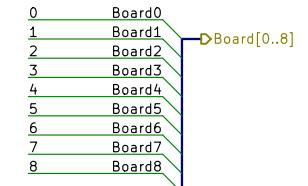
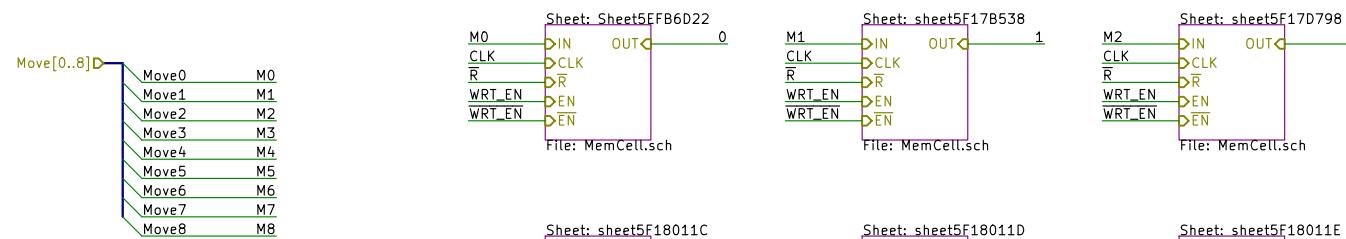


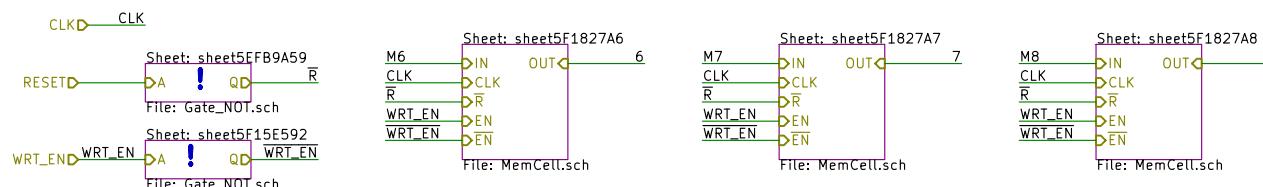
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk
Sheet: /
File: FetsAndCrosses.sch
Title: Fets and Crosses
Size: A3 | Date: 2020-07-05 | Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3 | Id: 1/389

1 2 3 4 5 6

A



B



C

Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_1/
File: PlayerMem.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 2/389

1 2 3 4 5 6

A

B

C

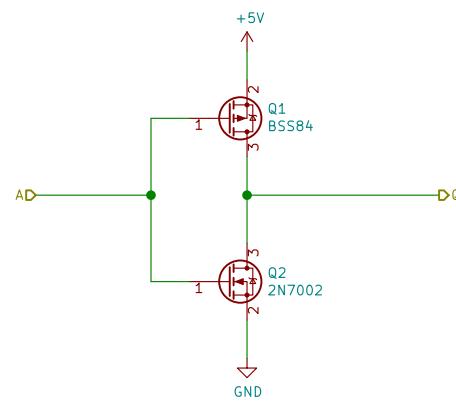
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5EFB9A59/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 3/389

A

B

C

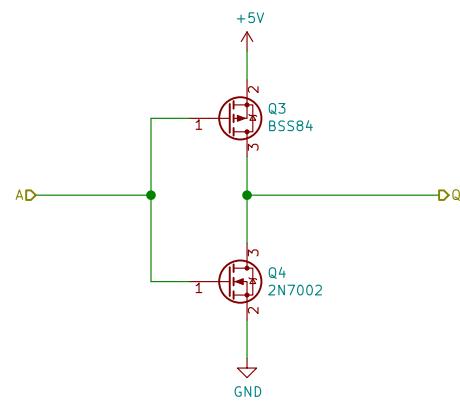
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F15E592/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 4/389

A

A

B

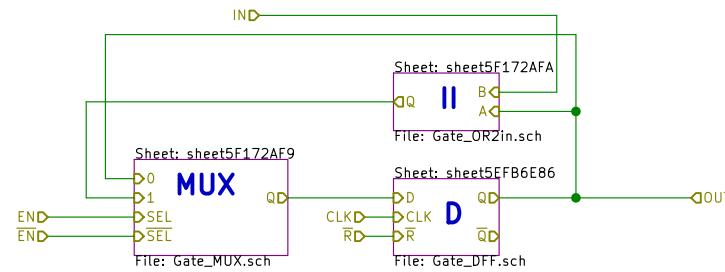
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/Sheet5EFB6D22/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 5/389

A

B

C

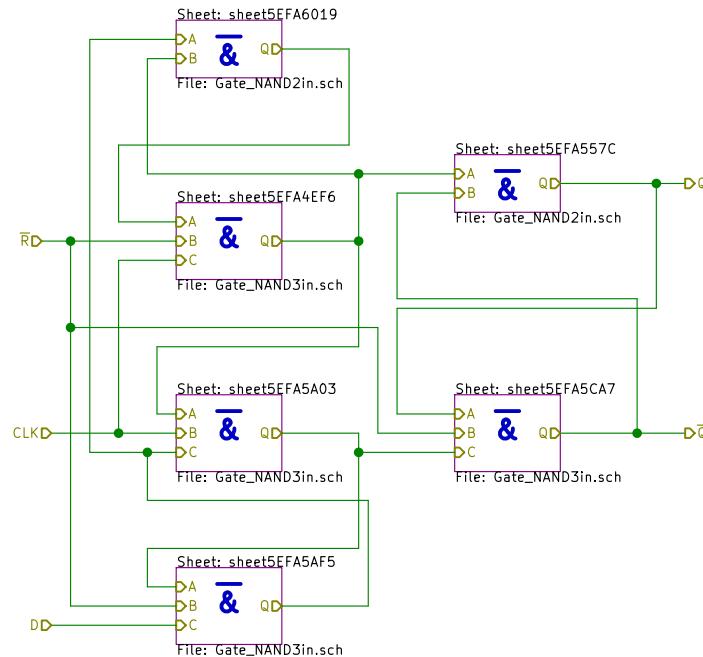
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/
 File: Gate_DFF.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 6/389

A

A

B

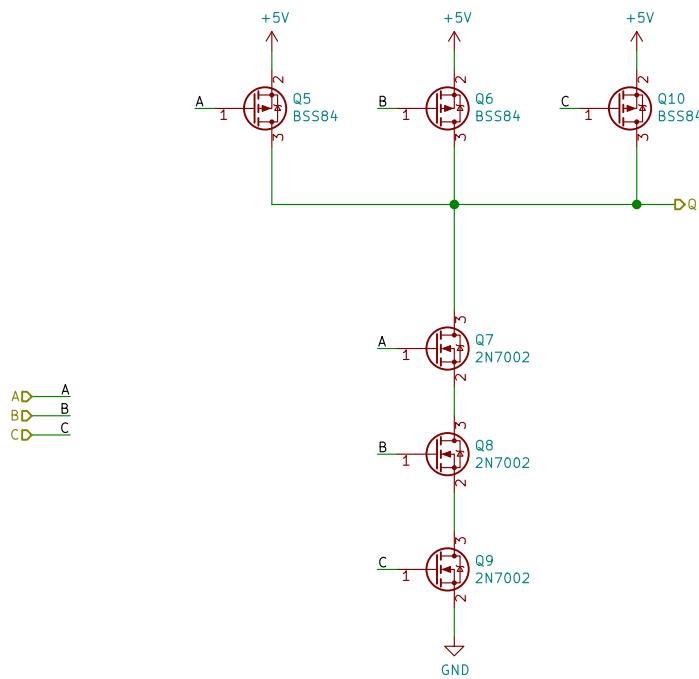
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA4EF6/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

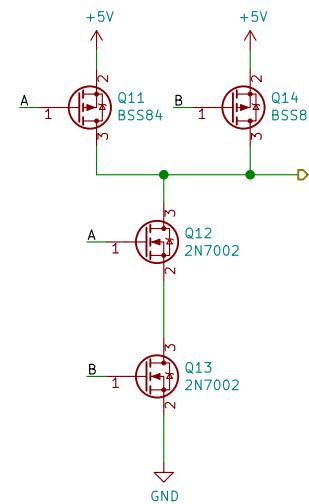
Rev: v0.0
Id: 7/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 8/389

A

A

B

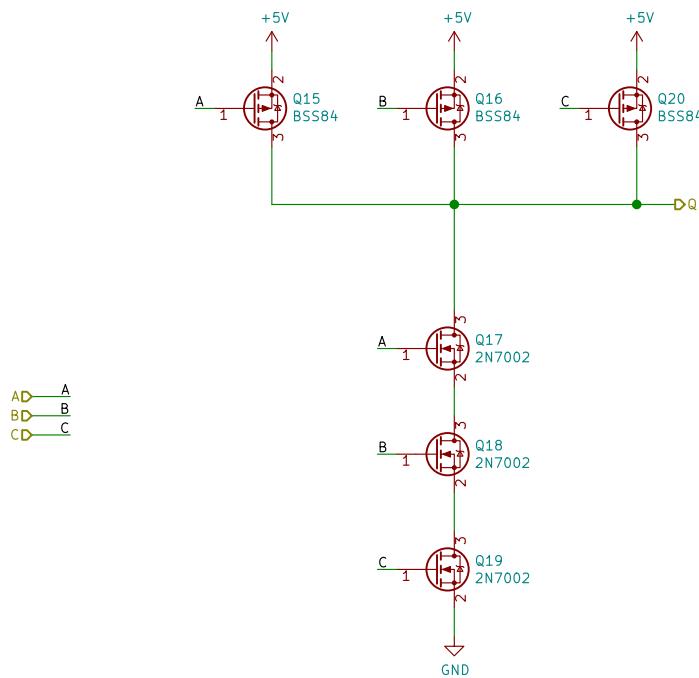
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA5A03/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 9/389

A

A

B

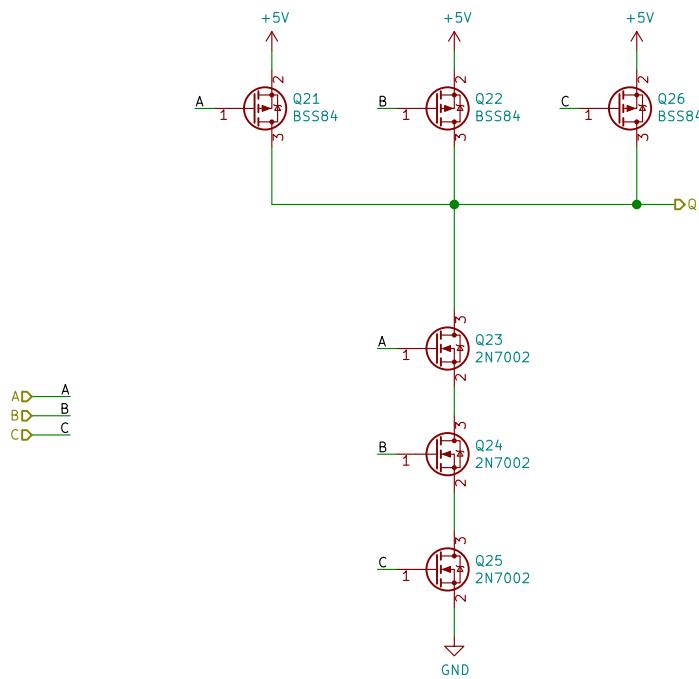
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 10/389

A

A

B

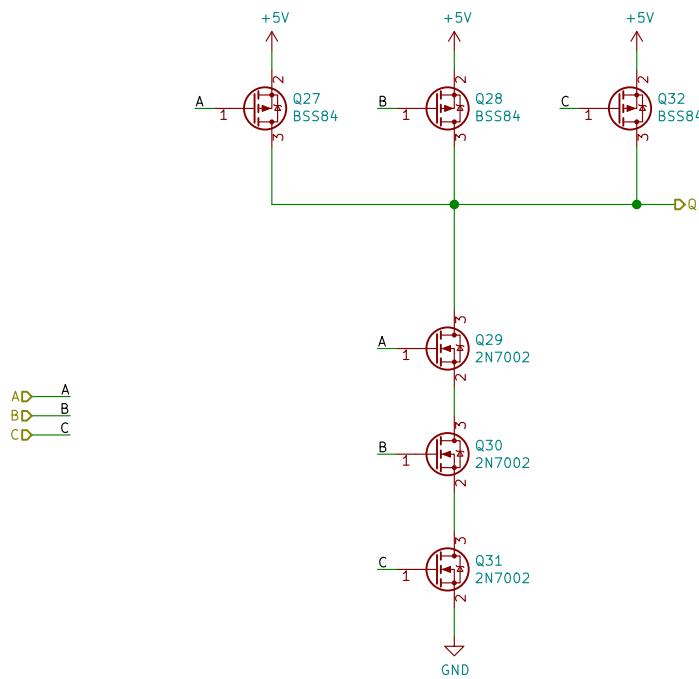
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

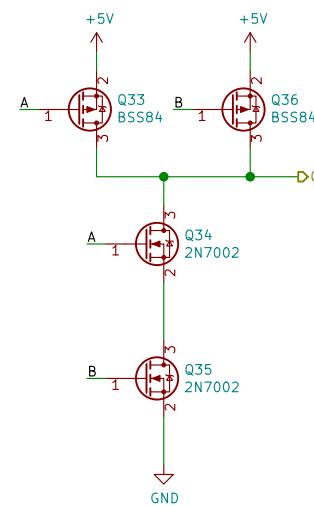
Rev: v0.0
Id: 11/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA6019/
File: Gate_NAND2in.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

