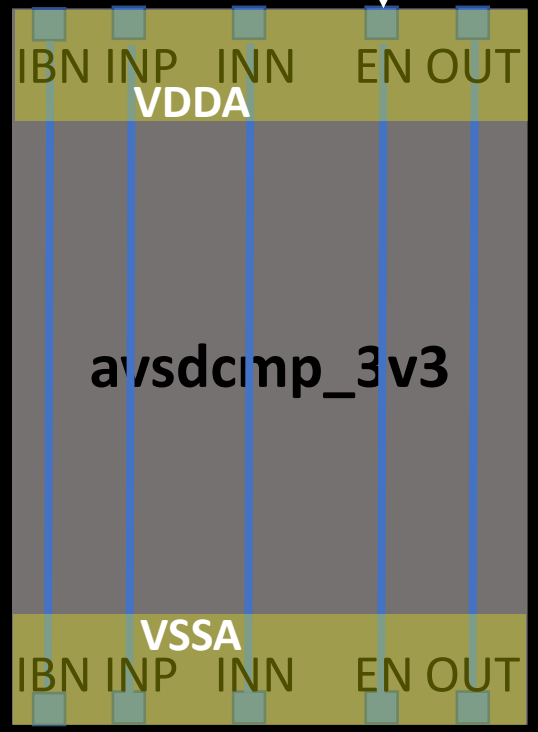
Min = 0.2uA **Max = 0.8uA**

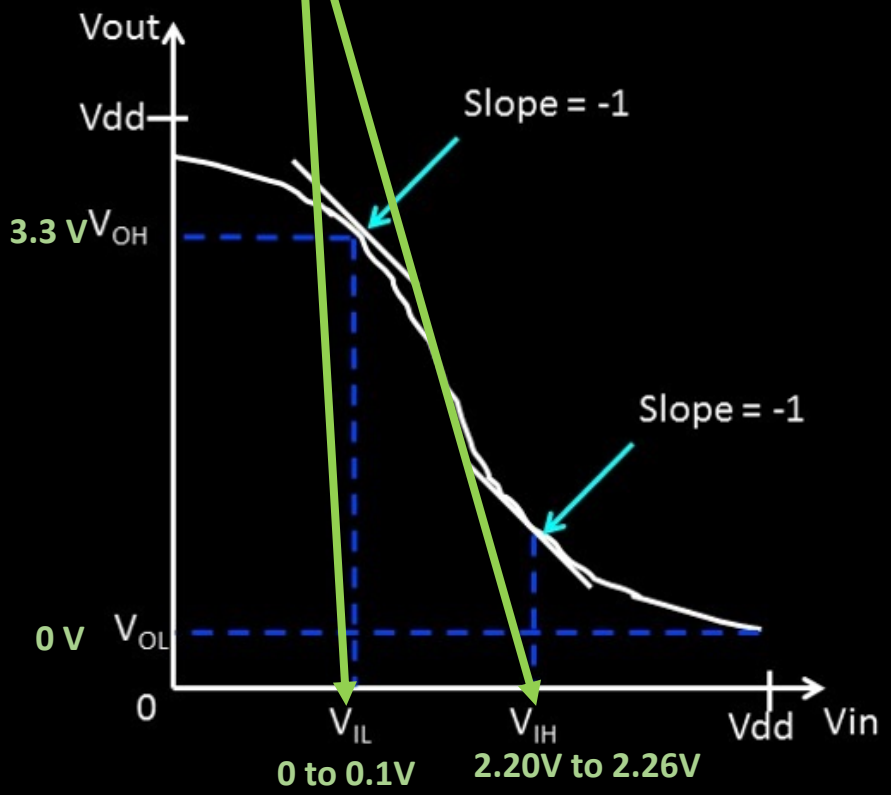
INP < INN, OUT = 0



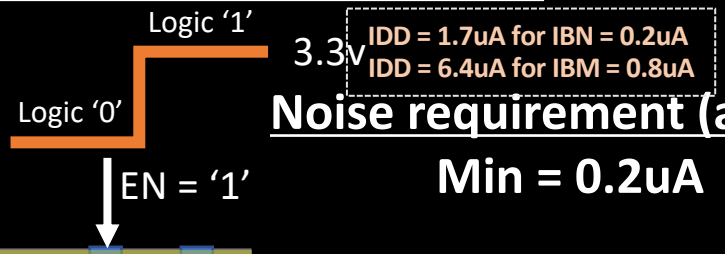
INP > INN, OUT = 1







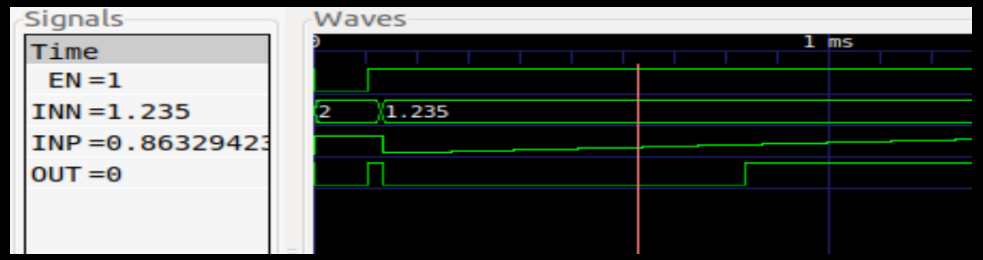
avsdcmp_3v3 operating modes



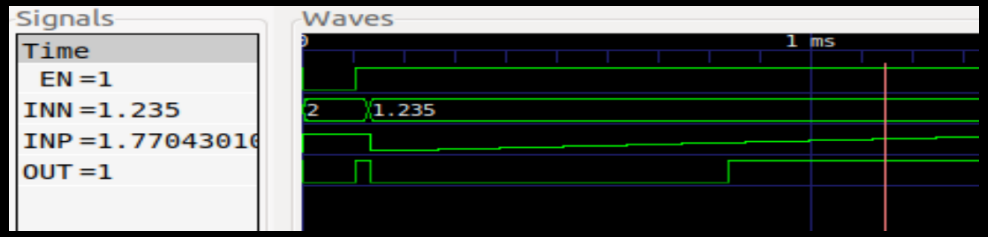
Noise requirement (at output load of 10MΩ):

