value=1
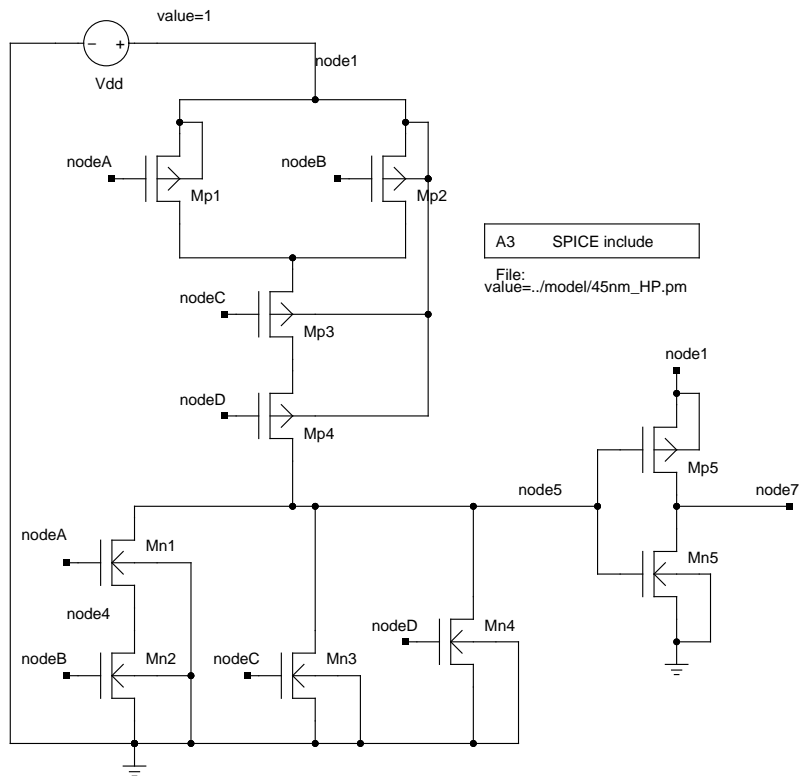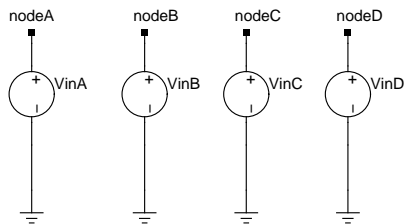
Vdd

node1

nodeA   Mp1

nodeB   Mp2

A1   SPICE directive
.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeC   Mp3

nodeD   Mp4

node1

Mp5

node5   node7

nodeA   Mn1

Mn5

nodeA   nodeB   nodeC   nodeD

node7

node4

+ VinA   + VinB   + VinC   + VinD

Cout

nodeB   Mn2   nodeC   Mn3   nodeD   Mn4

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node7)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1

HS65_GH_A0112.sch

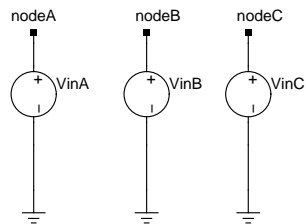TITLE

FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea

value=1

node1

Vdd

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

nodeA

nodeB

Mp1

Mp2

node1

nodeC

Mp4   node7

Mp3

node5

nodeA

Mn1

Mn4

node4

nodeA   nodeB   nodeC

nodeB   Mn2   nodeC   Mn3

node7

Cout

value={Coutp}

+VinA   +VinB   +VinC

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(node7)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1

HS65_GH_A012.sch

TITLE

FILE:

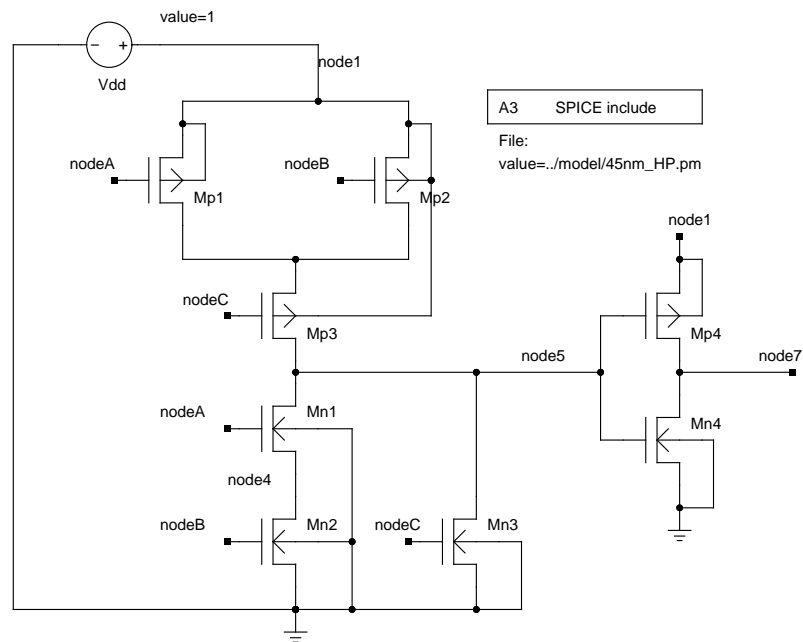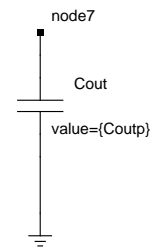PAGE   OF
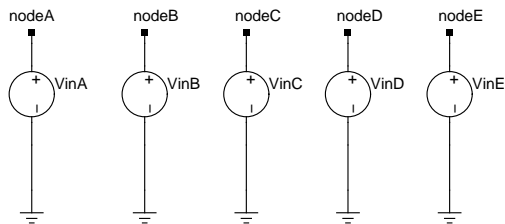
REVISION:

DRAWN BY: Antonio Mastrandrea

value=1

Vdd

node1

nodeC — Mp3
nodeD — Mp4

A1   SPICE directive
.PARAM Lmin=45n
.PARAM Wmin=45n
.PARAM Coutp=1f

nodeA — Mp1   node1
nodeB — Mp2

A3   SPICE include
File:
value=../model/45nm_HP.pm

nodeE — Mp5

node1

Mp6

node7

nodeA — Mn1   Mn3 — nodeC
node4

nodeB — Mn2   Mn4 — nodeD   Mn5 — nodeE

Mn6

node7

Cout
value={Coutp}

nodeA   nodeB   nodeC   nodeD   nodeE

VinA   VinB   VinC   VinD   VinE
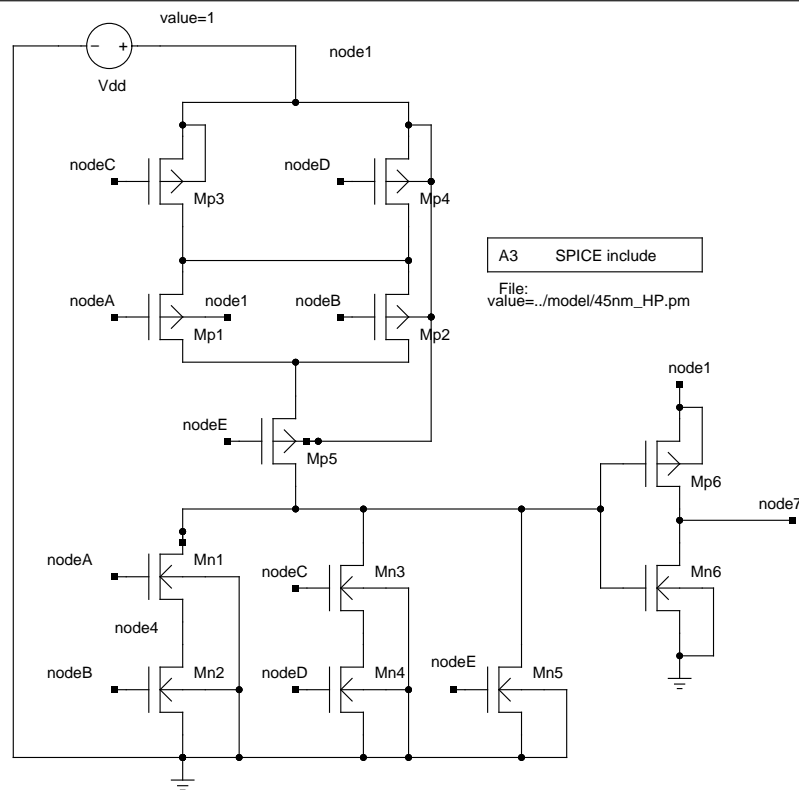
A2   SPICE directive

.TRAN 0.1p 3600p
.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(nodeE) V(node7)
.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1
.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1

HS65_GH_A0212.sch

TITLE

FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea

value=1

Vdd node1

A3   SPICE include

File:
value=../model/45nm_HP.pm

A1   SPICE directive
.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

nodeF   nodeE
         Mp5   Mp6

nodeC   node1   nodeD
         Mp3   Mp4

node1

nodeA   node1   nodeB
         Mp1   Mp2

Mp7
node7

nodeA   Mn1   nodeC   Mn3   nodeE   Mn5
                                                 Mn7
node4