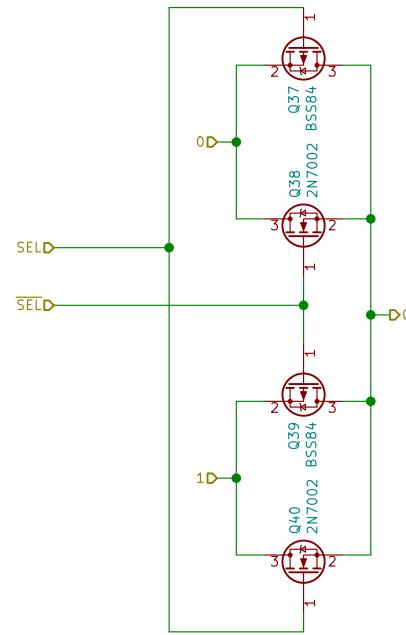
Id: 12/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 13/389

A

A

B

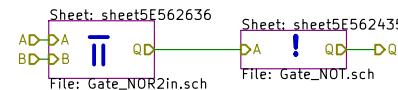
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5F172AFA/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 14/389

A

B

C

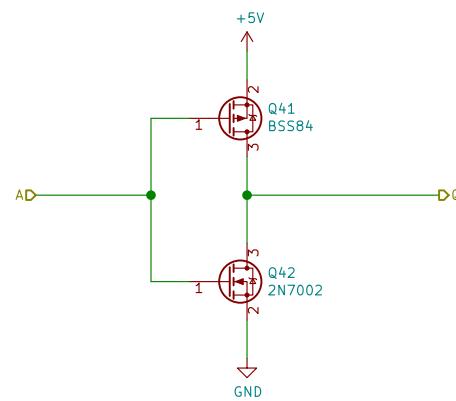
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

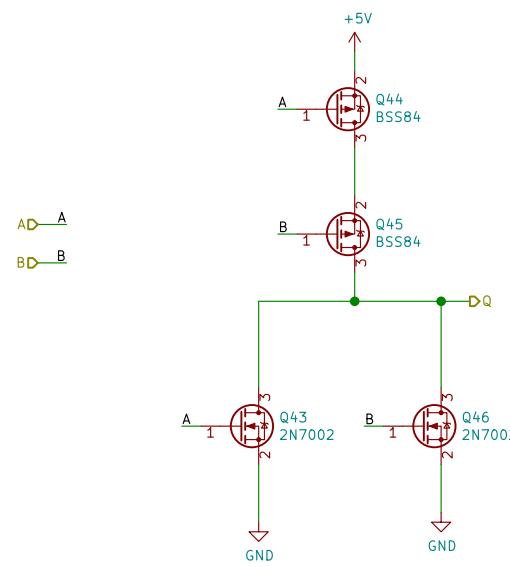
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 15/389



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philip Schilk

Sheet: /PlayerMem_1/Sheet5EFB6D22/sheet5F172AFA/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 16/389

A

A

B

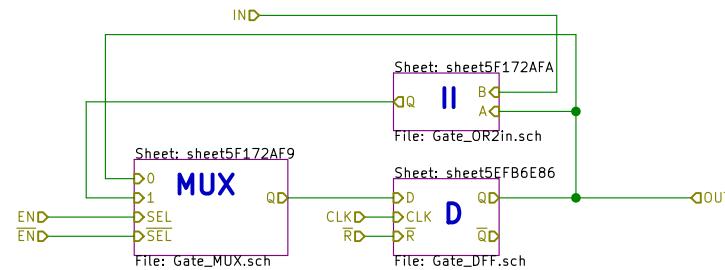
B

C

C

D

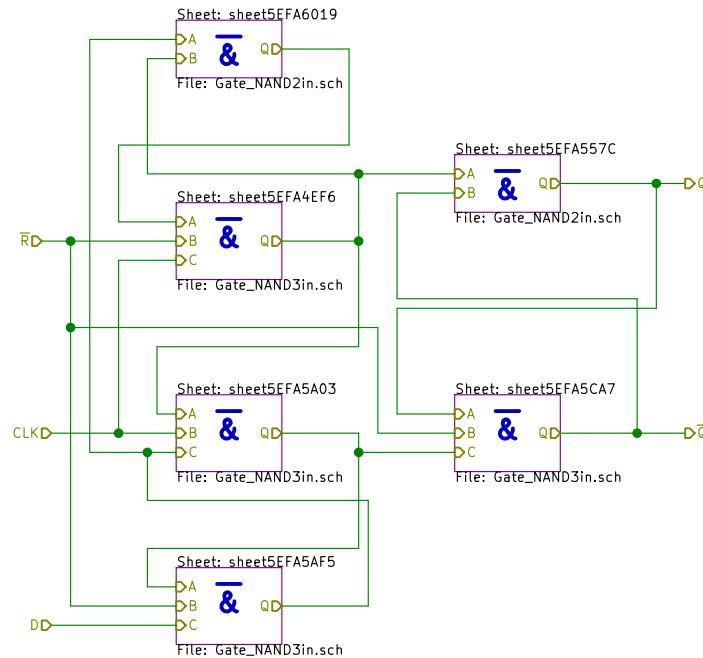
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F17B538/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 17/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 18/389

A

A

B

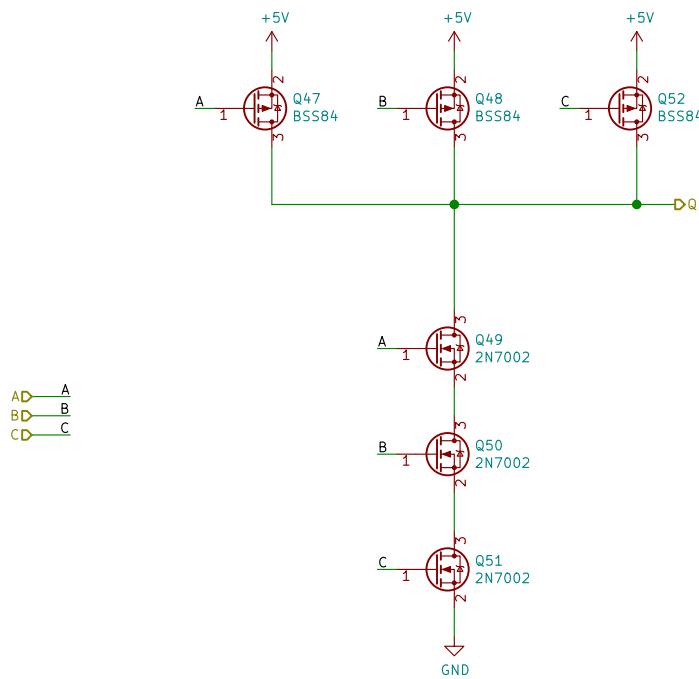
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/sheet5EFA4EF6/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

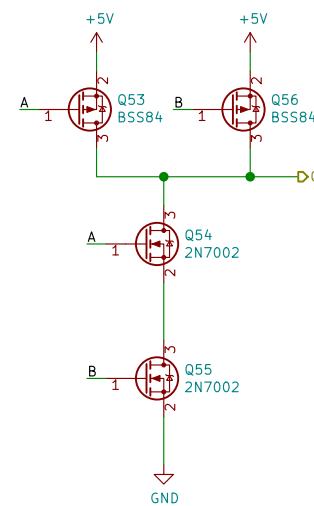
Id: 19/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 20/389

A

A

B

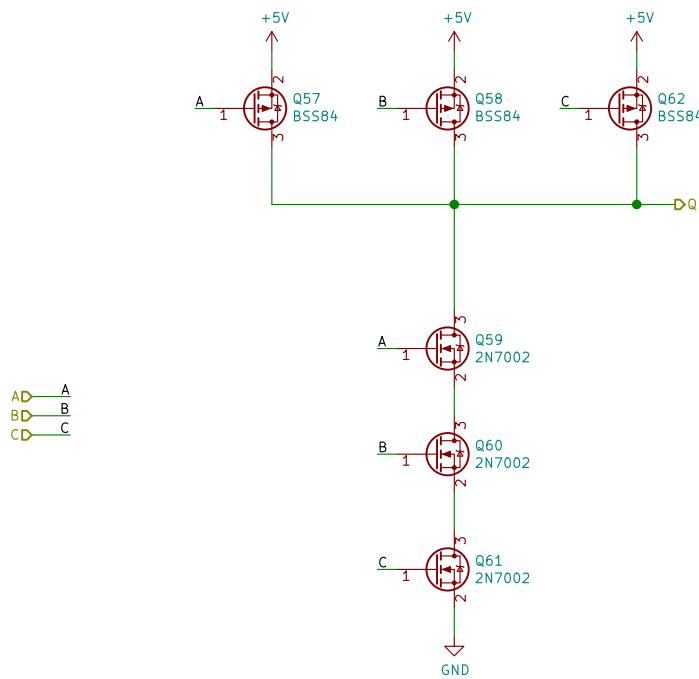
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 21/389

A

A

B

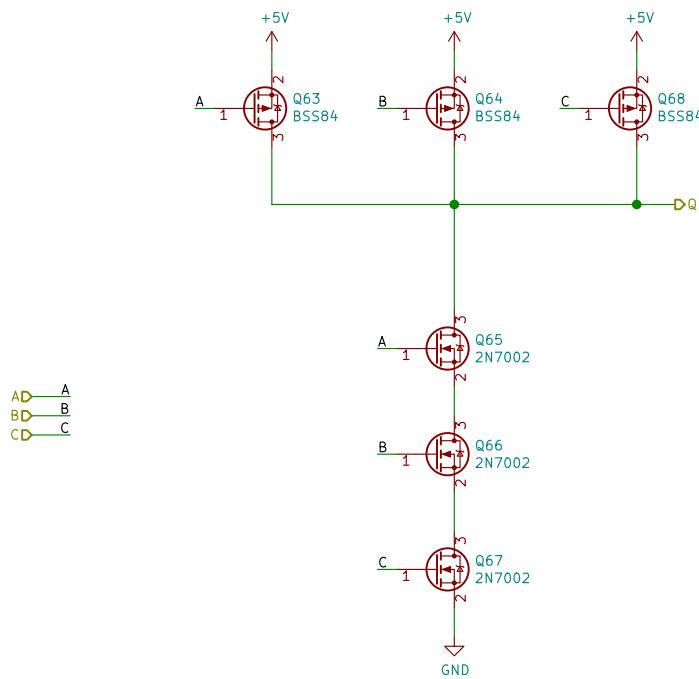
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 22/389

A

A

B

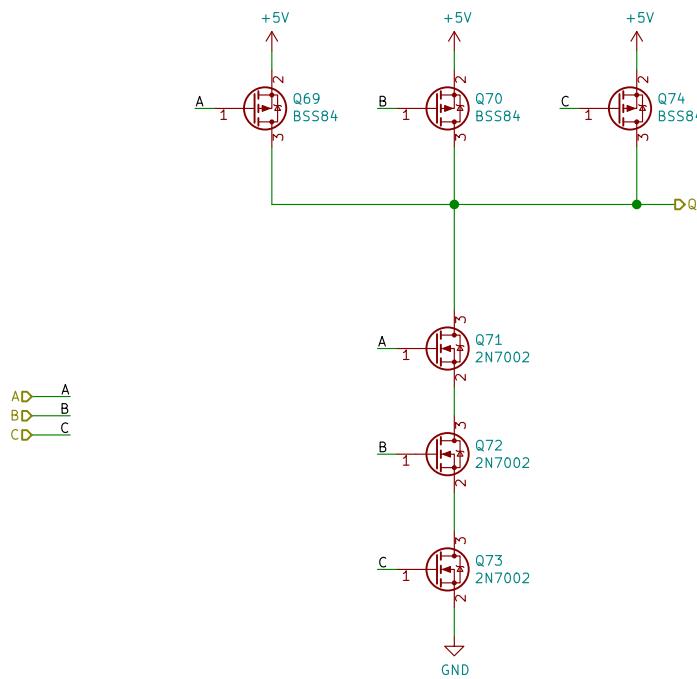
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

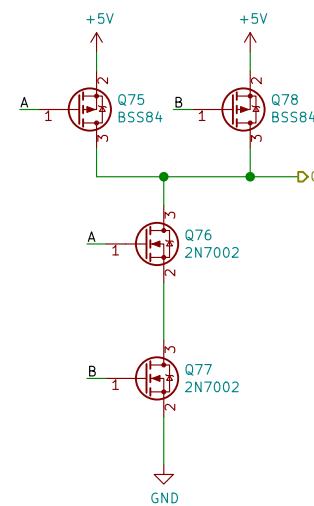
Id: 23/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17B538/sheet5EFB6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

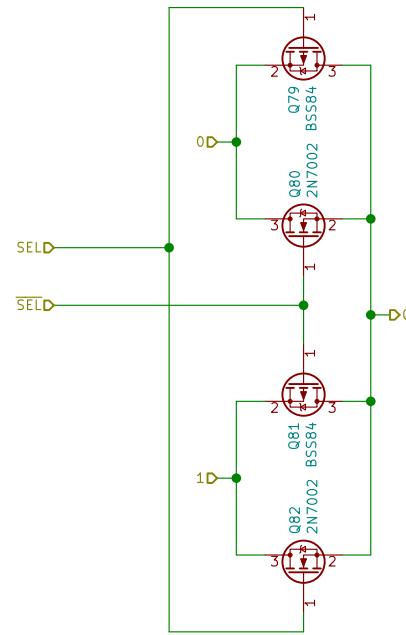
Id: 24/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17B538/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 25/389