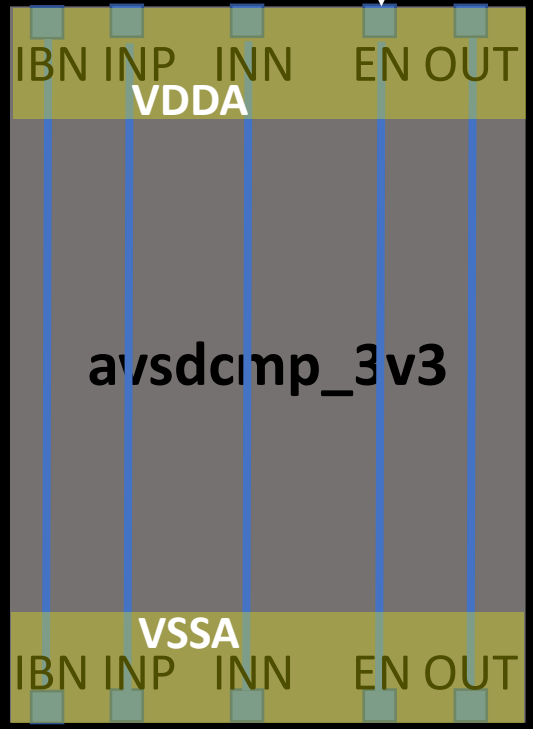
Min = 0.2uA **Max = 0.8uA**

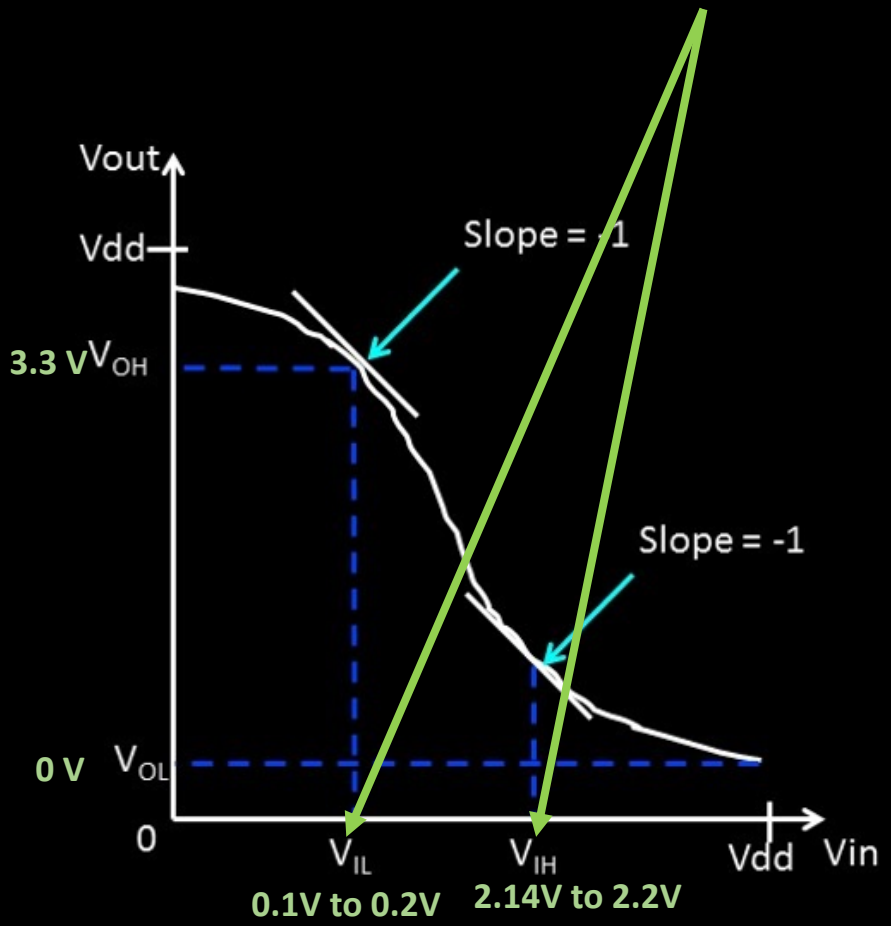
INP < INN, OUT = 0



INP > INN, OUT = 1







avsdcmp_3v3 plots and values needed

1) Rise and Fall T_{PD} vs I_{BN} (0.2uA to 0.8uA) for V_{DD}=3.3V

2) Rise and Fall T_{PD} vs V_{DD} (2.2V to 3.6V) for I_{BN}=0.2uA

3) Rise and Fall T_{PD} vs V_{DD} (2.2V to 3.6V) for I_{BN}=0.8uA