nodeB   Mn2   nodeD   Mn4   nodeF   Mn6

nodeA   nodeB   nodeC   nodeD   nodeE   nodeF

VinA   VinB   VinC   VinD   VinE   VinF

node7

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(nodeE) V(nodeF) V(node7)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1
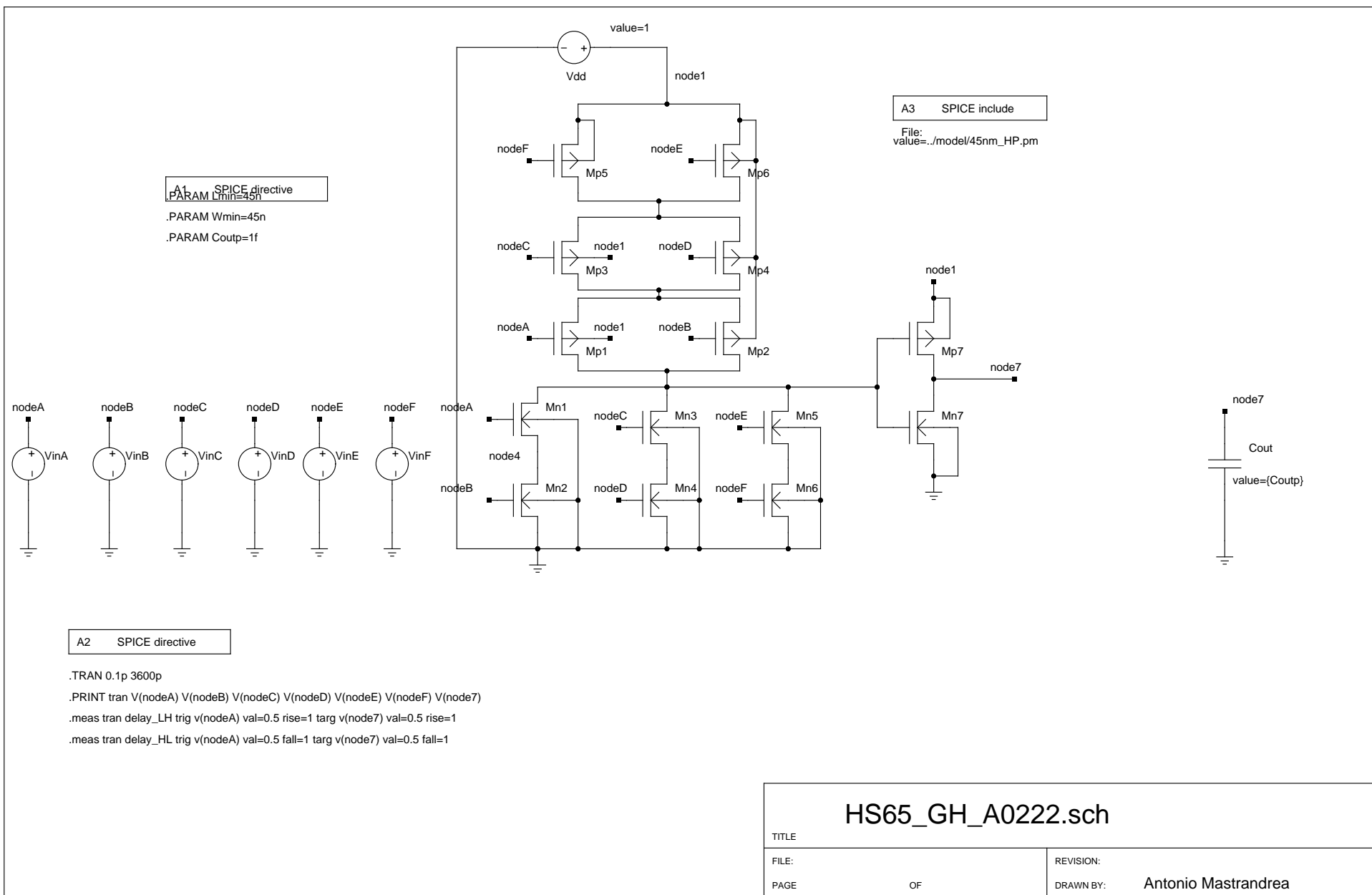
HS65_GH_A0222.sch

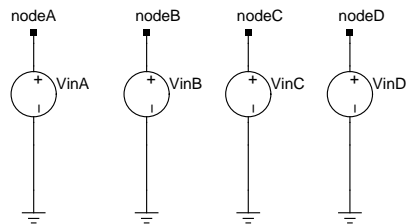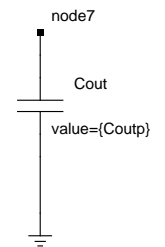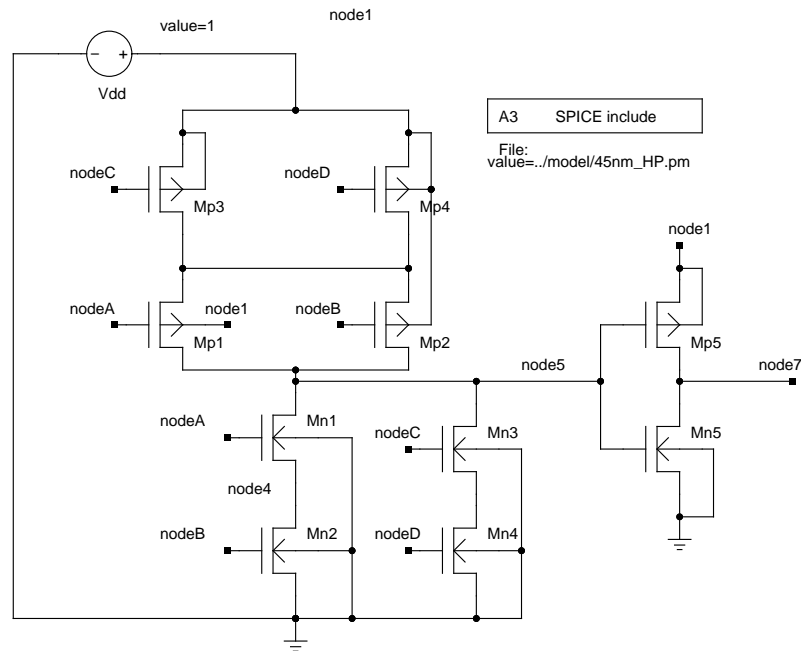TITLE

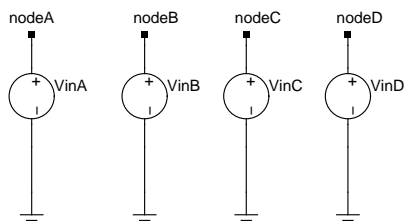FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea

value=1

node1

Vdd

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

nodeC   Mp3   nodeD   Mp4

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeA   node1   nodeB   Mp2

Mp1

node1

Mp5   node7

node5

nodeA   Mn1   nodeC   Mn3

Mn5

node4

nodeB   Mn2   nodeD   Mn4

node7

Cout

value={Coutp}

nodeA   nodeB   nodeC   nodeD

VinA   VinB   VinC   VinD

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node7)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1

	HS65_GH_A022.sch	
TITLE		
FILE:		REVISION:
PAGE OF		DRAWN BY: Antonio Mastrandrea

value=1

node1

Vdd

A1   SPICE directive
.PARAM Lmin=45n
.PARAM Wmin=45n
.PARAM Coutp=1f

A3   SPICE include
File:
value=../model/45nm_HP.pm

nodeA   nodeB   nodeC
Mp1   Mp2   Mp3

node1

Mp5   node7

nodeD
Mp4

node5

nodeA
Mn1

node7

node4

nodeA
Mn1

Mn5

Cout

nodeB
Mn2   nodeD   Mn4

value={Coutp}

nodeA   nodeB   nodeC   nodeD

nodeC
Mn3

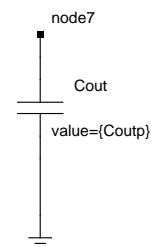VinA   VinB   VinC   VinD

A2   SPICE directive

.TRAN 0.1p 3600p
.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node7)
.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1
.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1

HS65_GH_A031.sch

TITLE

FILE: REVISION:
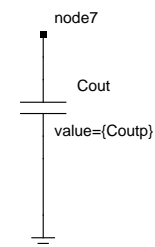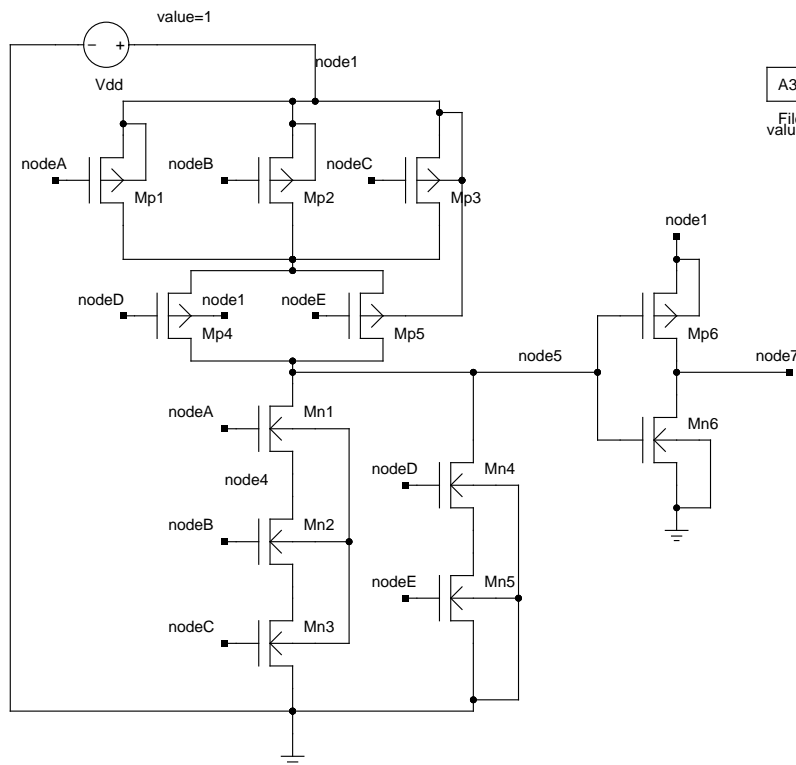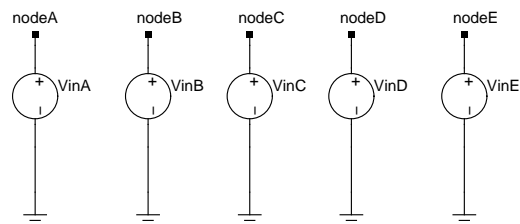
PAGE   OF   DRAWN BY: Antonio Mastrandrea

A1　　SPICE directive
.PARAM Lmin=45n
.PARAM Wmin=45n
.PARAM Coutp=1f

A3　　SPICE include
File:
value=../model/45nm_HP.pm

value=1
Vdd
node1

nodeA　Mp1　　nodeB　Mp2　　nodeC　Mp3

nodeD　　node1　　nodeE
Mp4　　　　　Mp5

node1
Mp6　node7

node5

nodeA　Mn1

node4

nodeB　Mn2

nodeC　Mn3

nodeD　Mn4

nodeE　Mn5

Mn6

nodeA　nodeB　nodeC　nodeD　nodeE

VinA　VinB　VinC　VinD　VinE

node7
Cout
value={Coutp}

A2　　SPICE directive
.TRAN 0.1p 3600p
.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(nodeE) V(node7)
.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node7) val=0.5 rise=1
.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node7) val=0.5 fall=1
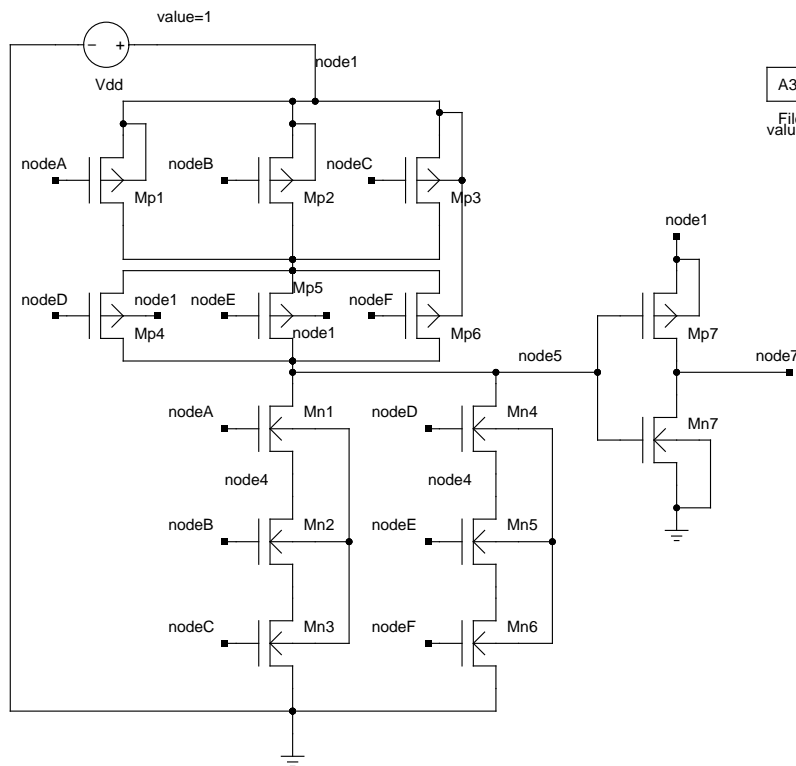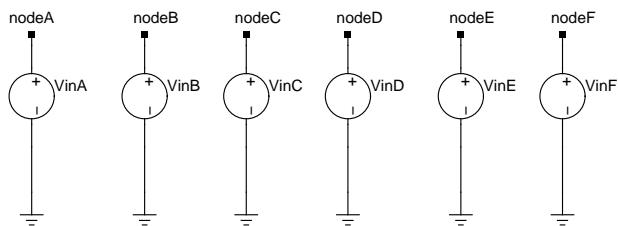
HS65_GH_A032.sch