A

A

B

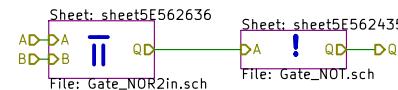
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17B538/sheet5F172AFA/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 26/389

A

B

C

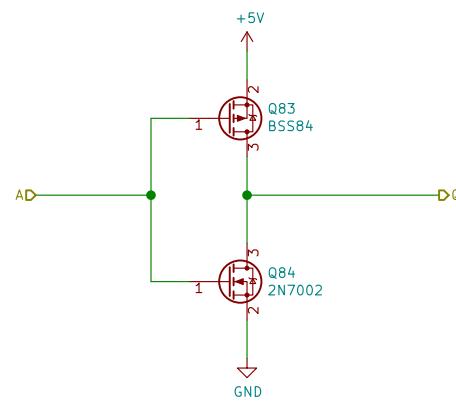
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17B538/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 27/389

A

A

B

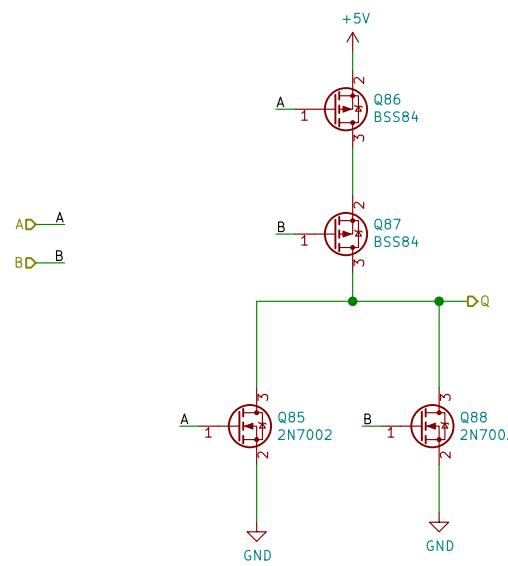
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17B538/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 28/389

A

A

B

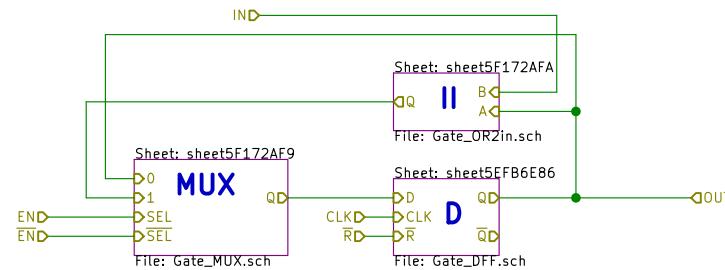
B

C

C

D

D



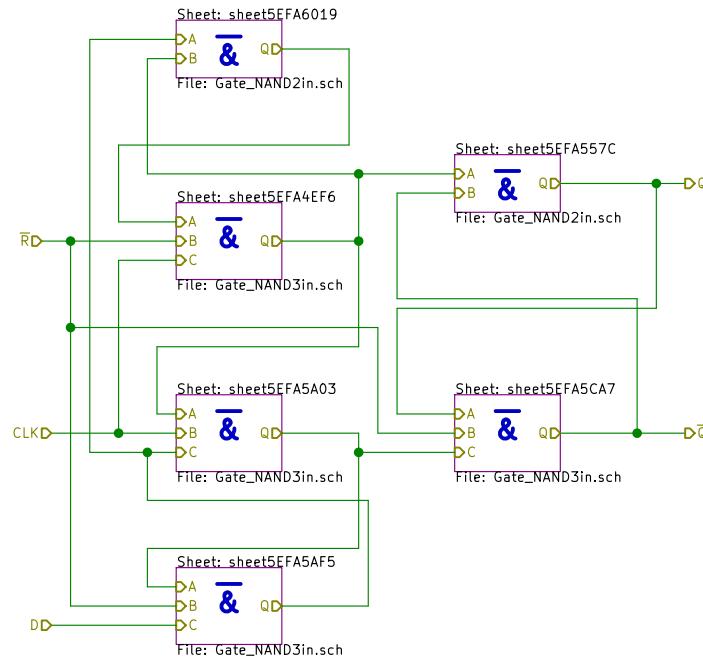
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/
File: MemCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 29/389

A



B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFB6E86/
 File: Gate_DFF.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 30/389

A

A

B

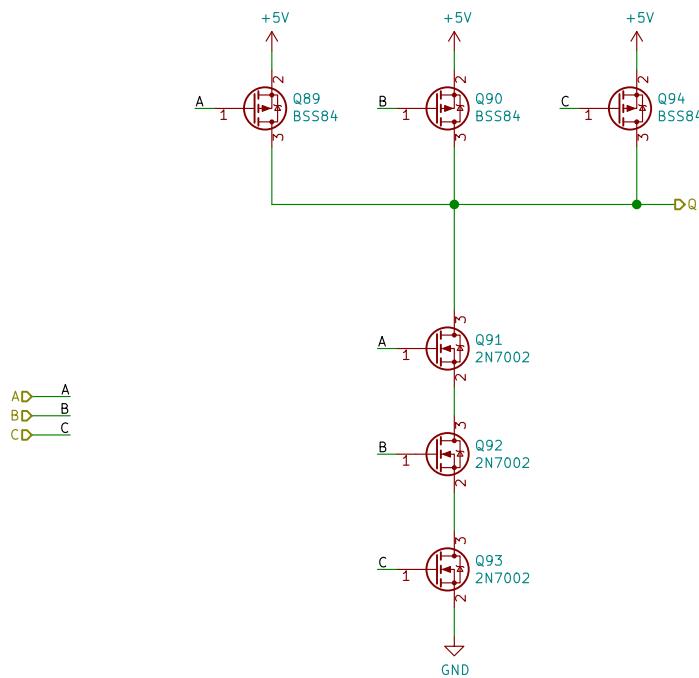
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

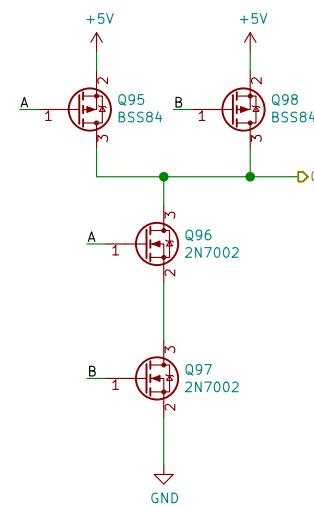
Id: 31/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 32/389

A

A

B

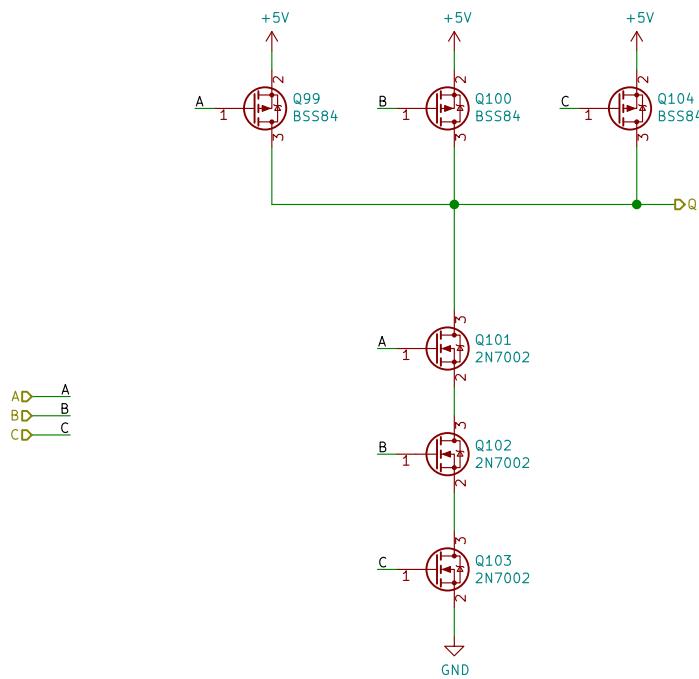
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 33/389

A

A

B

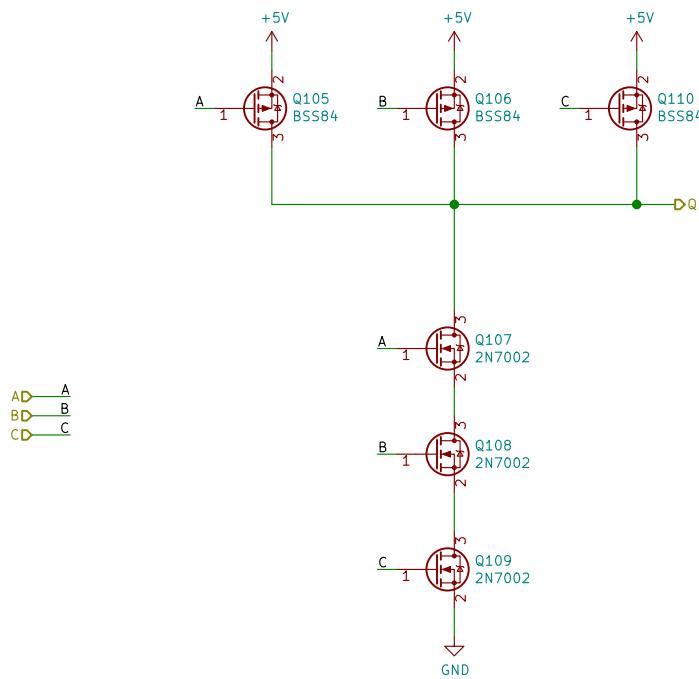
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFA5AF5/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 34/389

A

A

B

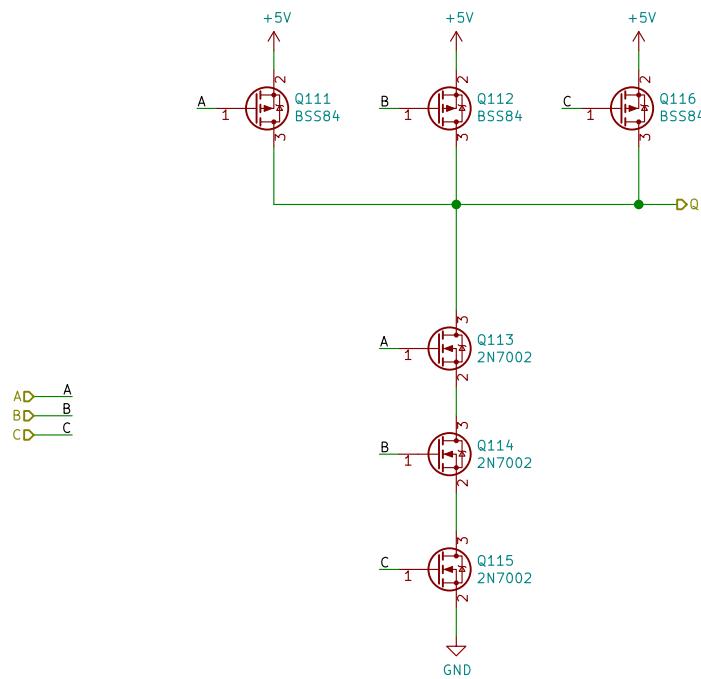
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

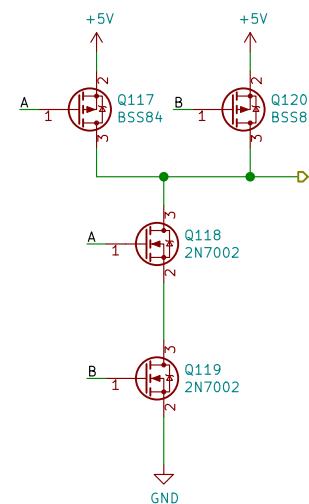
Id: 35/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5EFA6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

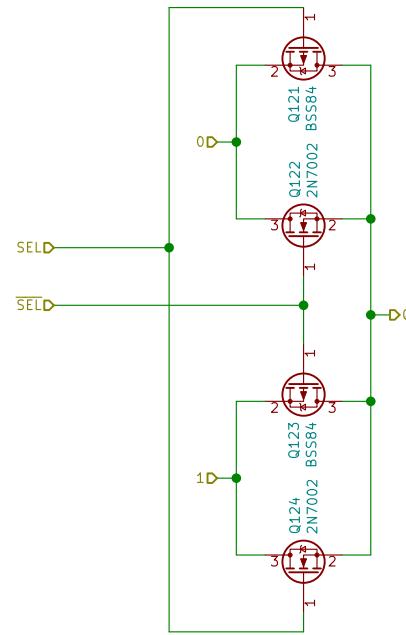
Id: 36/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 37/389

A

A

B

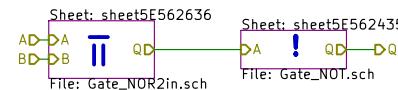
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5F172AFA/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 38/389

