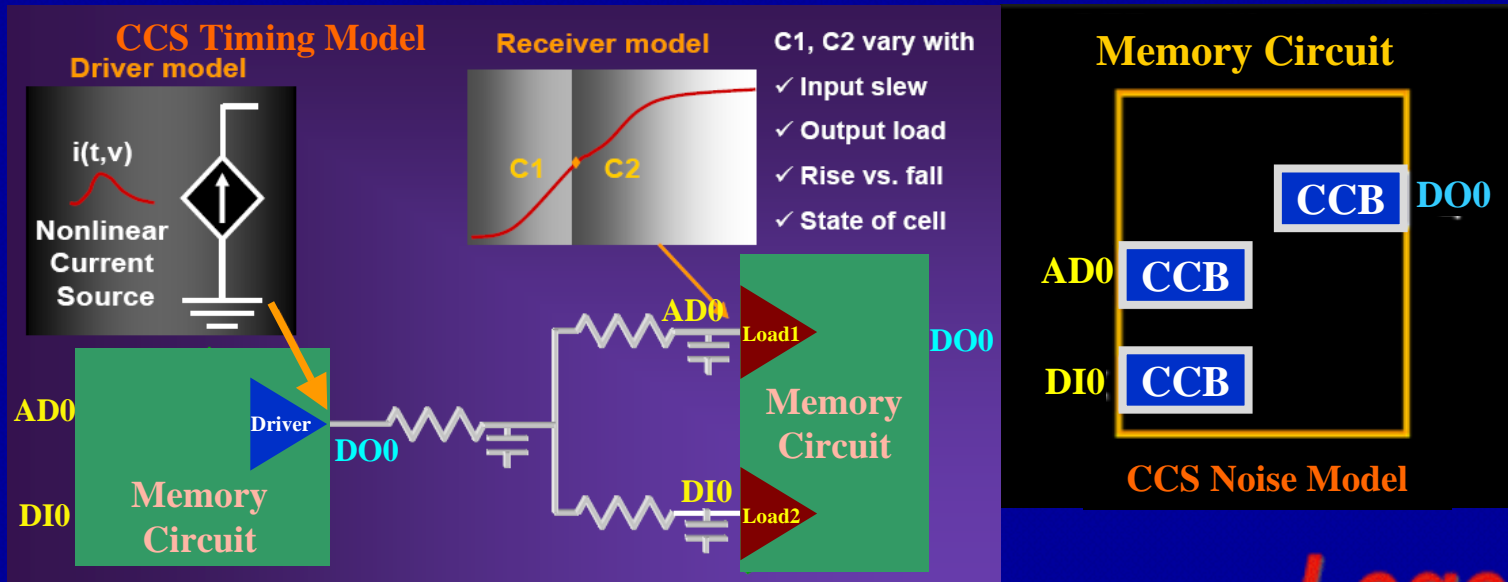


# Memory CCS Modeling

## Timing, Power and Noise

- ◆ Channel-connected blocks (CCB), receiver and driver will be partitioned from memory circuit by SpiceCut.
- ◆ Based on those partitions, CharFlo-Memory! can characterize CCS Timing, Power and Noise models.



# DC\_current Table Benchmark

CCB\_Name : rf16x4\_1\_AA\_0\_ccb

is\_needed : true;

is\_inverting : yes;

input\_node : AA[0]

output\_node : I3\_2/I1\_1/N28

ccsn\_type : dc\_current

index\_1 : -6.000000e-01 -4.875000e-01 -3.750000e-01 -2.625000e-01 -1.500000e-01 -3.750000e-02 7.500000e-02 1.875000e-01 3.000000e-01 4.125000e-01 5.250000e-01 6.375000e-01 7.500000e-01 8.625000e-01 9.750000e-01 1.087500e+00 1.200000e+00

index\_2 : -6.000000e-01 -4.875000e-01 -3.750000e-01 -2.625000e-01 -1.500000e-01 -3.750000e-02 7.500000e-02 1.875000e-01 3.000000e-01 4.125000e-01 5.250000e-01 6.375000e-01 7.500000e-01 8.625000e-01 9.750000e-01 1.087500e+00 1.200000e+00

values( "2.650100e-04 2.420400e-04 2.196700e-04 1.995200e-04 1.873700e-04 1.897100e-04 2.039100e-04 2.248500e-04 2.499200e-04 2.781300e-04 3.093000e-04 3.439000e-04 3.826600e-04 4.243200e-04 4.659700e-04 5.062900e-04 5.448300e-04 ", \