TITLE
FILE:　　　　　　　　REVISION:
PAGE　　　　OF　　　DRAWN BY:　Antonio Mastrandrea

value=1

Vdd

node1

nodeA   nodeB   nodeC

Mp1   Mp2   Mp3

nodeD   node1 nodeE   Mp5   nodeF

Mp4   node1   Mp6

node5

node1

Mp7   node7

nodeA   Mn1   nodeD   Mn4

node4   node4

Mn7

nodeB   Mn2   nodeE   Mn5

nodeC   Mn3   nodeF   Mn6

node7

Cout

value={Coutp}

nodeA   nodeB   nodeC   nodeD   nodeE   nodeF

VinA   VinB   VinC   VinD   VinE   VinF

	HS65_GH_A033sch	
TITLE		
FILE:		REVISION:
PAGE OF		DRAWN BY: Antonio Mastrandrea

value=1

Vdd

node1

nodeA   Mp1

nodeB   Mp2

node1

Mp3

node5   node6

xnode6

nodeB   Mn2

node6

Cout

node4

nodeA   Mn3

nodeA   Mn1

value={Coutp}

nodeA   nodeB

+ VinA   + VinB

HS65_GH_AND2.sch

TITLE

FILE:
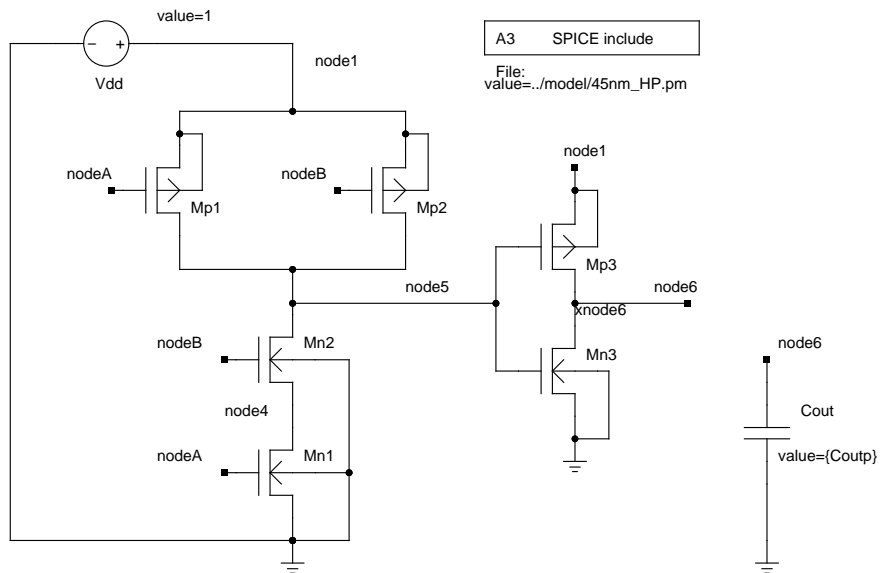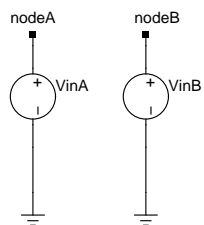
REVISION:

PAGE   OF

DRAWN BY: Antonio Mastrandrea

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

value=1

Vdd

node1

A3   SPICE include

File:
value=../model/45nm_HP.pm

node1

nodeA

nodeB

nodeC

Mp1   Mp2   Mp3

Mp4

node7   xnode8   node8

node8

nodeA   nodeB   nodeC

VinA   VinB   VinC

nodeC   Mn3

node6

nodeB   Mn2

node5

nodeA   Mn1

Mn4

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(node8)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node8) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node8) val=0.5 fall=1

HS65_GH_AND3.sch
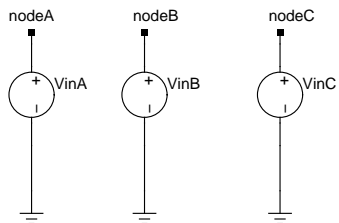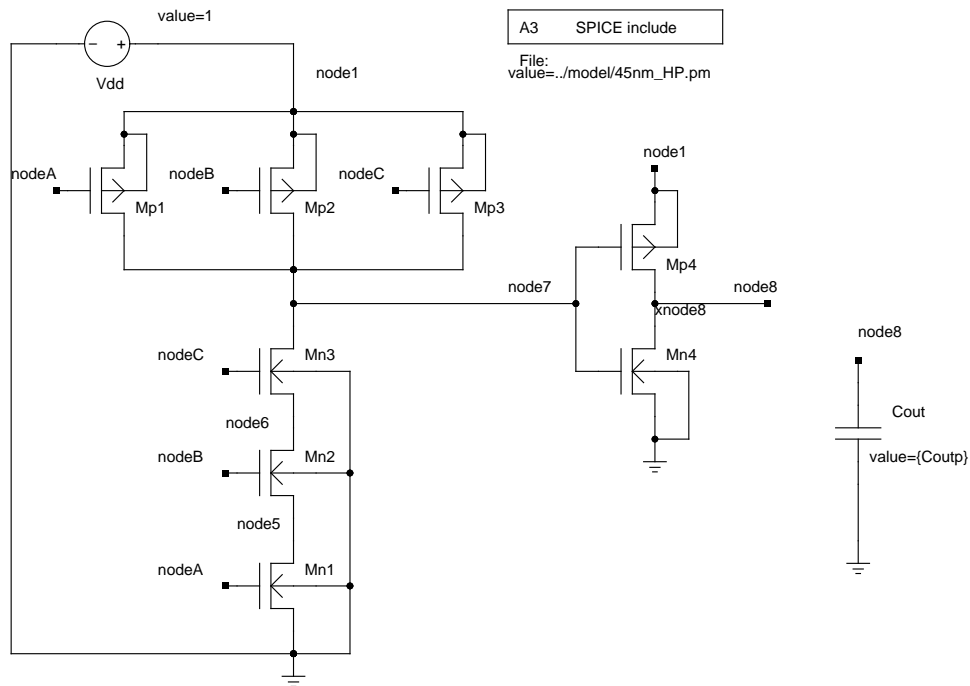
TITLE

FILE:

PAGE   OF

REVISION:

DRAWN BY: Antonio Mastrandrea

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

value=1

Vdd

node1

nodeA   Mp1

nodeB   Mp2

nodeC   Mp3

nodeD   Mp4

xnode9

node1

nodeD   Mn4

node8

nodeC   Mn3

node7

nodeB   Mn2

node6

nodeA   Mn1

node9

Mp5

node10

xnode10

Mn5

nodeA

+ VinA

nodeB

+ VinB

nodeC

+ VinC
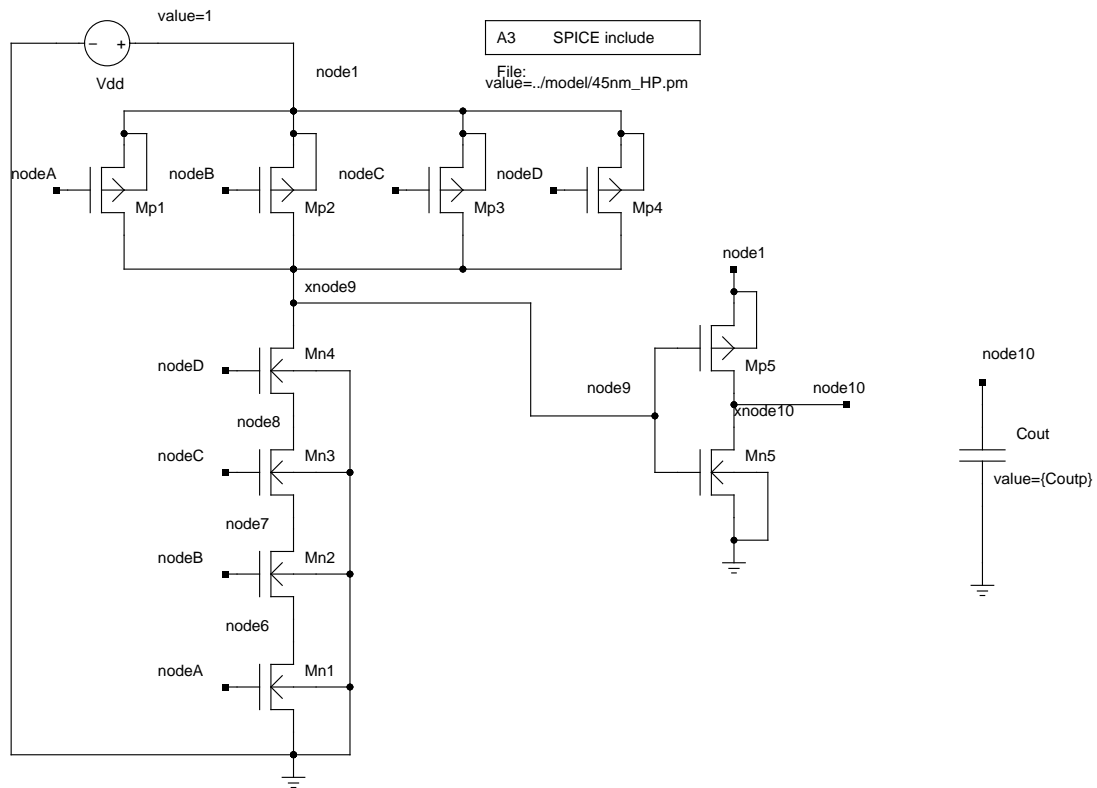
nodeD

+ VinD

node10

Cout

value={Coutp}
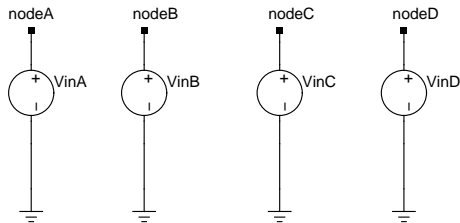
A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node10)