A

B

C

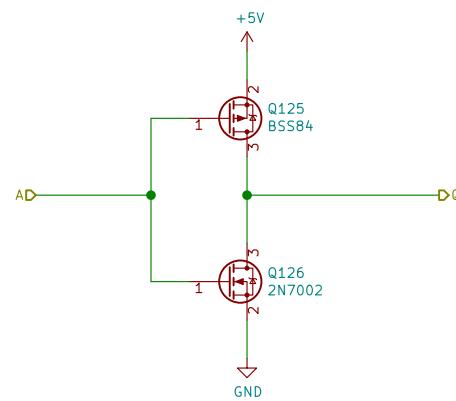
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F17D798/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 39/389

A

A

B

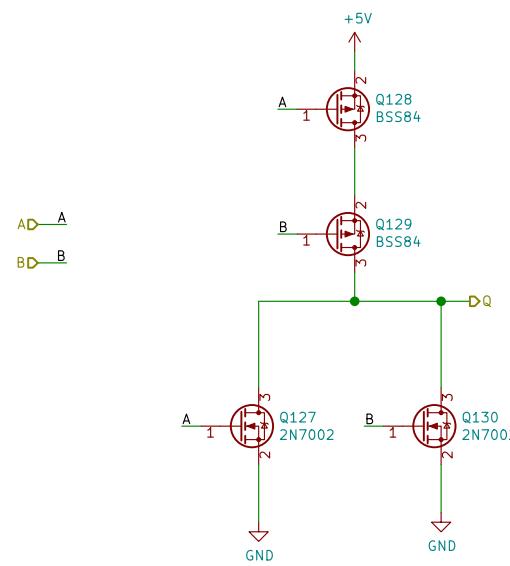
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F17D798/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 40/389

A

A

B

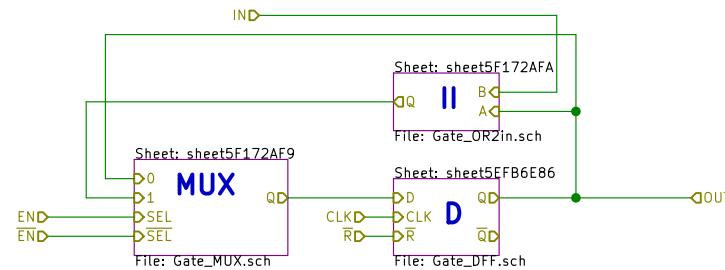
B

C

C

D

D



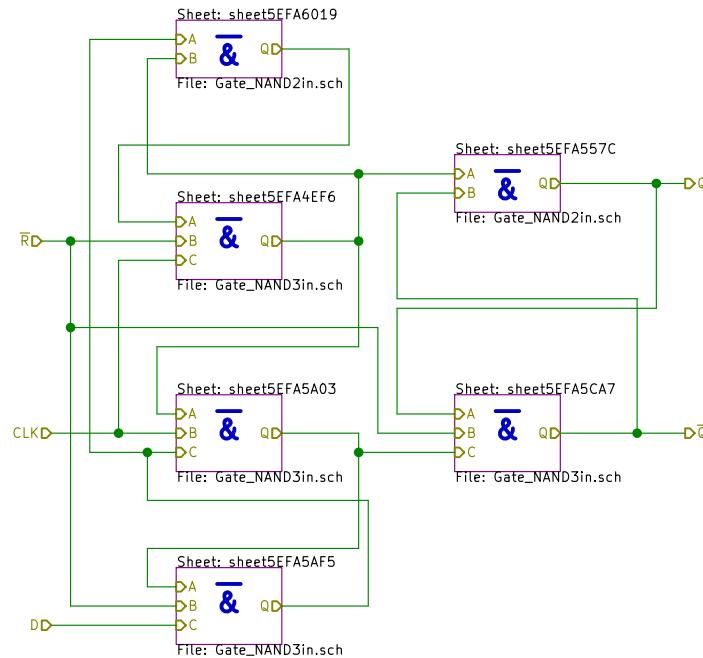
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/
File: MemCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 41/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F18011C/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 42/389

A

A

B

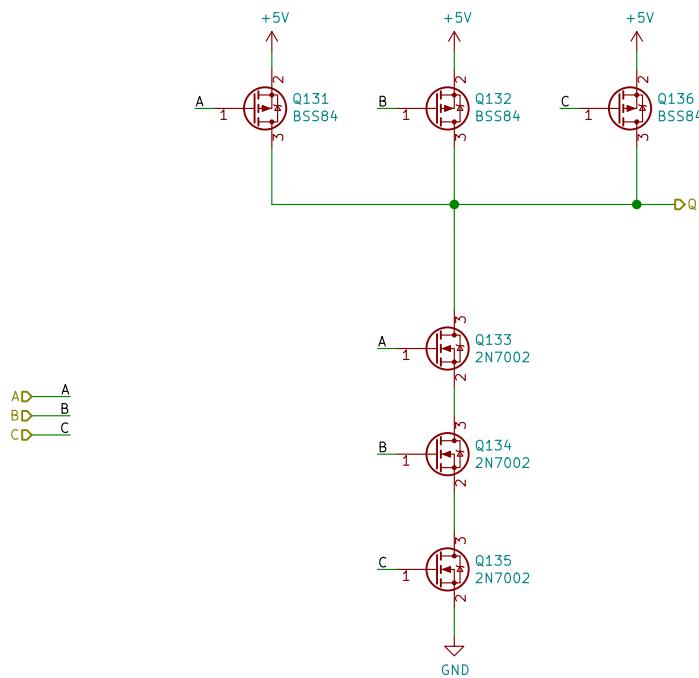
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011C/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

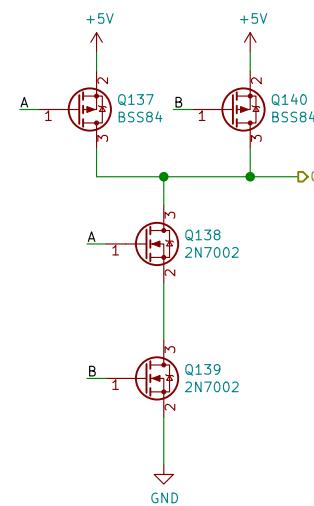
Id: 43/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5E86E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 44/389

A

A

B

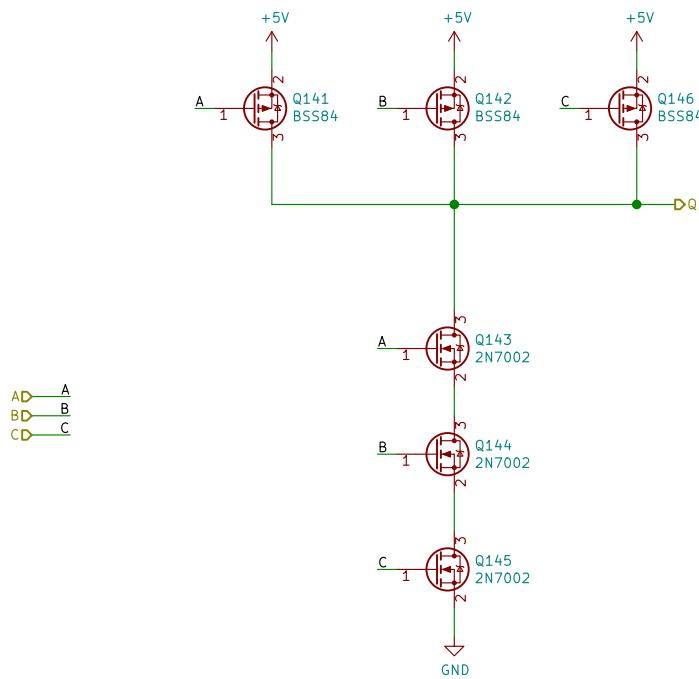
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5E86E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 45/389

A

A

B

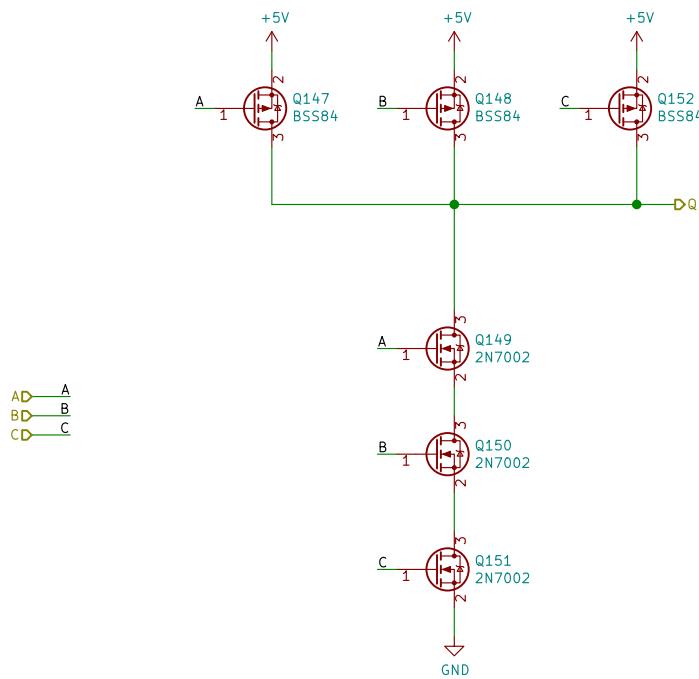
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5EFA5AF5/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 46/389

A

A

B

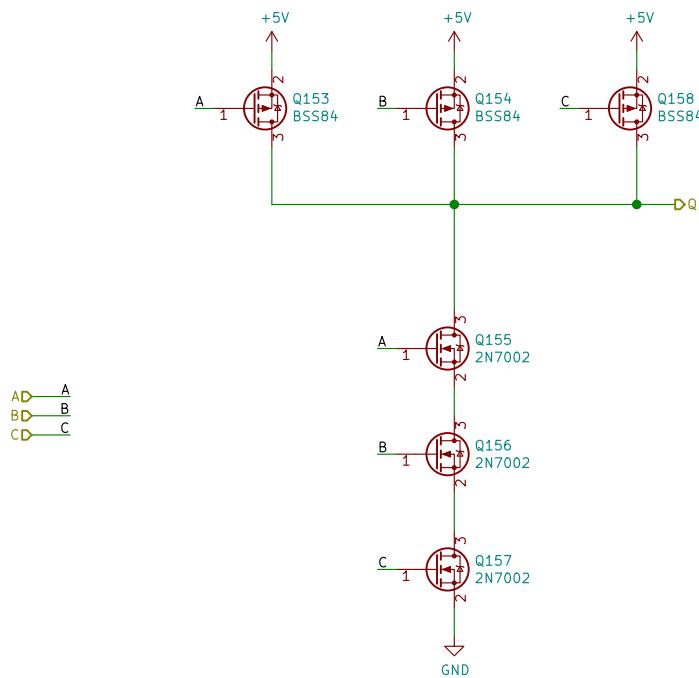
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5EFA5CA7/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

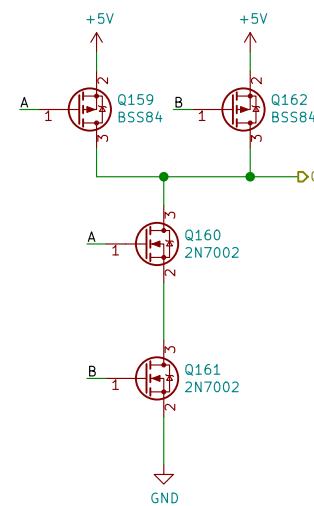
Id: 47/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

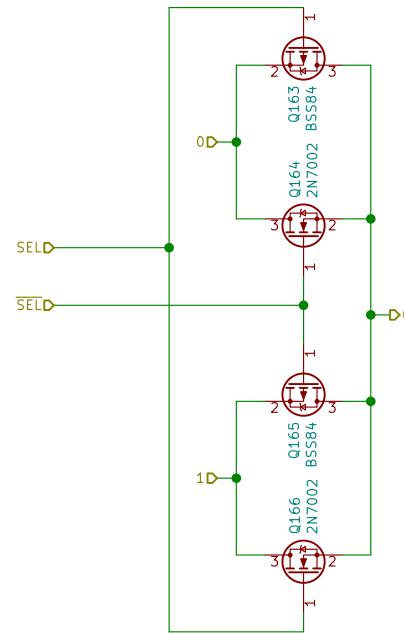
Id: 48/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 49/389

A

A

B

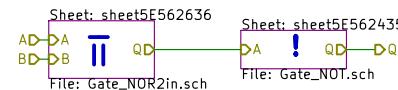
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 50/389

A

A

B

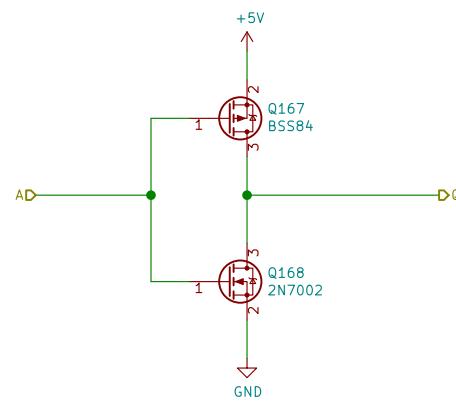
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011C/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 51/389