"2.275200e-04 2.048700e-04 1.825400e-04 1.608200e-04 1.410200e-04 1.282800e-04 1.296500e-04 1.434500e-04 1.644900e-04 1.899600e-04 2.189000e-04 2.513400e-04 2.877200e-04 3.265300e-04 3.647500e-04 4.010900e-04 4.352200e-04 ", \

"2.098500e-04 1.876100e-04 1.656200e-04 1.440100e-04 1.230300e-04 1.037500e-04 9.051400e-05 9.067600e-05 1.037300e-04 1.244100e-04 1.496800e-04 1.786200e-04 2.111100e-04 2.454100e-04 2.785900e-04 3.096400e-04 3.385000e-04 ", \

"2.035300e-04 1.817600e-04 1.601900e-04 1.389300e-04 1.181400e-04 9.804700e-05 7.950200e-05 6.598200e-05 6.469100e-05 7.629800e-05 9.537000e-05 1.185500e-04 1.448700e-04 1.725800e-04 1.990900e-04 2.236200e-04 2.462100e-04 ", \

.....)



# Output\_voltage Table Benchmark

```
CCB_Name : rf16x4_1_AA_0_ccb  
is_needed : true;  
is_inverting : true;  
output_node : I3_2/I1_1/N28  
ccsn_type : output_voltage_rise  
index_1 : 0.100000  
index_2 : 0.000000  
index_3 : 1.434E-10 8.875E-11 8.062E-11 7.272E-11 6.250E-11  
values( 0.12 0.36 0.6 0.84 1.08 )
```

```
CCB_Name : rf16x4_1_AA_0_ccb  
is_needed : true;  
is_inverting : true;  
output_node : I3_2/I1_1/N28  
ccsn_type : output_voltage_fall  
index_1 : 0.100000  
index_2 : 0.000000  
index_3 : 7.868E-11 9.537E-11 1.079E-10 1.248E-10 1.577E-10  
values( 0.12 0.36 0.6 0.84 1.08 )
```

# Noise propagation Table Benchmark

```
CCB_Name : rf16x4_1_AA_0_ccb
is_needed : true;
is_inverting : true;
output_node : I3_2/I1_1/N28
ccsn_type : propagated_noise_high
index_1 : 4.200000e-01
index_2 : 2.508679e-10
index_3 : 0.000000
index_4 : 1.570000e-01 1.713000e-01 2.062000e-01 2.543000e-01 2.638000e-01
values( 1.195700e+00 1.193120e+00 1.191400e+00 1.193120e+00 1.195700e+00 )
```

```
CCB_Name : rf16x4_1_AA_0_ccb
is_needed : true;
is_inverting : true;
output_node : I3_2/I1_1/N28
ccsn_type : propagated_noise_low
index_1 : 4.200000e-01
index_2 : 2.508679e-10
index_3 : 0.000000
index_4 : 1.447000e-01 1.594000e-01 2.062000e-01 2.524000e-01 2.574000e-01
values( 1.726000e-03 2.761600e-03 3.452000e-03 2.761600e-03 1.726000e-03 )
```



# Miller\_cap Benchmark

CCB\_Name : rf16x4\_1\_AA\_0\_.ccb  
input\_pin : AA[0]  
miller\_cap\_rise : 0.000352946  
miller\_cap\_fall : 0.000681546

CCB\_Name : rf16x4\_1\_AA\_1\_.ccb  
input\_pin : AA[1]  
miller\_cap\_rise : 0.000352946  
miller\_cap\_fall : 0.000681082

CCB\_Name : rf16x4\_1\_AA\_2\_.ccb  
input\_pin : AA[2]  
miller\_cap\_rise : 0.000352946  
miller\_cap\_fall : 0.000681546

CCB\_Name : rf16x4\_1\_AA\_3\_.ccb  
input\_pin : AA[3]  
miller\_cap\_rise : 0.000352946  
miller\_cap\_fall : 0.000681082

CCB\_Name : rf16x4\_1\_AB\_0\_.ccb  
input\_pin : AB[0]  
miller\_cap\_rise : 0.000352946  
miller\_cap\_fall : 0.000681546