.meas tran delay_LH trig v(nodeA) val=0.5 rise=1 targ v(node10) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 fall=1 targ v(node10) val=0.5 fall=1

HS65_GH_AND4.sch

TITLE

FILE:

PAGE   OF

REVISION:

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node1

Mp1

node21

Mn1

nodeCP

nodeE

Mp41

node1

Mp61

node1

nodeD

Mn6

Mp51

nodeCPN

node1

nodeD   VinD

nodeCP   VinCP

nodeEN

nodeCPN

Mn4

node1

Mp2

Mn2

noded2

Mn5

nodeZ

nodeZ

Cout

value={Coutp}

node1

Mp7

Mn7

node22

node1

Mp8

Mn8

nodeE   VinE

node1   Vdd

value=1

node1

Mp3

Mn3

nodeCP

node1

nodeEN

Mp9

Mn9

node1

nodeE

HS65_GH_DFPHQ.sch

TITLE

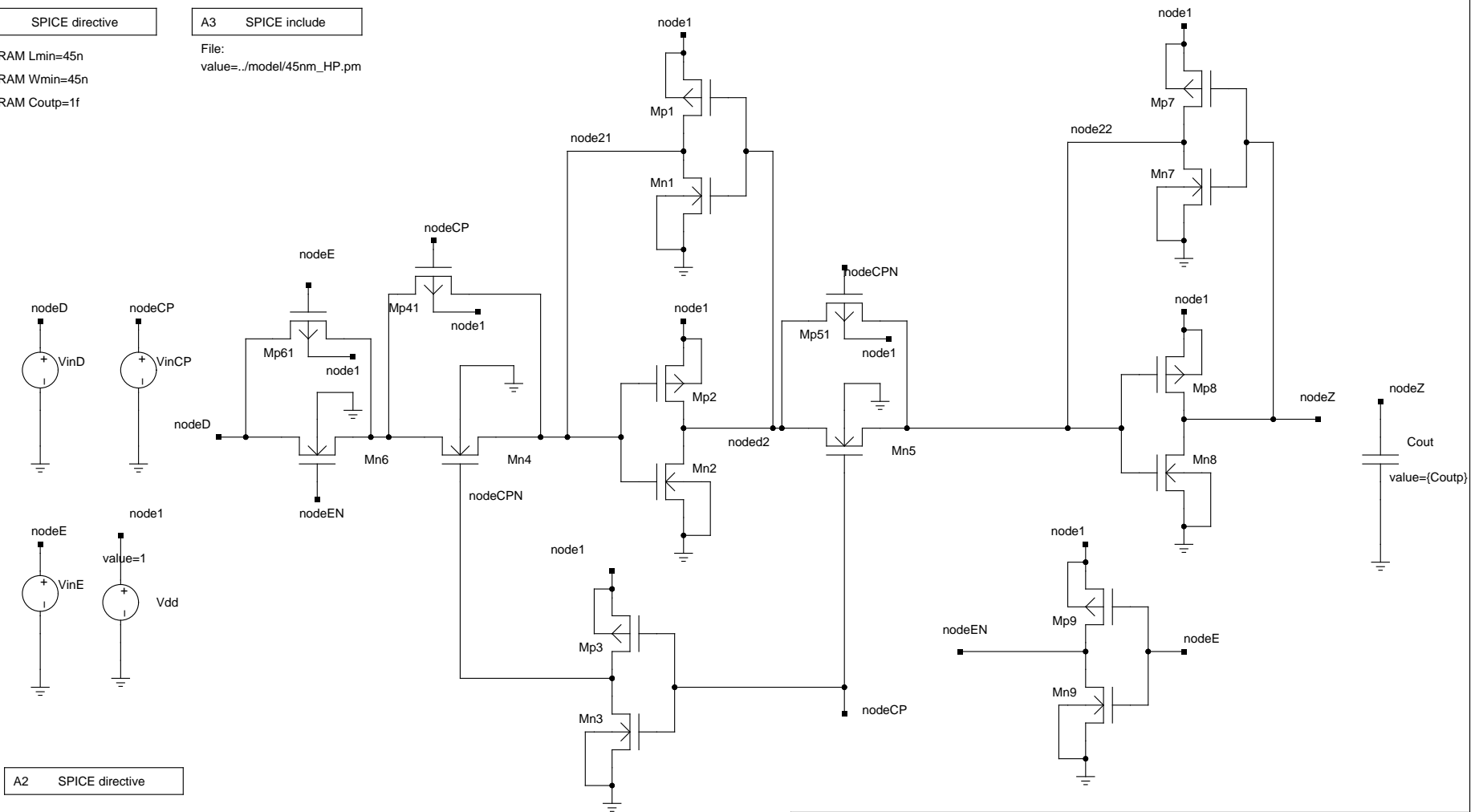FILE:

PAGE   OF

REVISION:

DRAWN BY: Antonio Mastrandrea

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

node1

Mp1

node21

Mn1

nodeD5

node1

Mp7

node51

Mn7

nodeCP

Mp41   node1

nodeCPN

Mp51   node1

node1

Mp2

node1

Mp6

nodeZ

nodeD

Mn4

Mn2

Mn5

nodeCP

Mn6

nodeZ

Cout

value={Coutp}

nodeCPN

node1

Mp11   nodeCP

Mn11

nodeD

VinD

nodeCP

VinCP

node1

value=1

Vdd

A2   SPICE directive

.TRAN 0.1p 12000p

.PRINT tran V(nodeD) V(nodeCP) V(nodeZ)

.meas tran delay_LH trig v(nodeCP) val=0.5 rise=2 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeCP) val=0.5 rise=3 targ v(nodeZ) val=0.5 fall=1

.meas tran delay_HL trig v(nodeCP) val=0.5 rise=3 targ v(nodeZ) val=0.5 fall=2

HS65_GH_DFPQ.sch

TITLE
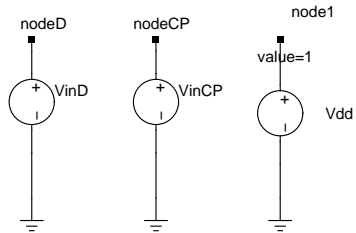
FILE:

REVISION:

PAGE   OF

DRAWN BY: Antonio Mastrandrea

A1   SPICE directive
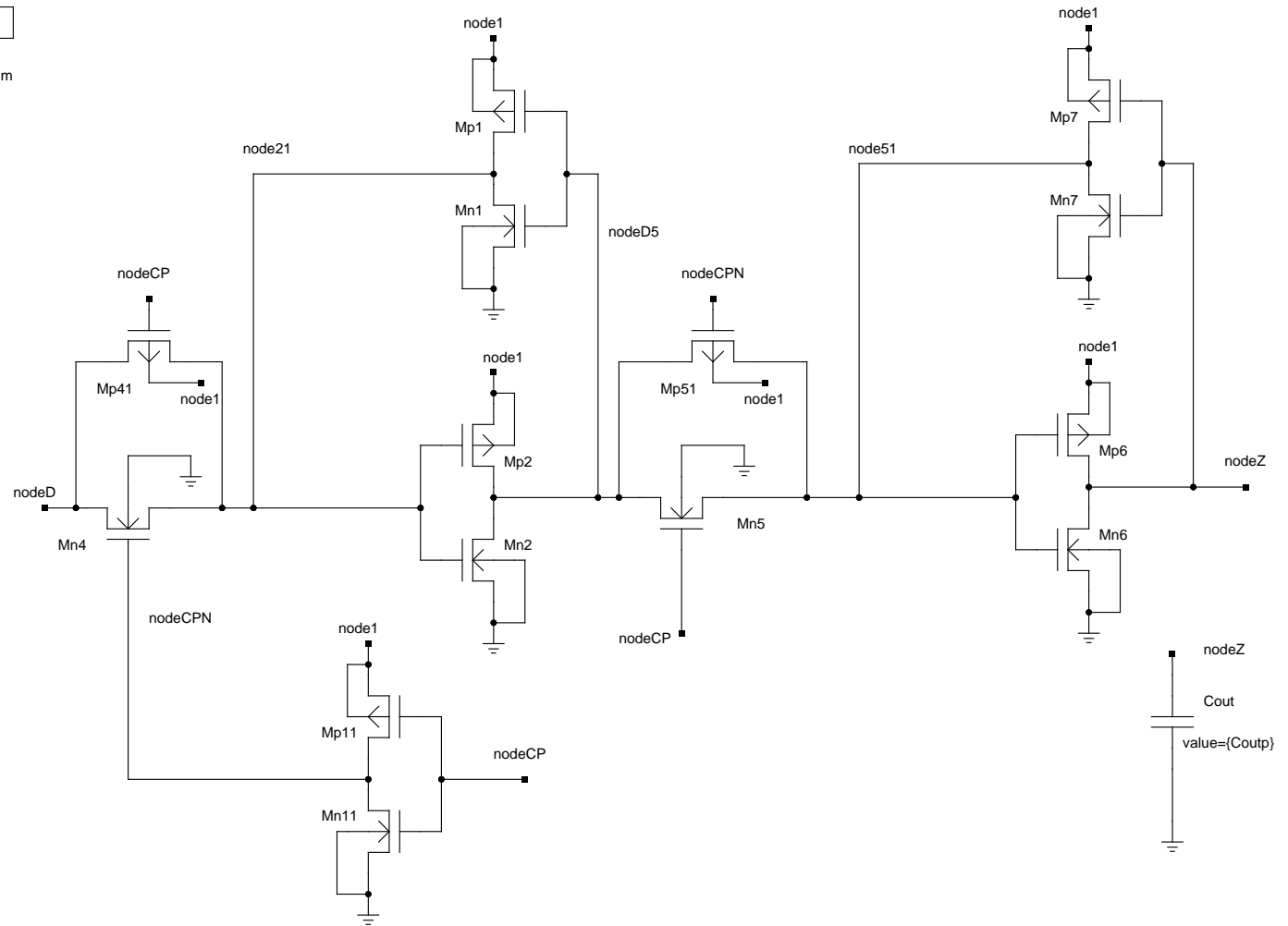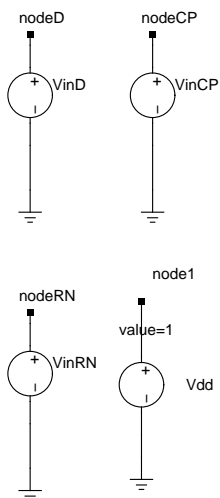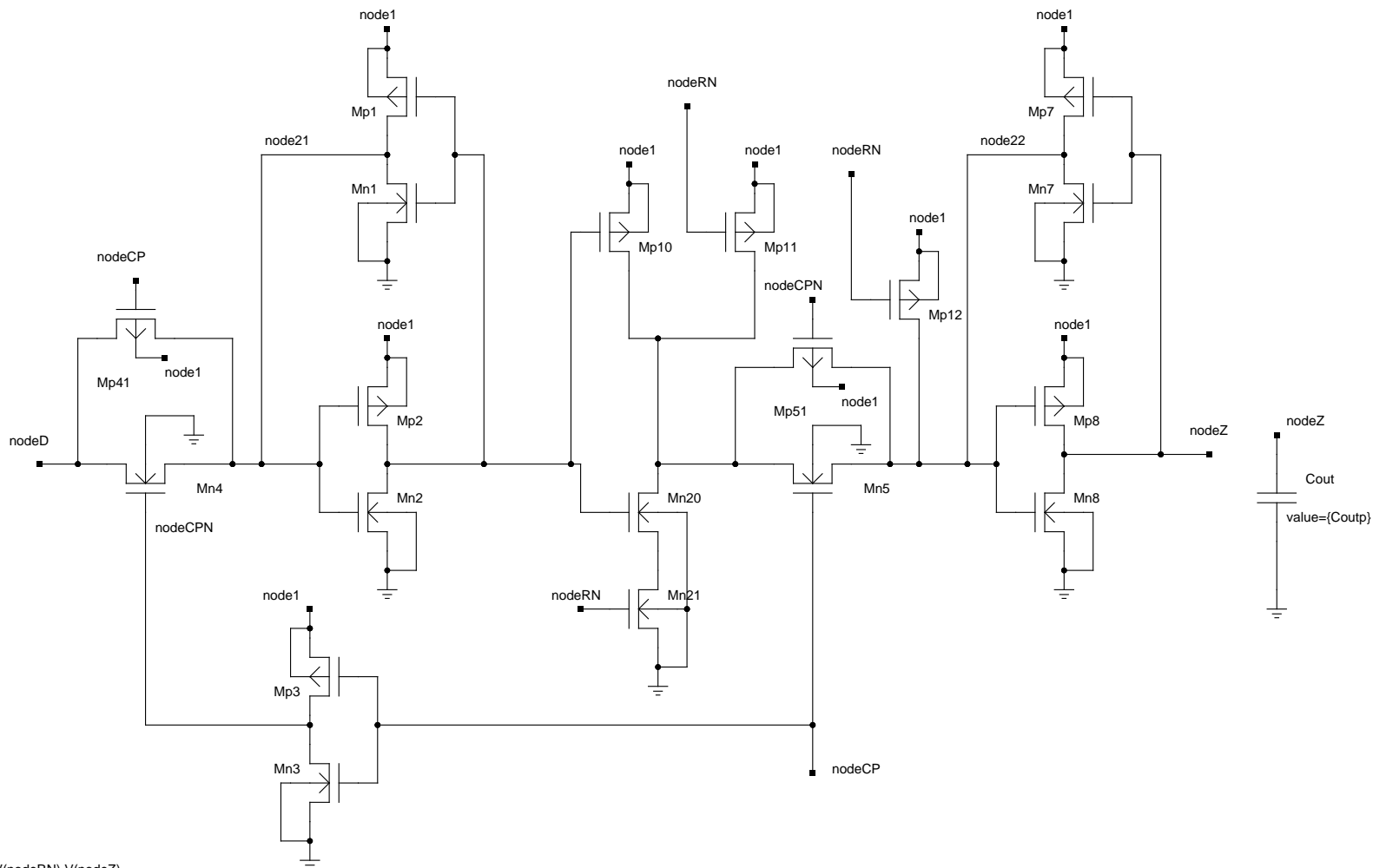
.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeD

nodeCP

VinD

VinCP

nodeRN

node1

VinRN

value=1

Vdd

nodeCP

Mp41

node1

nodeD

Mn4

nodeCPN

node21

node1

Mp1

Mn1

node1

Mp2

Mn2

node1

Mp3

Mn3

nodeRN

node1   node1

Mp10   Mp11

node1

Mn20

nodeRN   Mn21

nodeRN

nodeCPN

Mp51   node1

Mn5

node1   Mp12

nodeCP

node1

Mp7

Mn7

node22

node1

Mp8   nodeZ

Mn8

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 7800p

.PRINT tran V(nodeD) V(nodeCP) V(nodeRN) V(nodeZ)

.meas tran delay_LH trig v(nodeCP) val=0.5 rise=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeCP) val=0.5 rise=2 targ v(nodeZ) val=0.5 fall=1

.meas tran delay_HL trig v(nodeCP) val=0.5 rise=2 targ v(nodeZ) val=0.5 fall=2

.meas tran delay_LH_DaRN trig v(nodeRN) val=0.5 rise=2 targ v(nodeZ) val=0.5 rise=3

.meas tran delay_HL_DaRN trig v(nodeRN) val=0.5 fall=1 targ v(nodeZ) val=0.5 fall=2

HS65_GH_DFPRQN.sch

TITLE

FILE:

PAGE   OF

REVISION:

DRAWN BY: Antonio Mastrandrea

A3   SPICE include

File:
value=../model/45nm_HP.pm

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

node1

value=1

Vdd
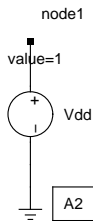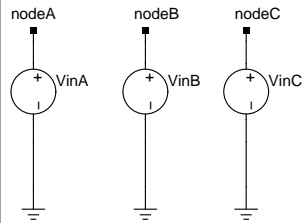
A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeCo) V(nodeS0)

.meas tran delay_LH_S0 trig v(nodeA) val=0.5 rise=1 targ v(nodeS0) val=0.5 rise=1

.meas tran delay_HL_S0 trig v(nodeB) val=0.5 rise=1 targ v(nodeS0) val=0.5 fall=1

.meas tran delay_LH_Co trig v(nodeB) val=0.5 rise=1 targ v(nodeCo) val=0.5 rise=1

.meas tran delay_HL_Co trig v(nodeB) val=0.5 fall=1 targ v(nodeCo) val=0.5 fall=1
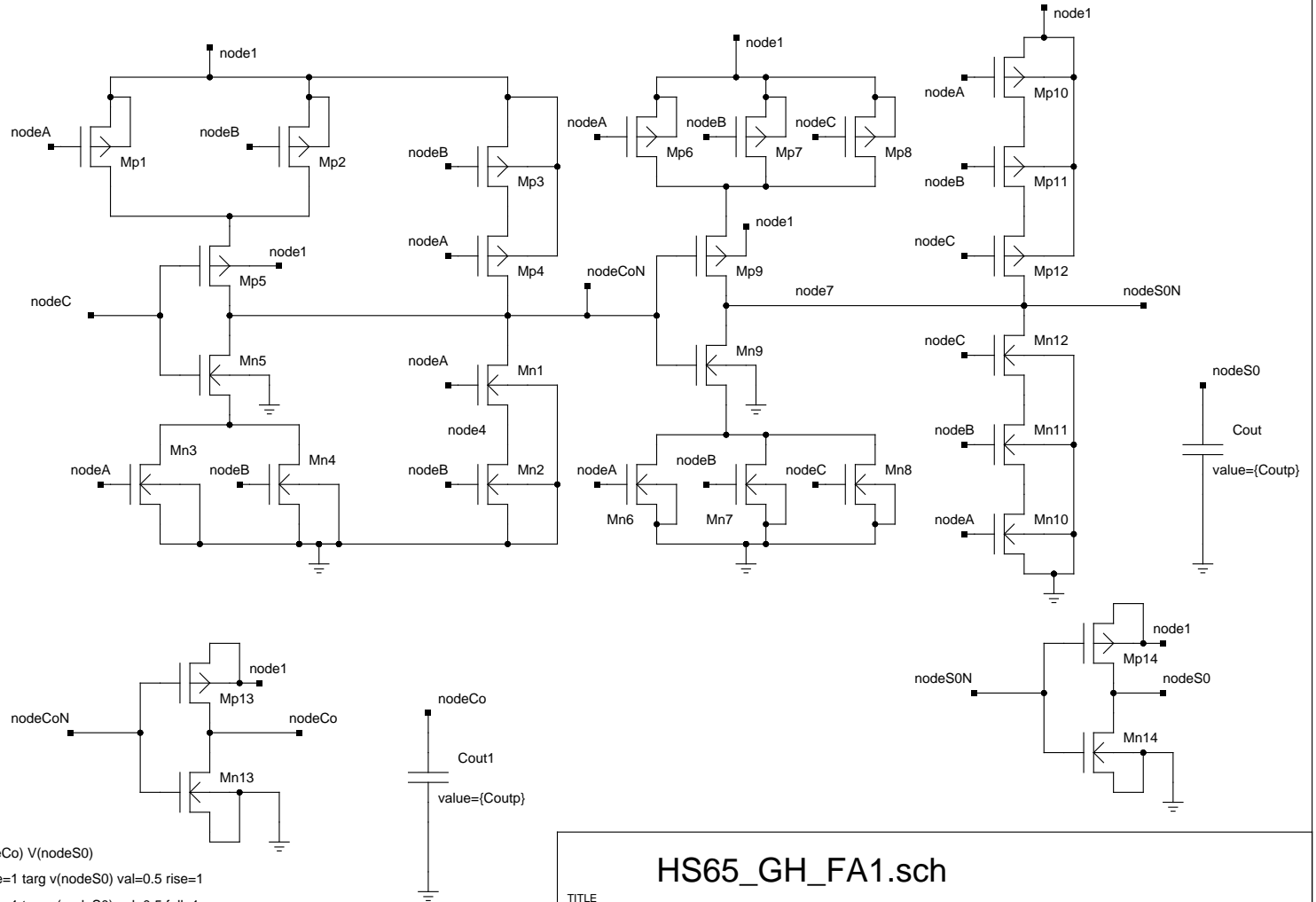
HS65_GH_FA1.sch

TITLE

FILE:

REVISION:

PAGE   OF

DRAWN BY: Antonio Mastrandrea

node1

Mp1

Mn1

node21

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeGN

Mp41

node1

nodeD

Mn4

nodeG

node1

Mp2

Mn2

node1

Mp3

Mn3

nodeZ

nodeD

nodeG

node1

value=1

+
VinD
-

+
VinG
-

+
Vdd
-

node1

Mp5

nodeGN

nodeG

Mn5

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 5400p

.PRINT tran V(nodeD) V(nodeG) V(nodeZ)