A

A

B

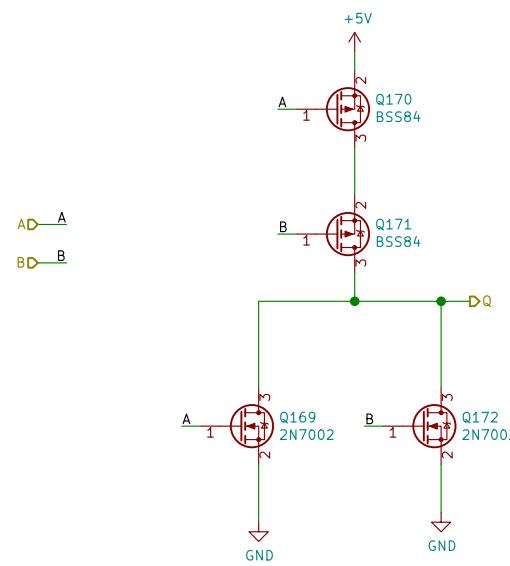
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011C/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 52/389

A

A

B

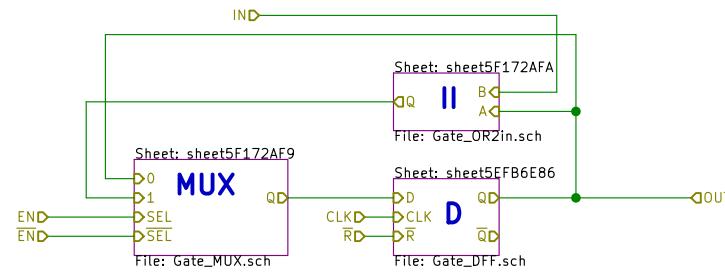
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/

File: MemCell.sch

Title: Fets and Crosses

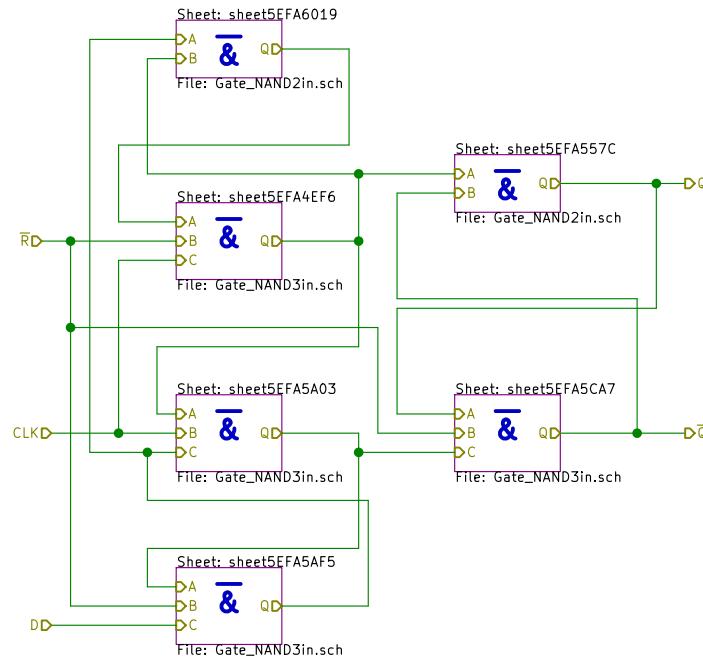
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 53/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F18011D/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 54/389

A

A

B

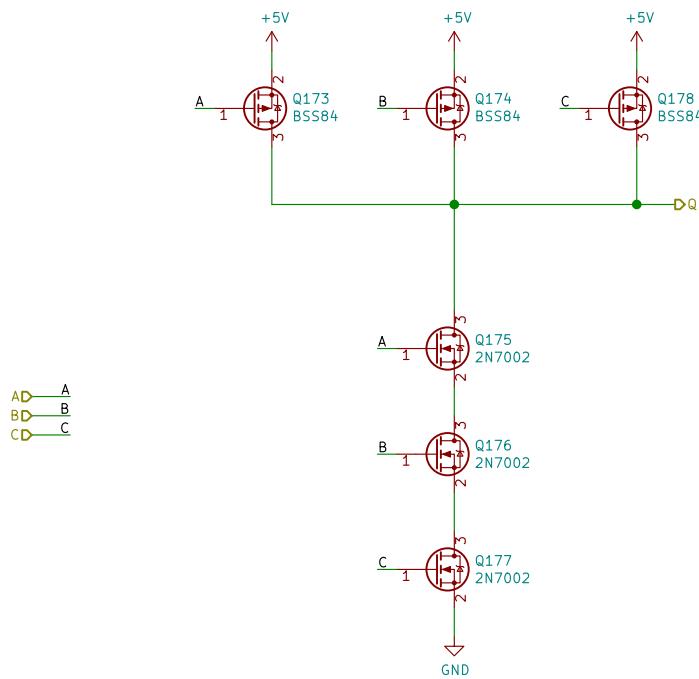
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011D/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

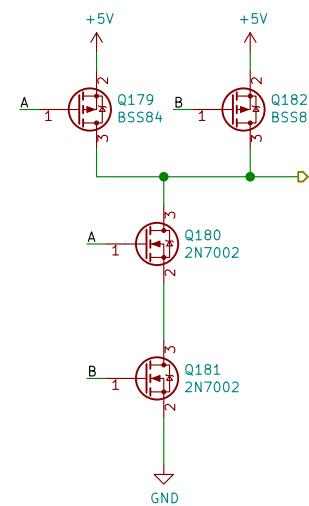
Id: 55/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5E86E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 56/389

A

A

B

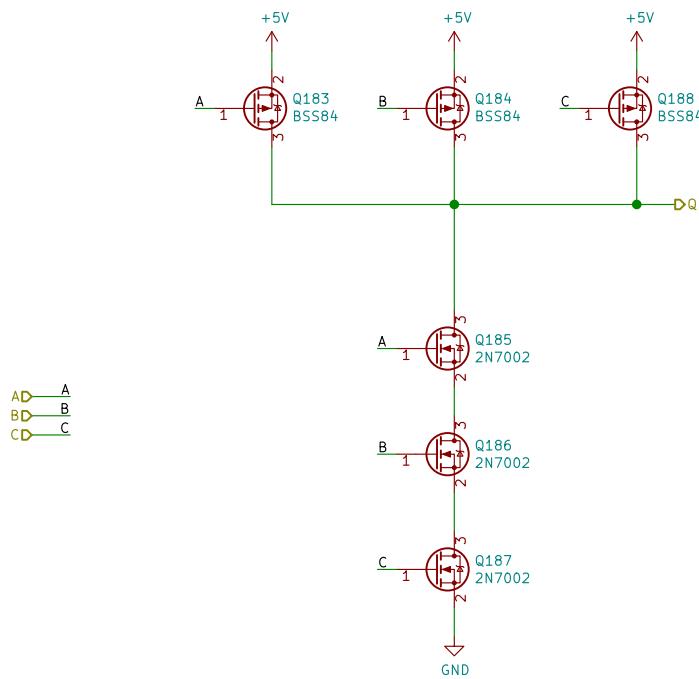
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5E86E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 57/389

A

A

B

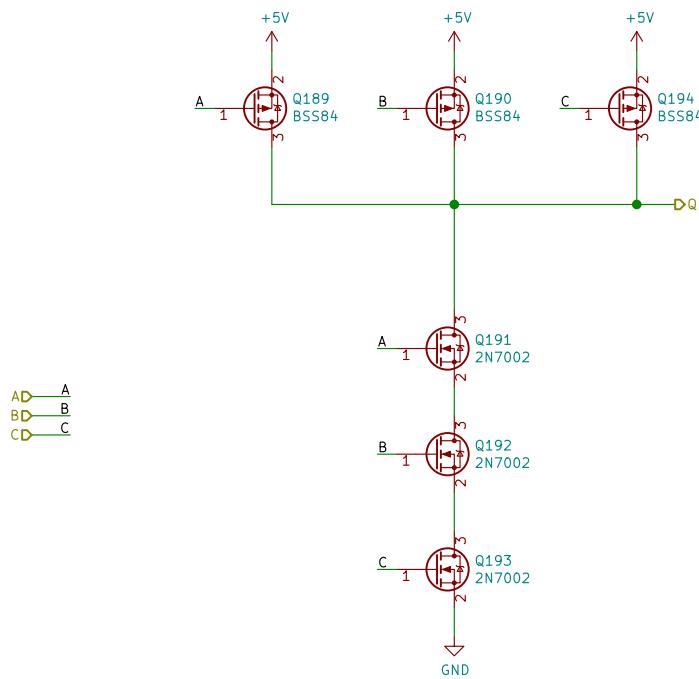
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 58/389

A

A

B

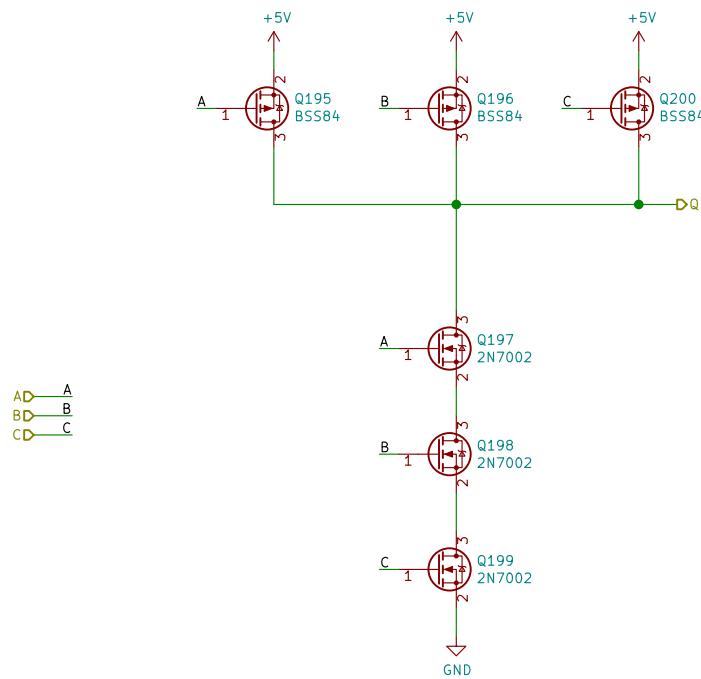
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5E86E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

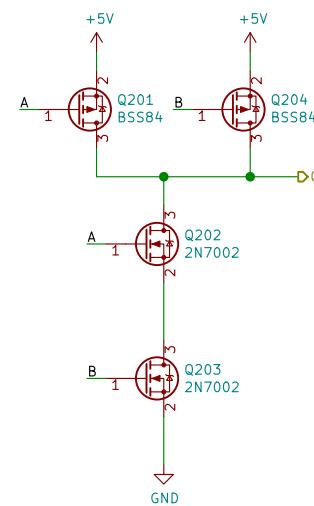
Id: 59/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

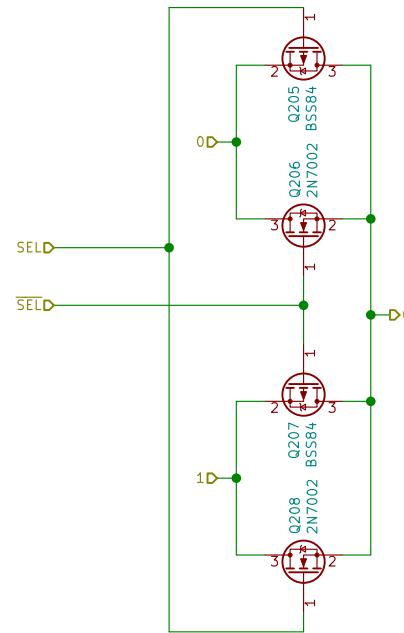
Id: 60/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 61/389

A

A

B

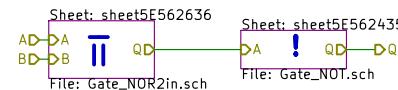
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5F172AFA/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 62/389

A

B

C

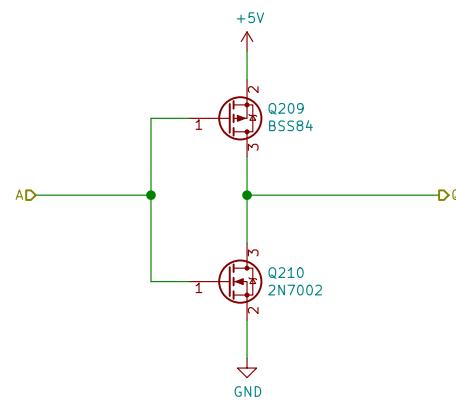
D

A

B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011D/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 63/389

A

A

B

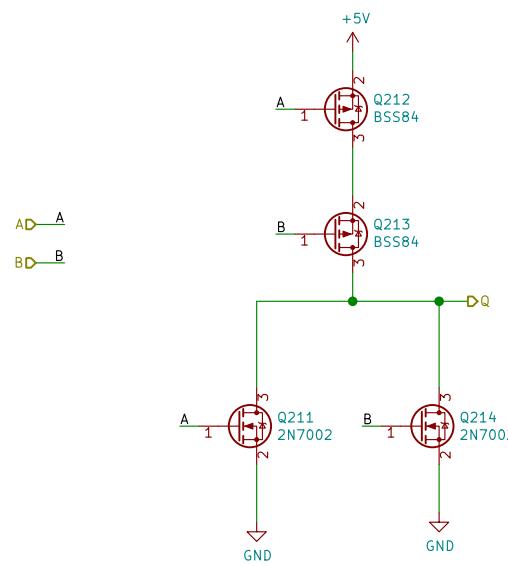
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011D/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 64/389

A

A

B

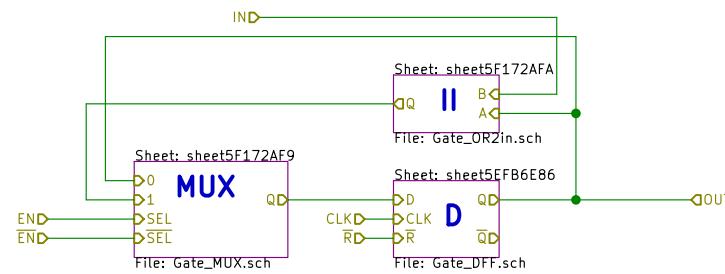
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

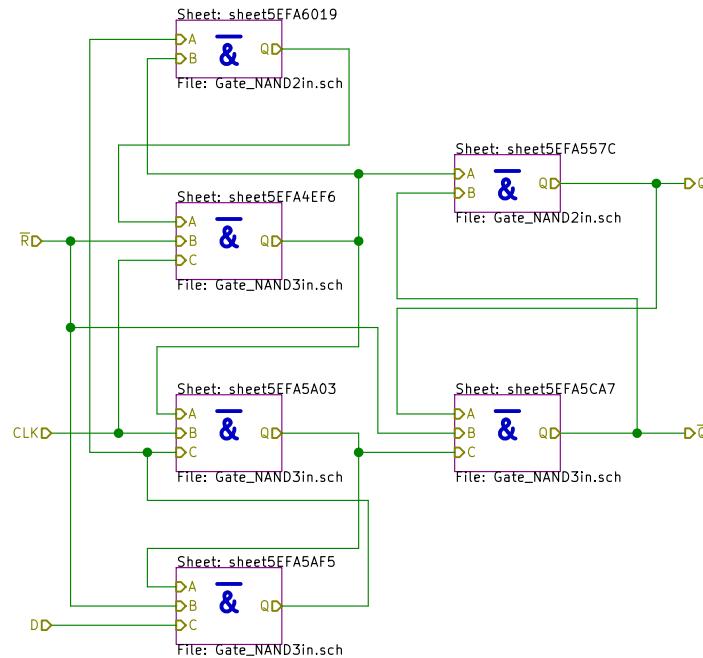
Sheet: /PlayerMem_1/sheet5F18011E/
File: MemCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 65/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F18011E/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 66/389

A

A

B

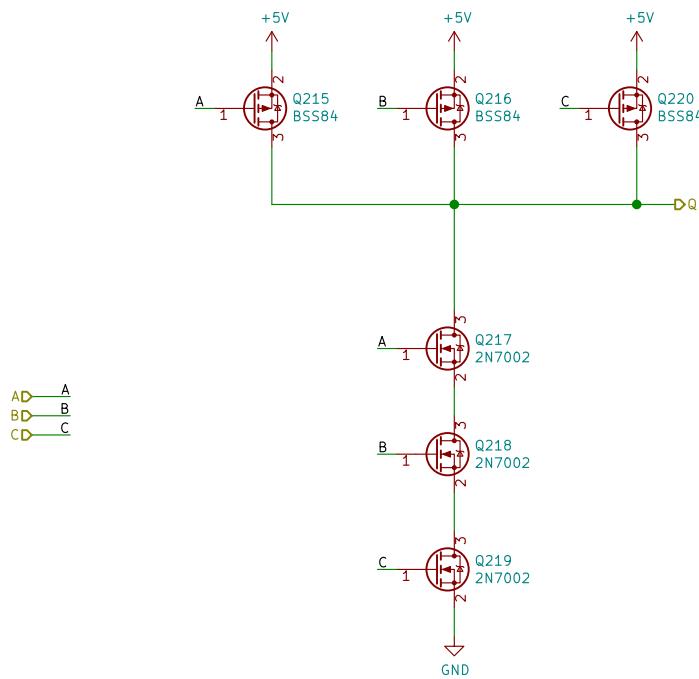
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011E/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

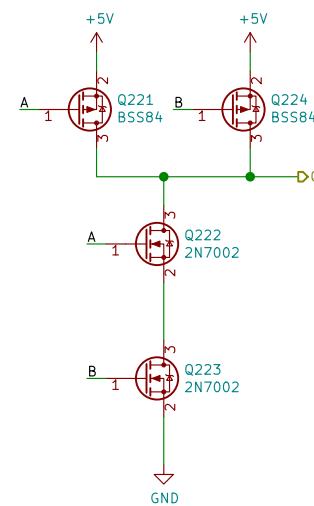
Id: 67/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 68/389

A

A

B

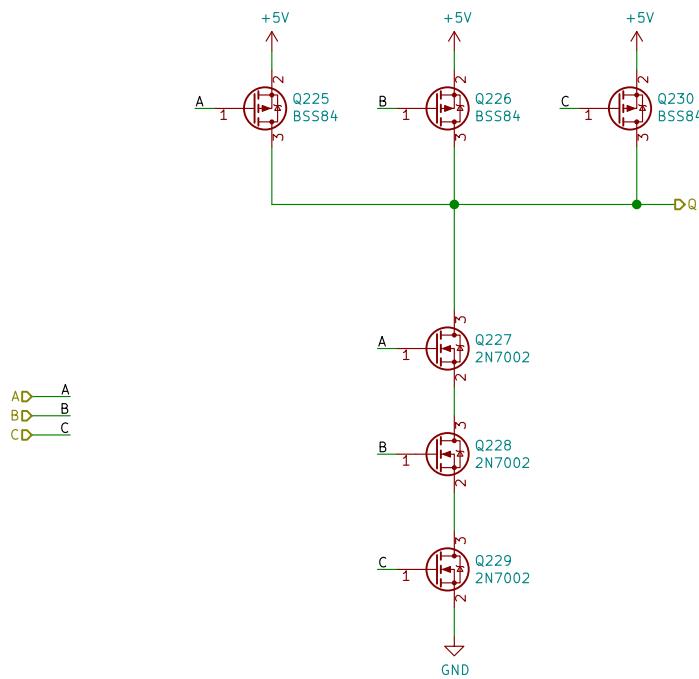
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011E/sheet5EFB6E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 69/389

A

A

B

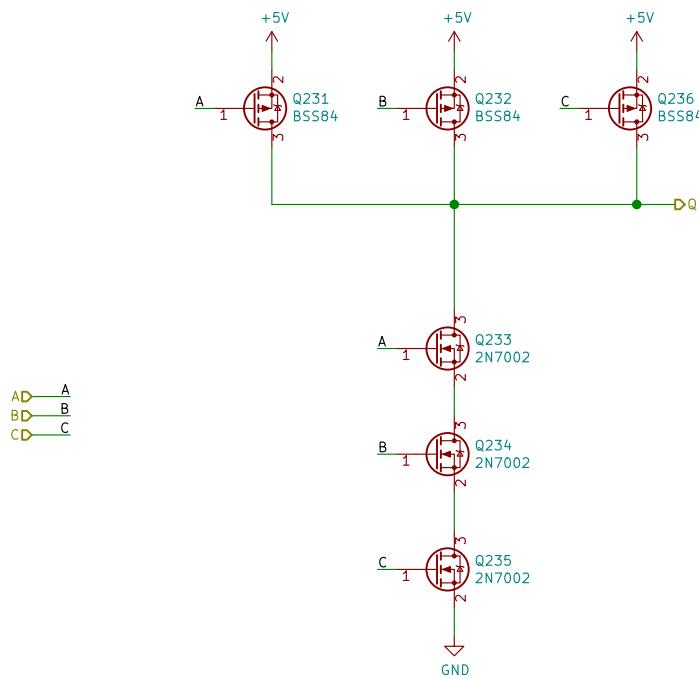
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5EFB6E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 70/389

A

A

B

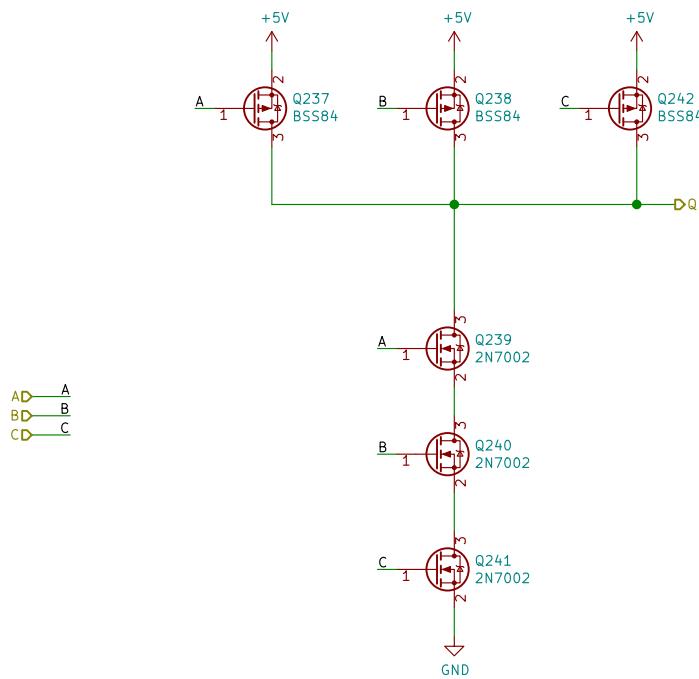
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5E86E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

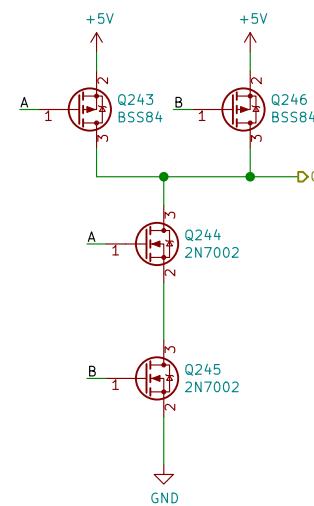
Id: 71/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5EFB6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

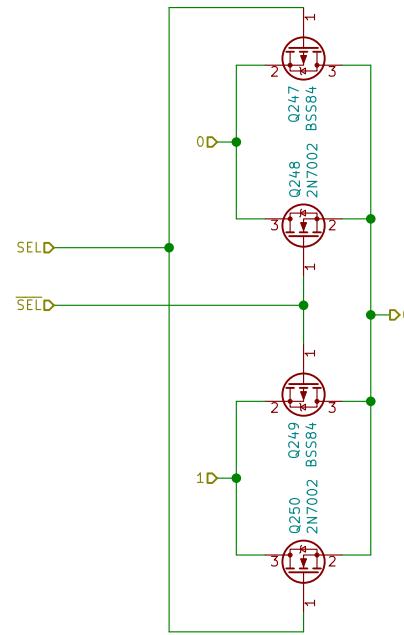
Id: 72/389

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 73/389

A

A

B

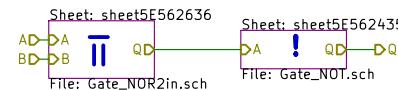
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F18011E/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 74/389

A

B

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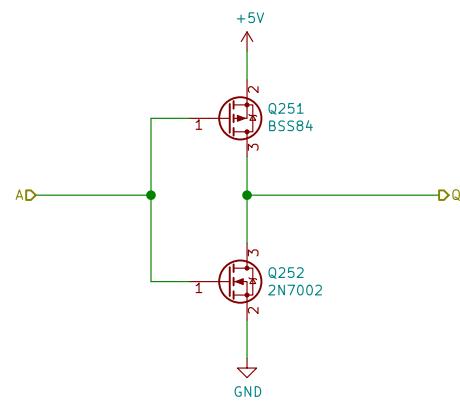
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011E/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 75/389

A

A

B

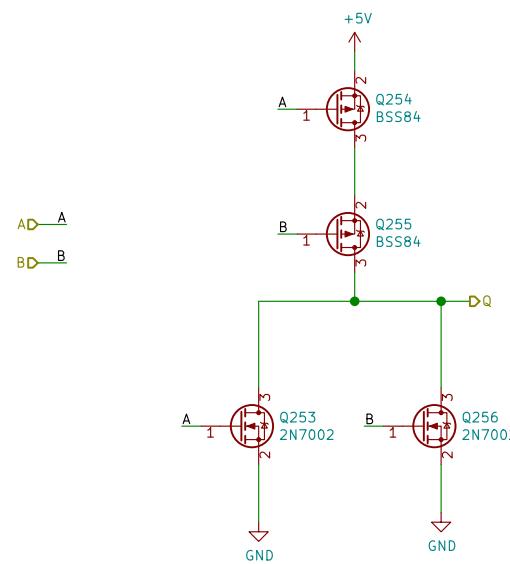
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F18011E/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 76/389

A

A

B

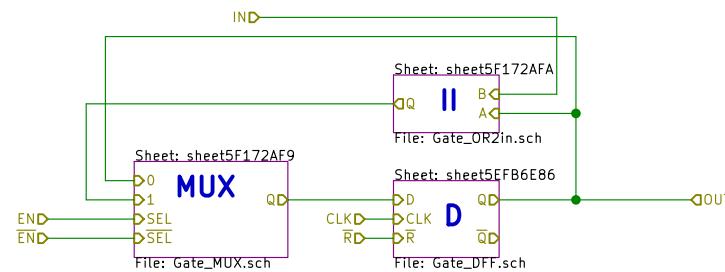
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk
 Sheet: /PlayerMem_1/sheet5F1827A6/
 File: MemCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 77/389