.meas tran delay_LH trig v(nodeD) val=0.5 rise=2 targ v(nodeZ) val=0.5 rise=2

.meas tran delay_HL trig v(nodeD) val=0.5 fall=2 targ v(nodeZ) val=0.5 fall=2

.meas tran delay_LH_DaG trig v(nodeG) val=0.5 rise=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL_DaG trig v(nodeG) val=0.5 rise=2 targ v(nodeZ) val=0.5 fall=1
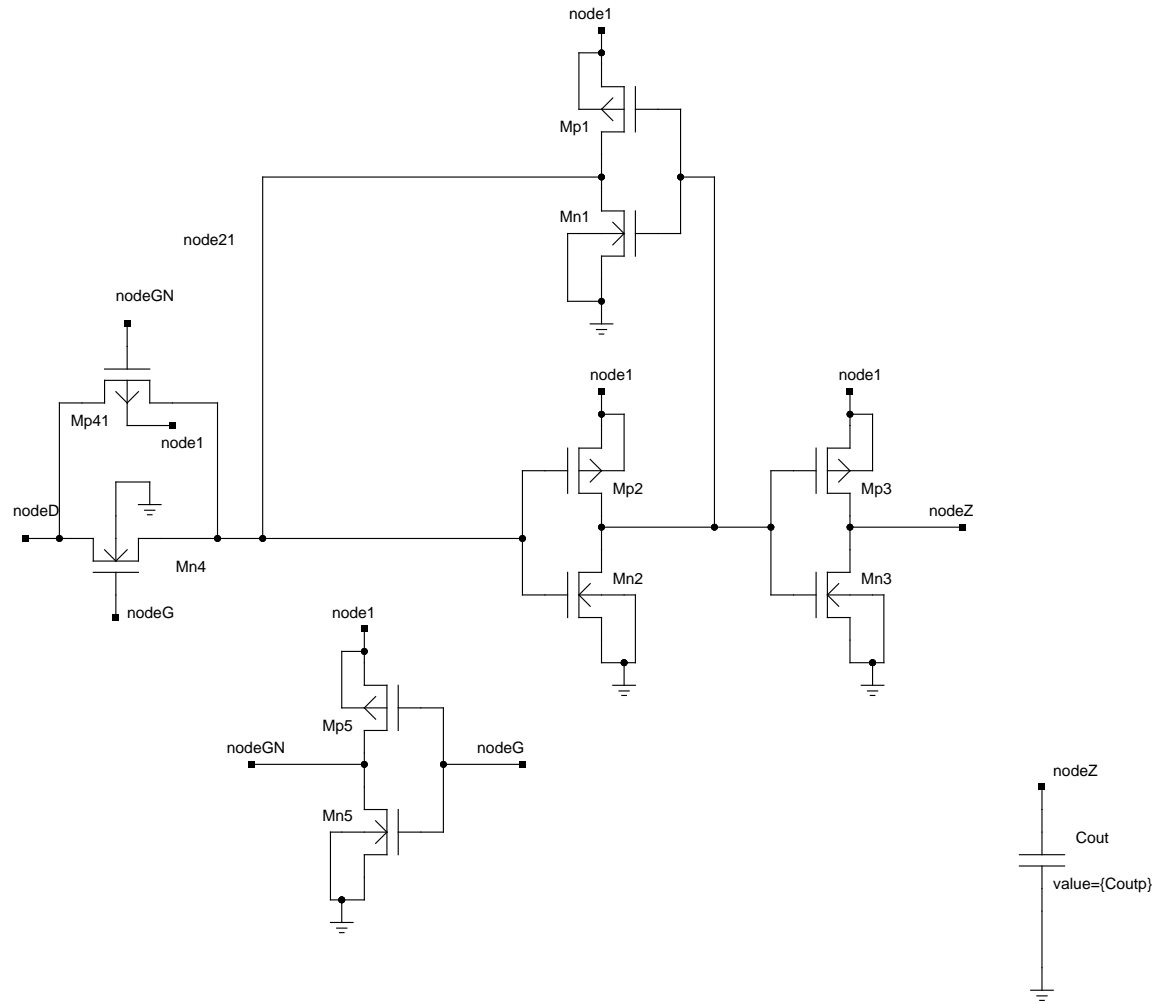
HS65_GH_LDHQ.sch	
TITLE	
FILE:	REVISION:
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nodeS0

nodeD0 ── Mp4 ── nodeU

node1

Mp4

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeD0

Mn4

nodeS0N

node1   node1

Mp2   Mp3   nodeZ
nodeUN

nodeU

Mn2   Mn3

nodeD1

Mn5

nodeD0   nodeD1   nodeS0   node1

+ VinD0   + VinD1   + VinS0   value=1

+ Vdd

nodeS0N

nodeD1 ── Mp5 ── nodeU

node1

Mp5

nodeS0

node1

Mp1

nodeS0N

Mn1

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeD0) V(nodeD1) V(nodeS0) V(nodeZ)

.meas tran delay_LH trig v(nodeD1) val=0.5 rise=1 targ v(nodeZ) val=0.5 rise=1

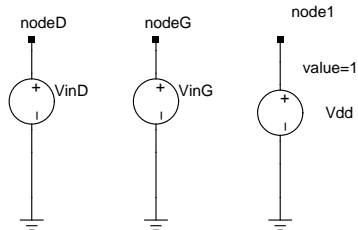.meas tran delay_HL trig v(nodeD1) val=0.5 fall=1 targ v(nodeZ) val=0.5 fall=1

HS65_GH_MUX21.sch

TITLE

FILE: REVISION:
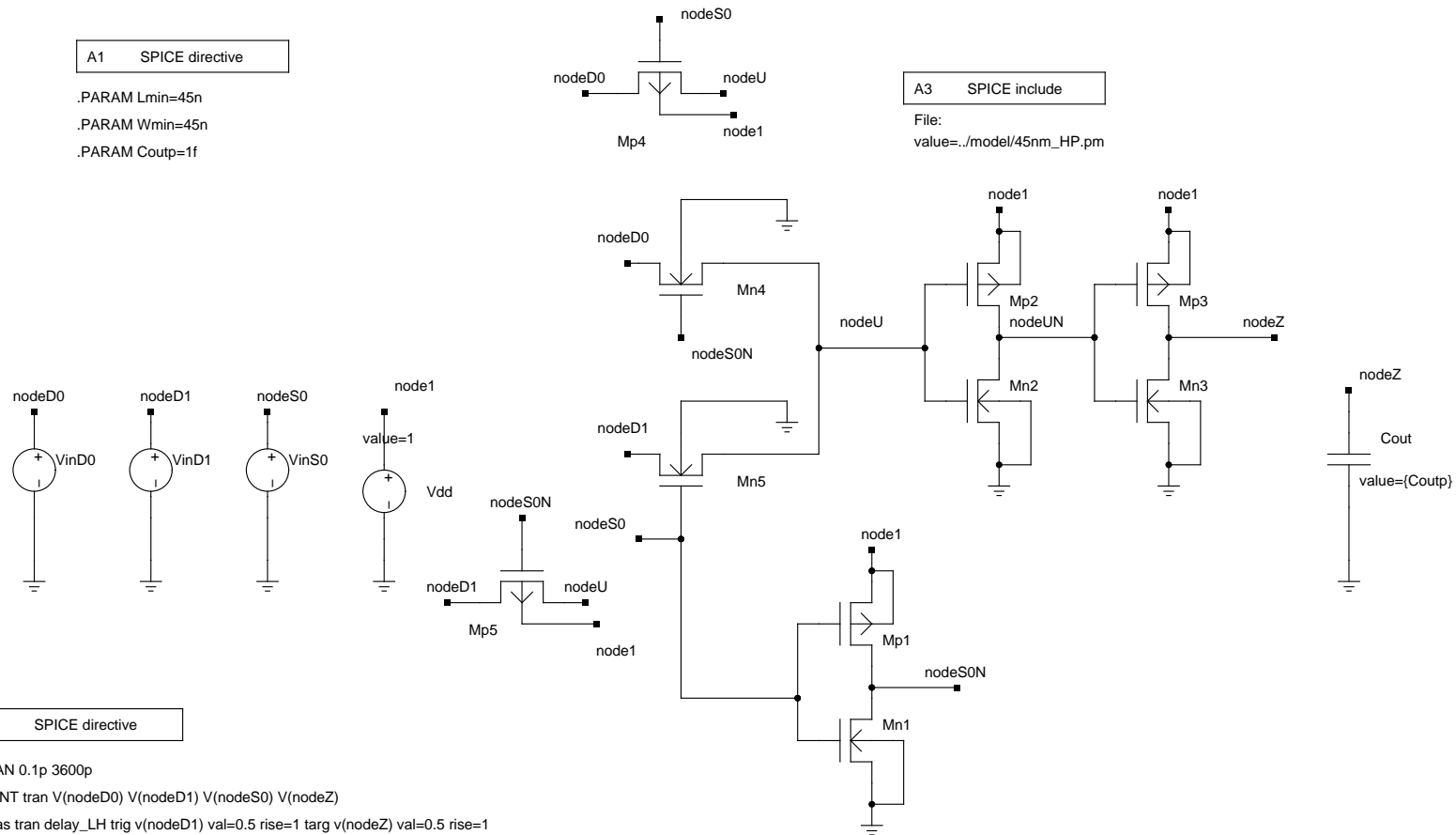
PAGE   OF   DRAWN BY: Antonio Mastrandrea

A3   SPICE include

File:
value=../model/45nm_HP.pm

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

nodeS0

nodeD0   nodeU1

Mp3   node1

nodeS0N

nodeD1   nodeU1

Mp4   node1

nodeS1N

nodeD2   nodeU2

Mp5   node1

nodeD0

nodeS0N

Mn3

nodeU1

nodeD1

Mn4

nodeS0

node1

Mp1

Mn1

nodeS0N

nodeS1

nodeU1   nodeU2

Mp8   node1

nodeS1N

Mn8

nodeD0   nodeD1   nodeS0   nodeS1

VinD0   VinD1   VinS0   VinS1

nodeD2   node1

VinD2   Vdd

value=1

nodeD2

Mn5

nodeS1

node1

Mp2

nodeS1N

Mn2

node1   node1

Mp6   Mp7

nodeU2   nodeZ

Mn6   Mn7

nodeU2

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeD0) V(nodeD1) V(nodeD2) V(nodeS0) V(nodeS1) V(nodeZ)