A

B

C

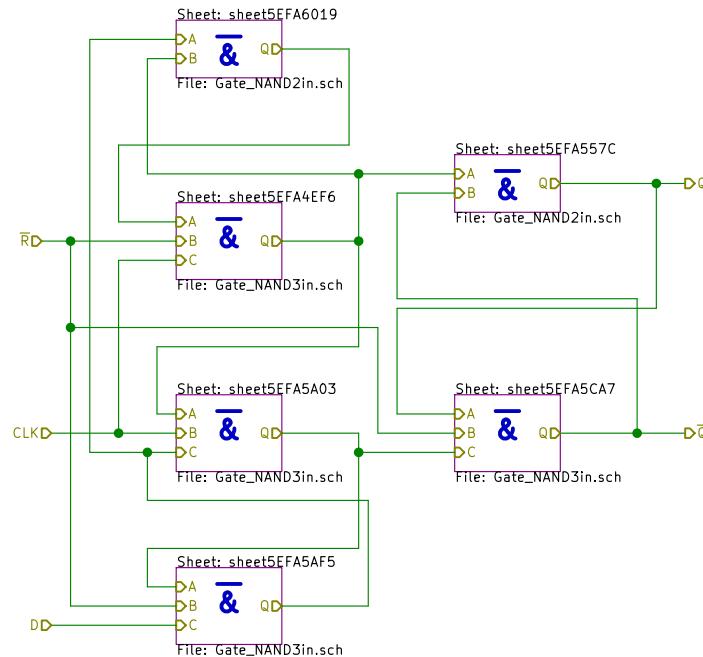
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F1827A6/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 78/389

A

A

B

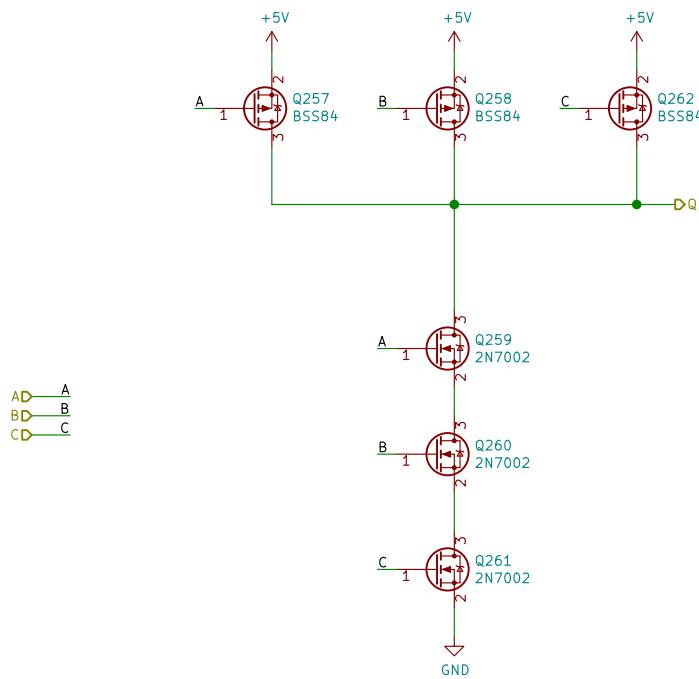
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5EFA4EF6/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

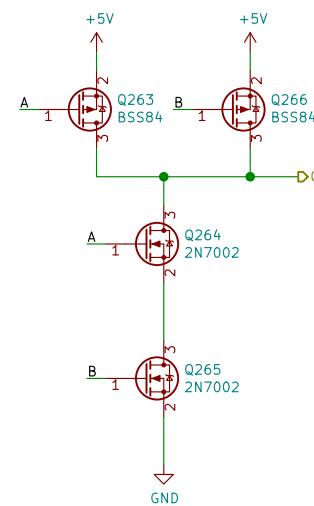
Id: 79/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 80/389

A

A

B

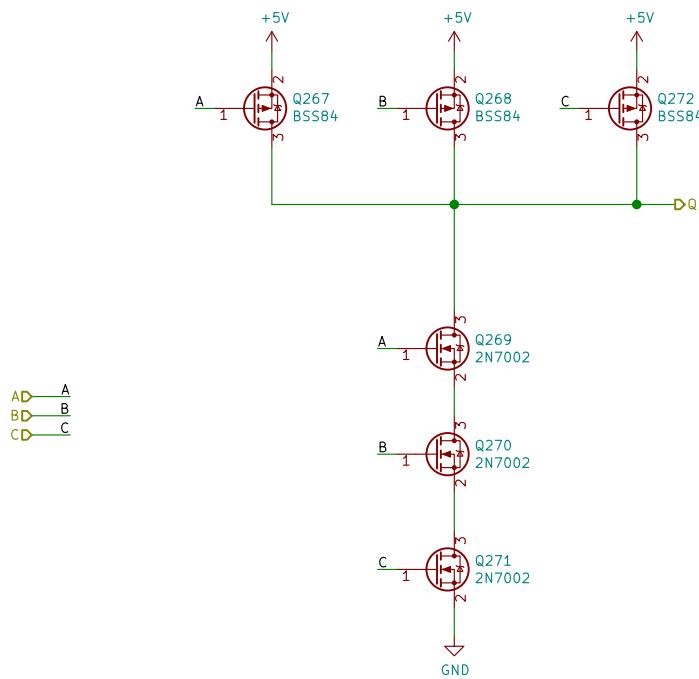
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 81/389

A

A

B

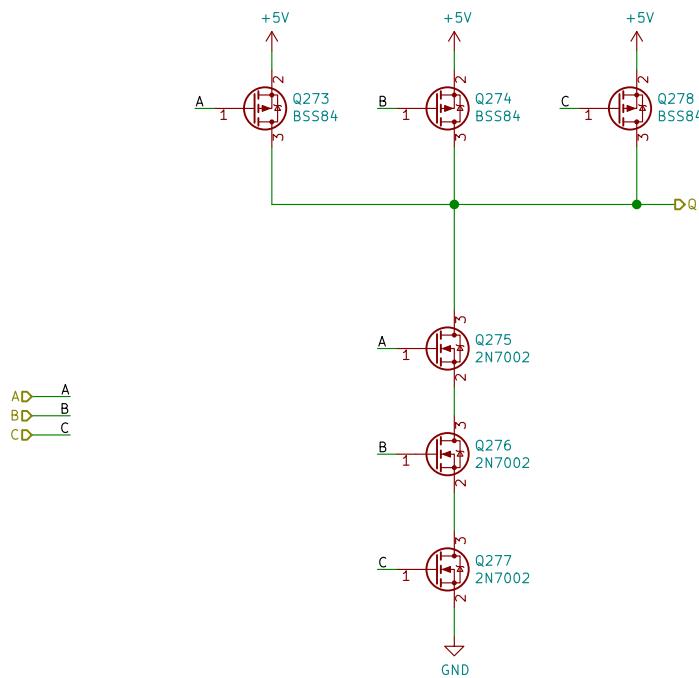
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 82/389

A

A

B

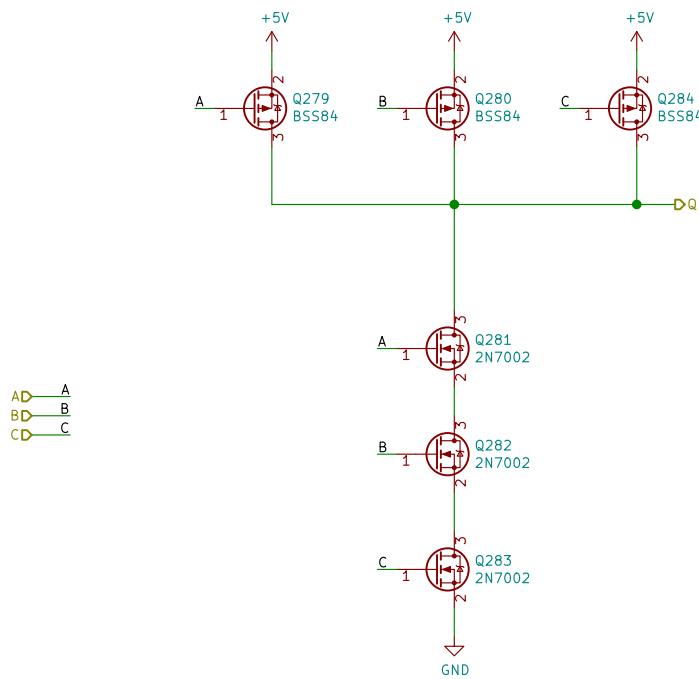
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5EFA5CA7/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

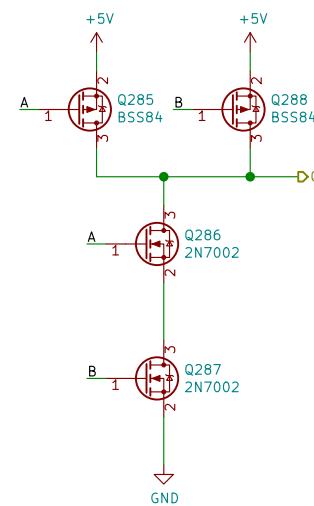
Id: 83/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

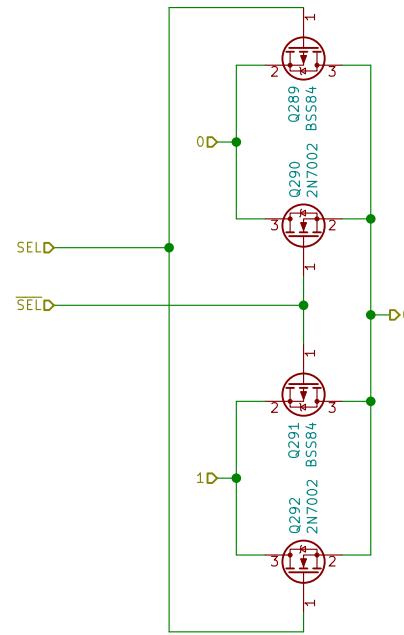
Id: 84/389

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 85/389

A

A

B

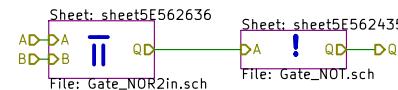
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 86/389

A

B

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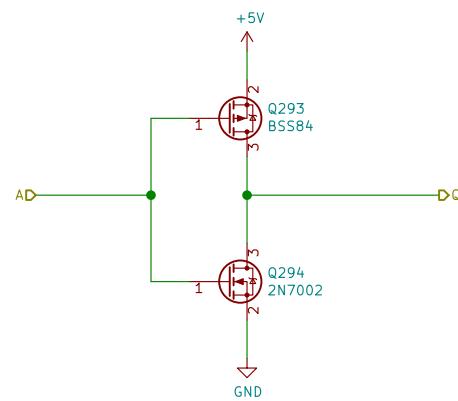
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 87/389

A

A

B

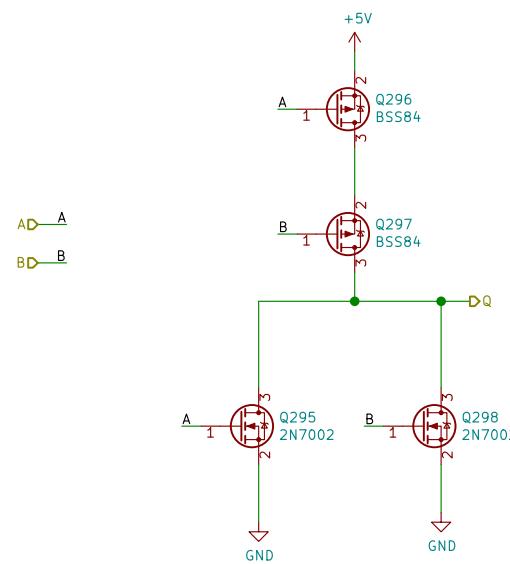
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F1827A6/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 88/389

A

A

B

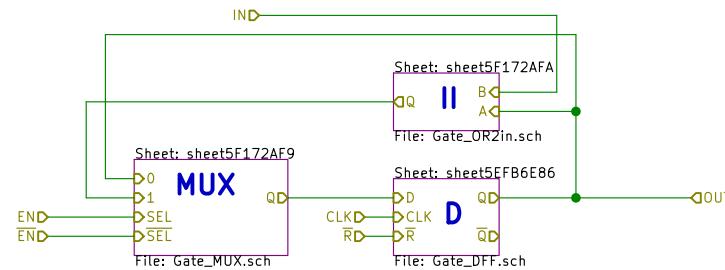
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/

File: MemCell.sch

Title: Fets and Crosses

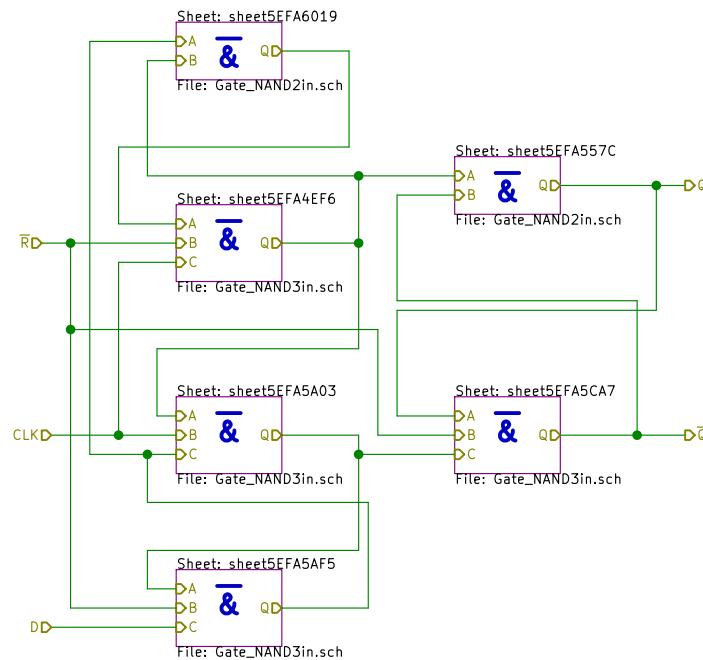
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 89/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F1827A7/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 90/389