.meas tran delay_LH trig v(nodeD1) val=0.5 rise=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeD1) val=0.5 fall=1 targ v(nodeZ) val=0.5 fall=1
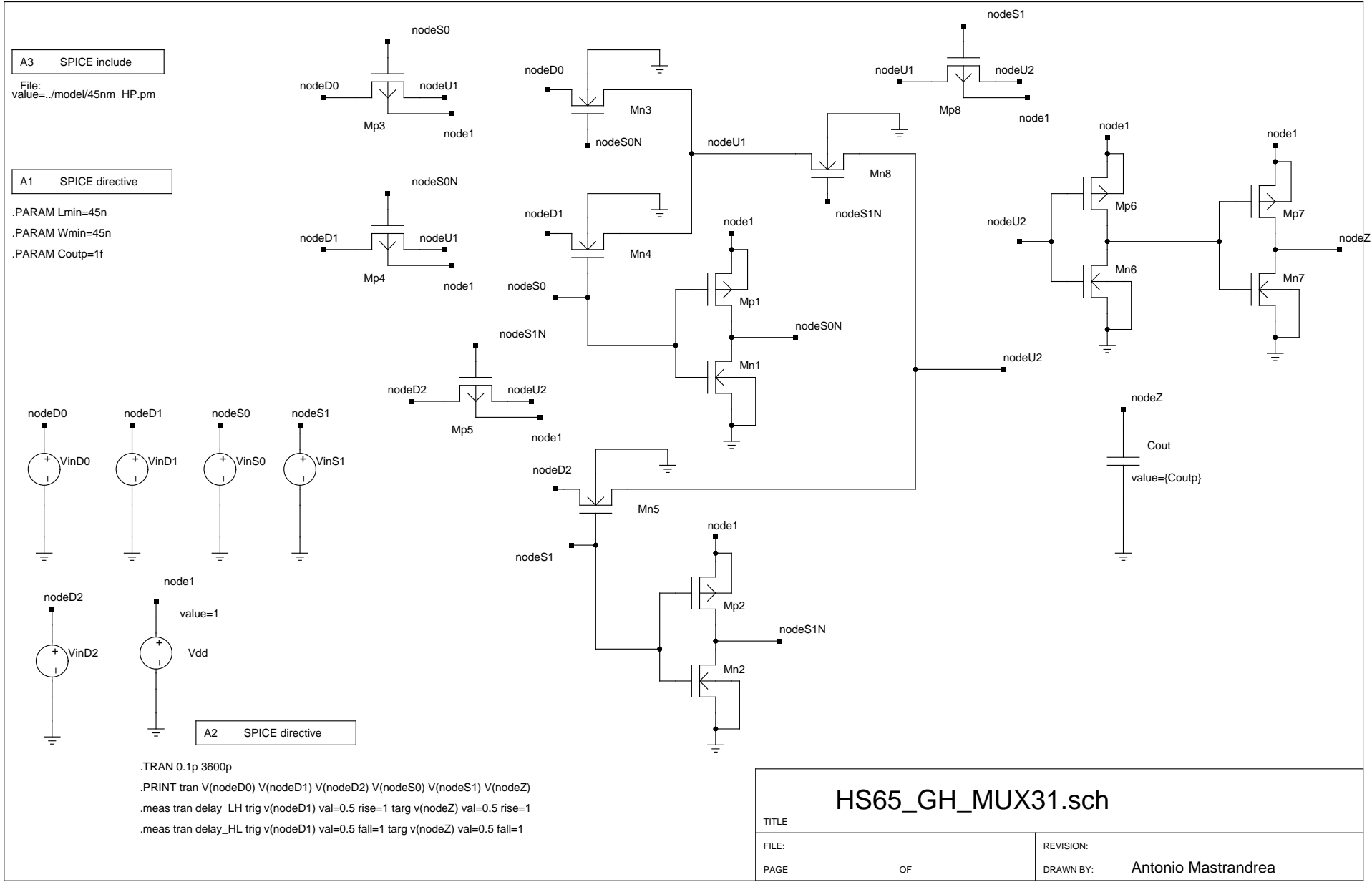
HS65_GH_MUX31.sch

TITLE
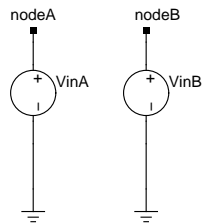
FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea

node1

Mp9

nodeU3

Mn9

node1

Mp10

nodeZ

Mn10

nodeS0

nodeD0   nodeU1

Mp3   node1

nodeS0N

nodeD1   nodeU1

Mp4   node1

nodeD0

Mn3

nodeS0N

nodeU1

Mn7

nodeS1N

nodeD1

Mn4

nodeS0

node1

Mp1

nodeS0N

Mn1

nodeS1

nodeU1   nodeZ

Mp7   node1

nodeU3

nodeS1N   nodeZ

nodeU2

Mp8   node1

nodeZ

Cout

value={Coutp}

nodeD0   nodeD1   nodeS0   nodeS1   node1

value=1

VinD0   VinD1   VinS0   VinS1   Vdd

nodeS0

nodeD2   nodeU2

Mp5   node1

nodeS0N

nodeD3   nodeU2

Mp6   node1

nodeD2

Mn5

nodeS0N

nodeU2

nodeD3

Mn6

nodeS0

Mn8

nodeS1

node1

Mp2

nodeS1N

Mn2

nodeD2   nodeD3

VinD2   VinD3

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A2   SPICE directive

A3   SPICE include

File:
value=../model/45nm_HP.pm

.TRAN 0.1p 3600p

.PRINT tran V(nodeD0) V(nodeD1) V(nodeD2) V(nodeD3) V(nodeS0) V(nodeS1) V(nodeZ)

.meas tran delay_LH trig v(nodeD3) val=0.5 rise=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeD3) val=0.5 fall=1 targ v(nodeZ) val=0.5 fall=1

HS65_GH_MUX41.sch

TITLE

FILE: REVISION:

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A1   SPICE directive

.PARAM Lmin=45n
.PARAM Wmin=45n
.PARAM Coutp=1f

value=1

Vdd

node1

nodeA   Mp1

nodeB   Mp2

node5

nodeB   Mn2

node4

nodeA   Mn1

A3   SPICE include

File:
value=../model/45nm_HP.pm

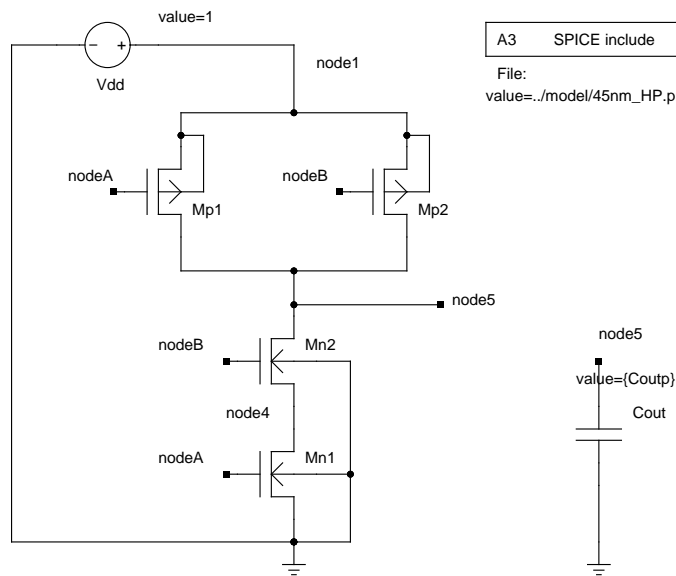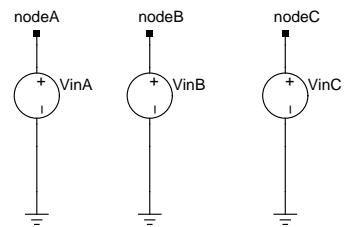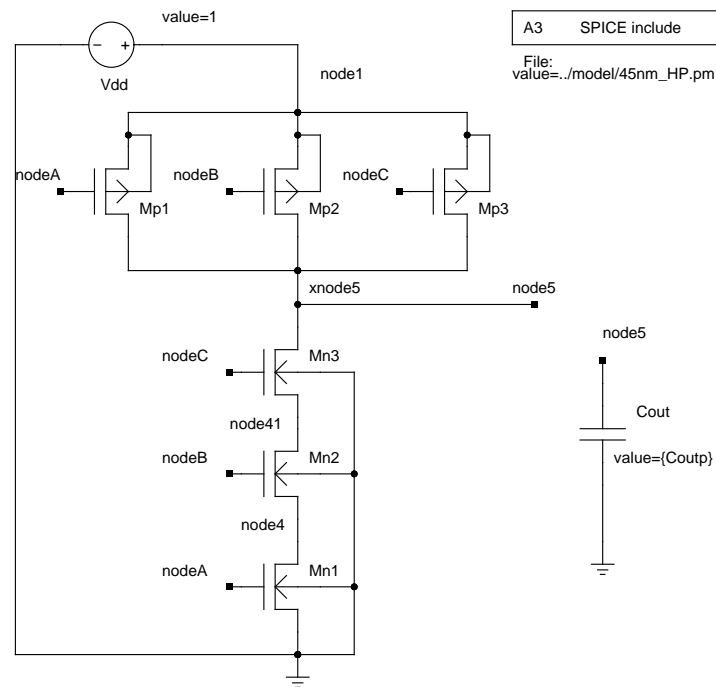node5

value={Coutp}

Cout

nodeA   nodeB

VinA   VinB

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(node5)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node5) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node5) val=0.5 fall=1

HS65_GH_NAND2.sch

TITLE

FILE:

PAGE   OF

REVISION:

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A1   SPICE directive
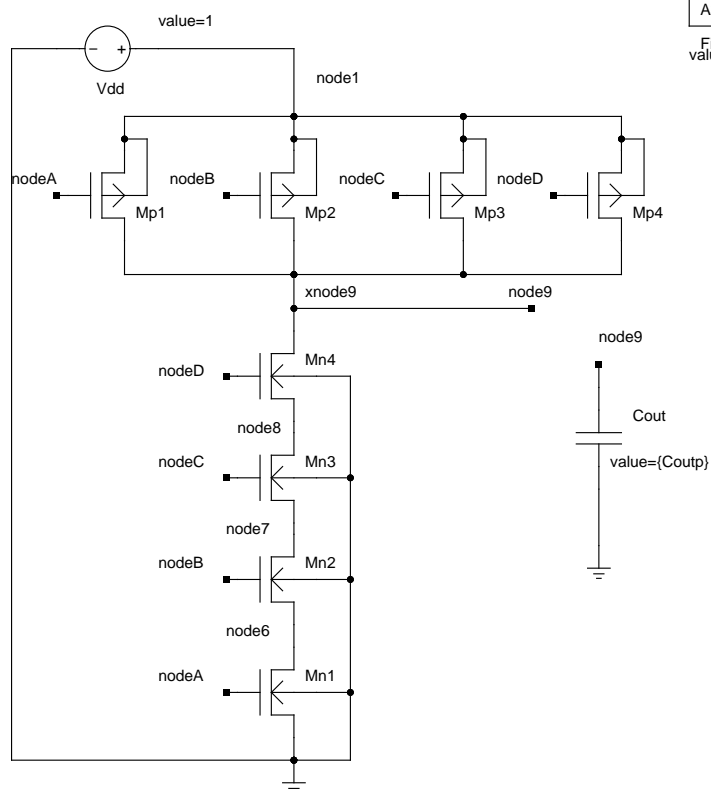
.PARAM Lmin=45n
.PARAM Wmin=45n
.PARAM Coutp=1f

value=1

Vdd

node1

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeA   nodeB   nodeC
        Mp1   Mp2   Mp3

xnode5   node5

node5

nodeA   nodeB   nodeC

        VinA   VinB   VinC

nodeC   Mn3

node41

nodeB   Mn2

node4

nodeA   Mn1

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p
.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(node5)
.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node5) val=0.5 rise=1
.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node5) val=0.5 fall=1

HS65_GH_NAND3.sch

TITLE

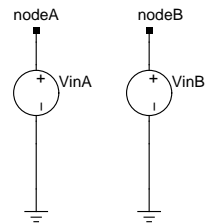FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea
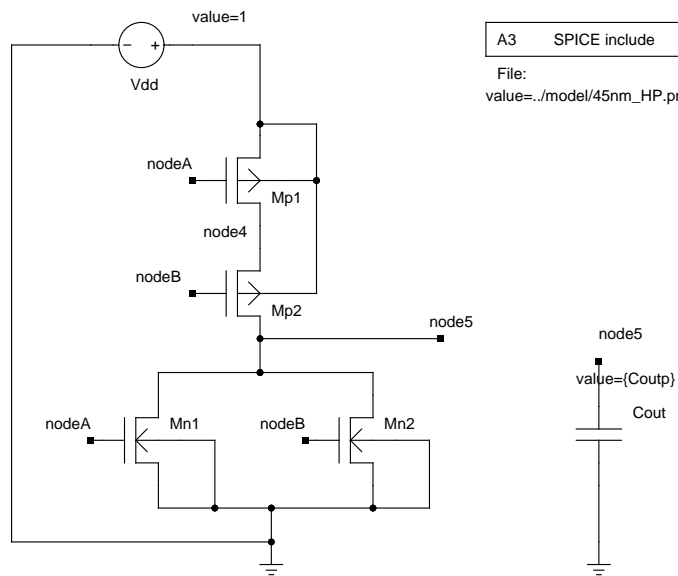
A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

value=1

Vdd

node1

nodeA   nodeB   nodeC   nodeD

Mp1   Mp2   Mp3   Mp4

xnode9   node9

nodeA   nodeB   nodeC   nodeD

VinA   VinB   VinC   VinD

node9

nodeD   Mn4

Cout

node8

nodeC   Mn3

value={Coutp}

node7

nodeB   Mn2

node6

nodeA   Mn1
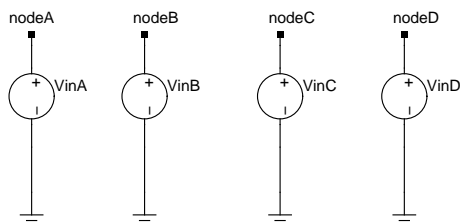
A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node9)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node9) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node9) val=0.5 fall=1
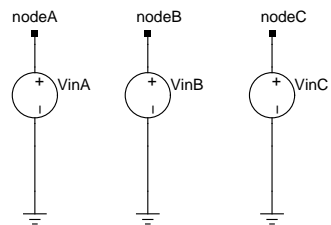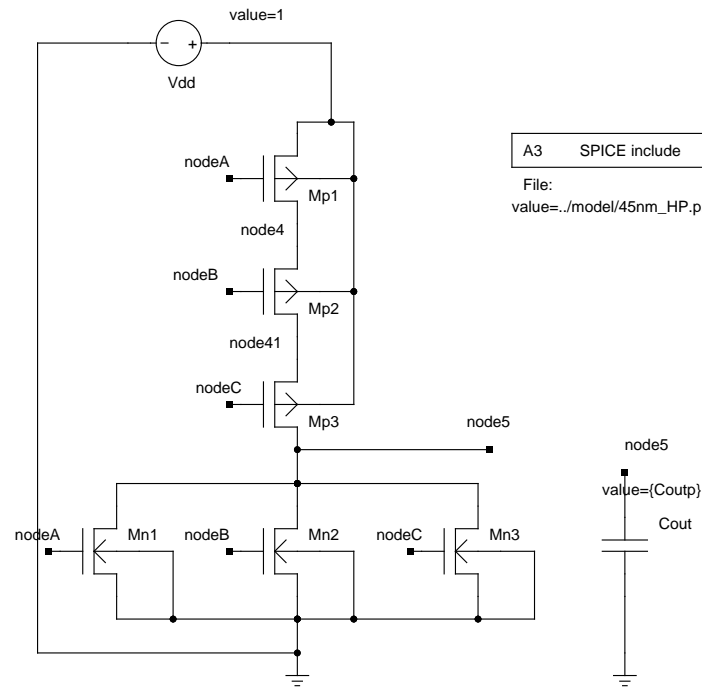
HS65_GH_NAND4.sch

TITLE

FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea

A1	SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

value=1

Vdd

A3	SPICE include

File:
value=../model/45nm_HP.pm

nodeA

Mp1

node4

nodeB

Mp2

node5

node5

value={Coutp}

Cout

nodeA   nodeB

VinA   VinB

nodeA   Mn1   nodeB   Mn2

A2	SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(node5)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node5) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node5) val=0.5 fall=1

HS65_GH_NOR2.sch

TITLE

FILE:

PAGE   OF

REVISION:

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value=1

Vdd

A1　　SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

nodeA

Mp1

node4

nodeB

Mp2

node41

nodeC

Mp3

node5

A3　　SPICE include

File:
value=../model/45nm_HP.pm

node5

value={Coutp}

Cout

nodeA

nodeB

nodeC

nodeA　　Mn1　　nodeB　　Mn2　　nodeC　　Mn3

VinA

VinB

VinC

A2　　SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(node5)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node5) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node5) val=0.5 fall=1

HS65_GH_NOR3.sch

TITLE

FILE:

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REVISION:

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value=1

Vdd

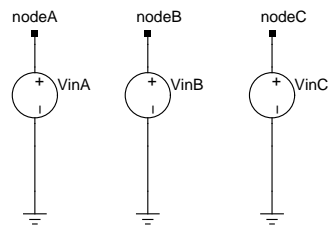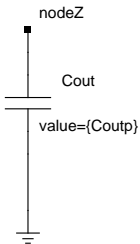nodeA — Mp1

node6

nodeB — Mp2

node7

nodeC — Mp3

node8

nodeD — Mp4

node9

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

nodeA   nodeB   nodeC

node9

node9

value={Coutp}

Cout

nodeA   Mn1   nodeB   Mn2   nodeC   Mn3   nodeD   Mn4

VinA   VinB   VinC

nodeD

VinD

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeC) V(nodeD) V(node9)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(node9) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(node9) val=0.5 fall=1

HS65_GH_NOR4.sch

TITLE

FILE:

REVISION:

PAGE   OF

DRAWN BY:

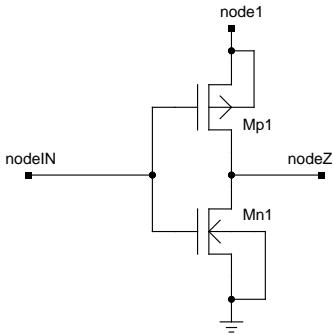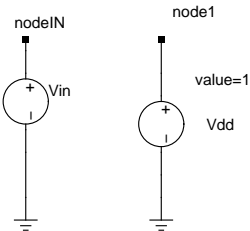Antonio Mastrandrea

A1   SPICE directive

.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

A3   SPICE include

File:
value=../model/45nm_HP.pm

node1

Mp1

nodeIN   nodeZ

Mn1

nodeIN

+ Vin
–

node1

value=1

+
– Vdd

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 1800p

.PRINT tran V(nodeIN) V(nodeZ)

.meas tran delay_LH trig v(nodeIN) val=0.5 fall=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeIN) val=0.5 rise=1 targ v(nodeZ) val=0.5 fall=1

HS65_GH_NOT.sch
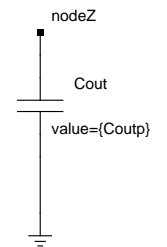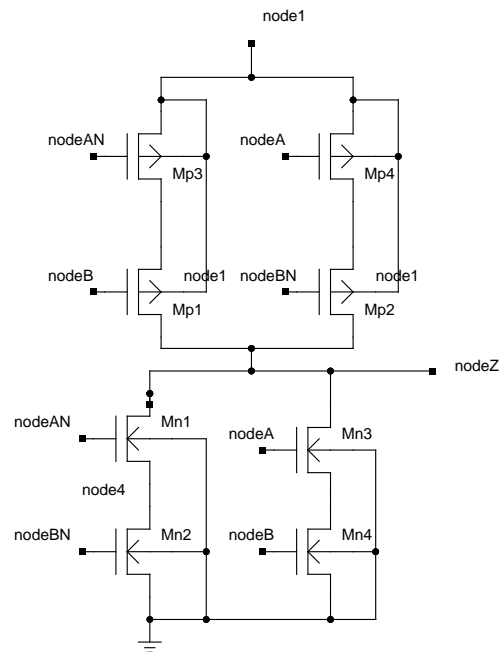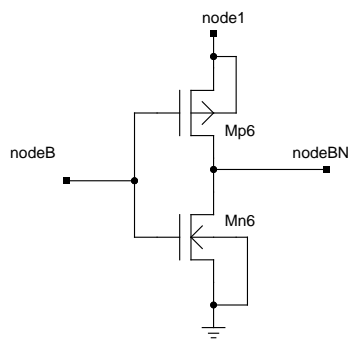
TITLE

FILE:
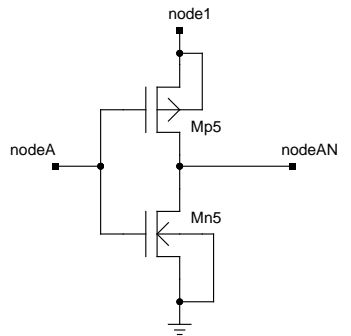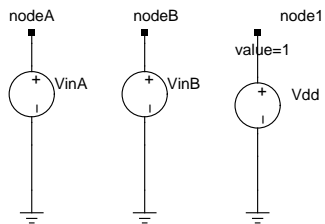
PAGE   OF

REVISION:

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A3   SPICE include

File:
value=../model/45nm_HP.pm

A1   SPICE directive
.PARAM Lmin=45n

.PARAM Wmin=45n

.PARAM Coutp=1f

node1

nodeA   nodeAN

Mp5

Mn5

node1

nodeAN   nodeA

Mp3   Mp4

nodeB   node1   nodeBN   node1

Mp1   Mp2

nodeZ

nodeA   nodeB   node1

VinA   VinB   Vdd
                              value=1

node1

nodeB   nodeBN

Mp6

Mn6

nodeAN   Mn1   nodeA   Mn3

node4

nodeBN   Mn2   nodeB   Mn4

nodeZ

Cout

value={Coutp}

A2   SPICE directive

.TRAN 0.1p 3600p

.PRINT tran V(nodeA) V(nodeB) V(nodeZ)

.meas tran delay_LH trig v(nodeA) val=0.5 fall=1 targ v(nodeZ) val=0.5 rise=1

.meas tran delay_HL trig v(nodeA) val=0.5 rise=1 targ v(nodeZ) val=0.5 fall=1

HS65_GH_XOR2.sch

TITLE

FILE: REVISION:

PAGE   OF   DRAWN BY: Antonio Mastrandrea