A

A

B

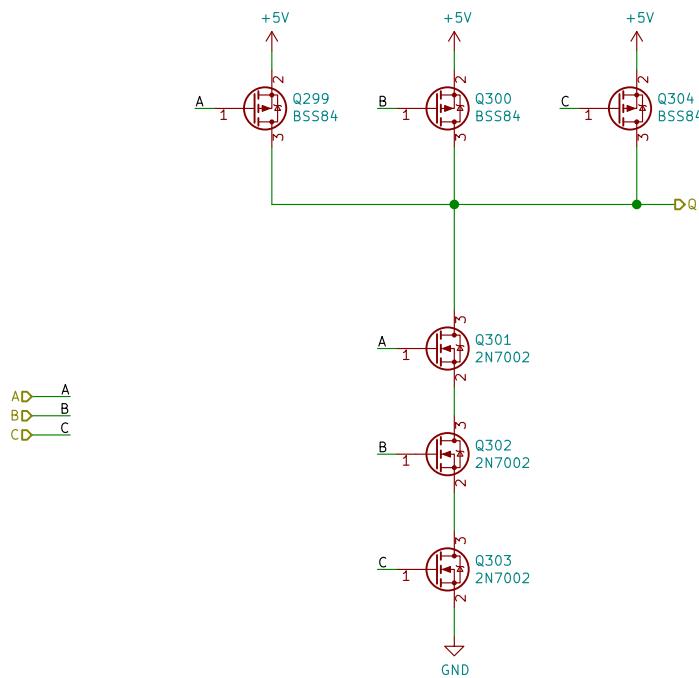
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA4EF6/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

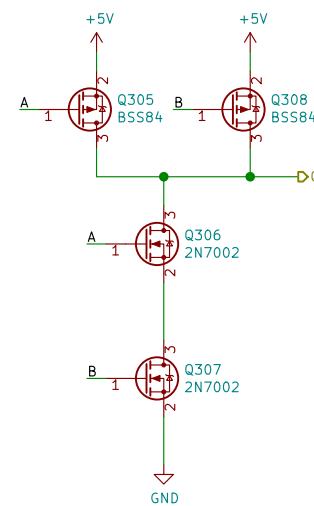
Id: 91/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 92/389

A

A

B

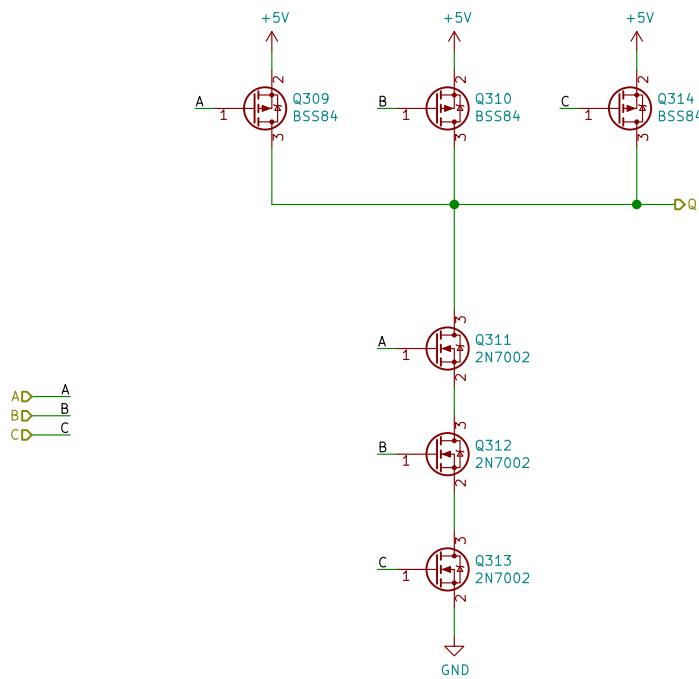
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 93/389

A

A

B

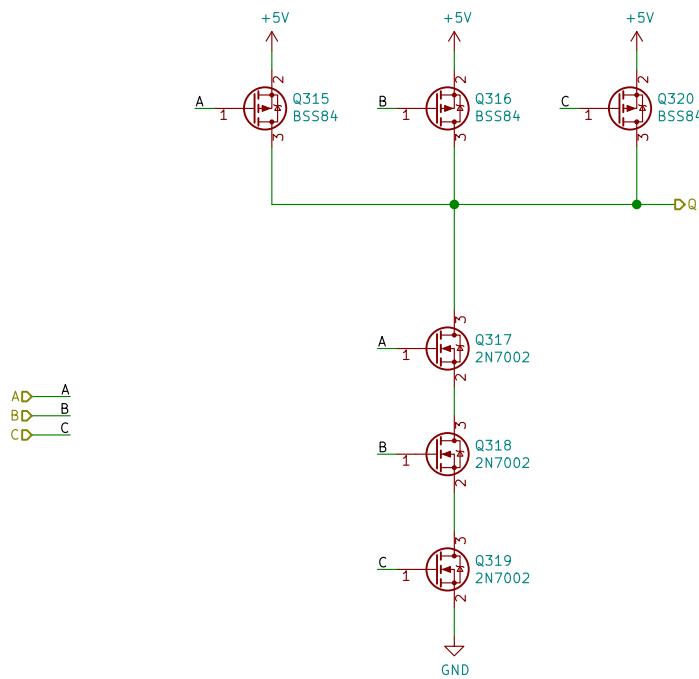
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA5AF5/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 94/389

A

A

B

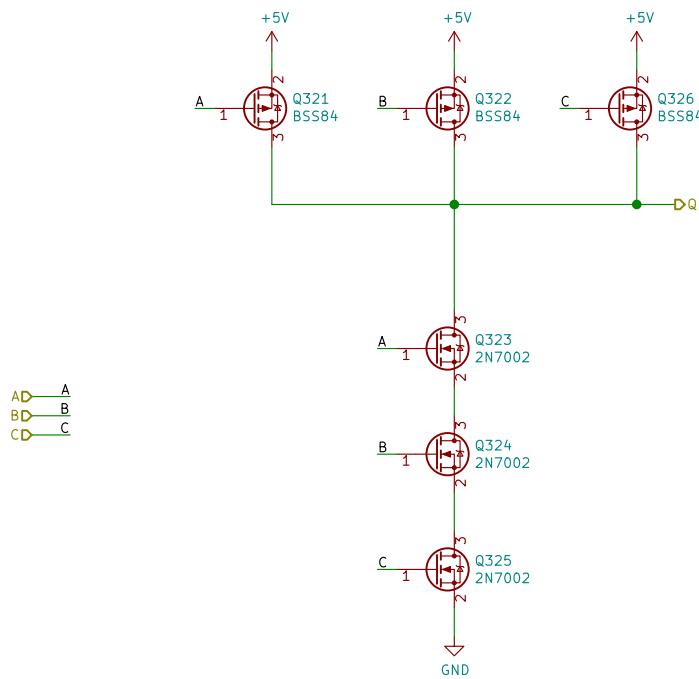
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA5CA7/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

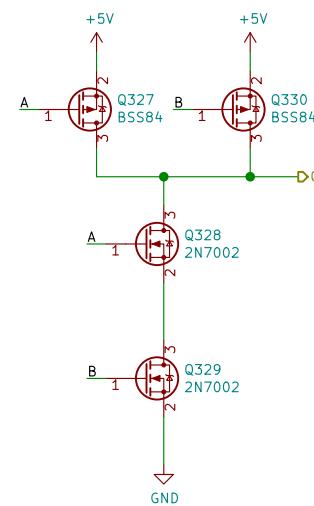
Id: 95/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

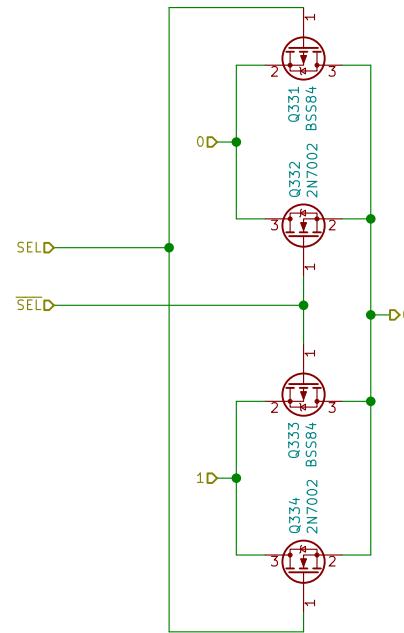
Id: 96/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 97/389

A

A

B

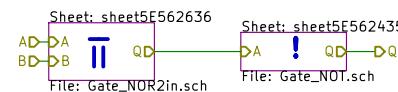
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 98/389

A

B

C

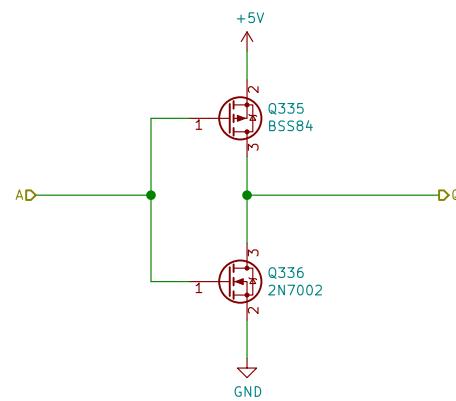
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 99/389

A

A

B

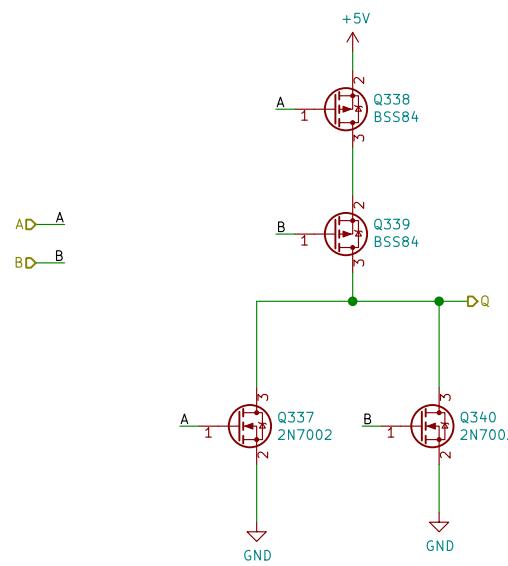
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F1827A7/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 100/389

A

A

B

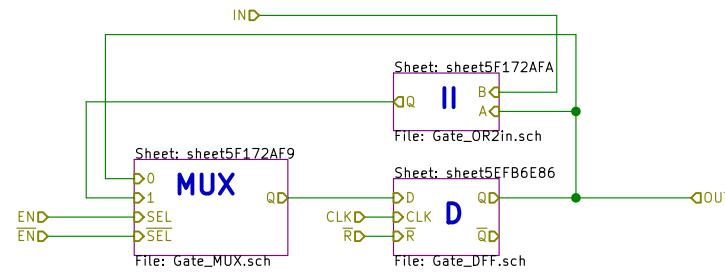
B

C

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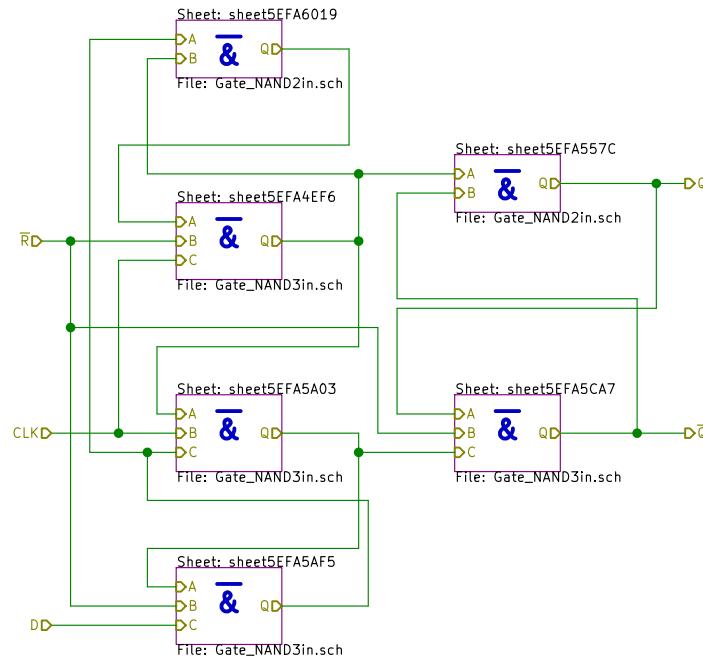
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F1827A8/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 101/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_1/sheet5F1827A8/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 102/389

A

A

B

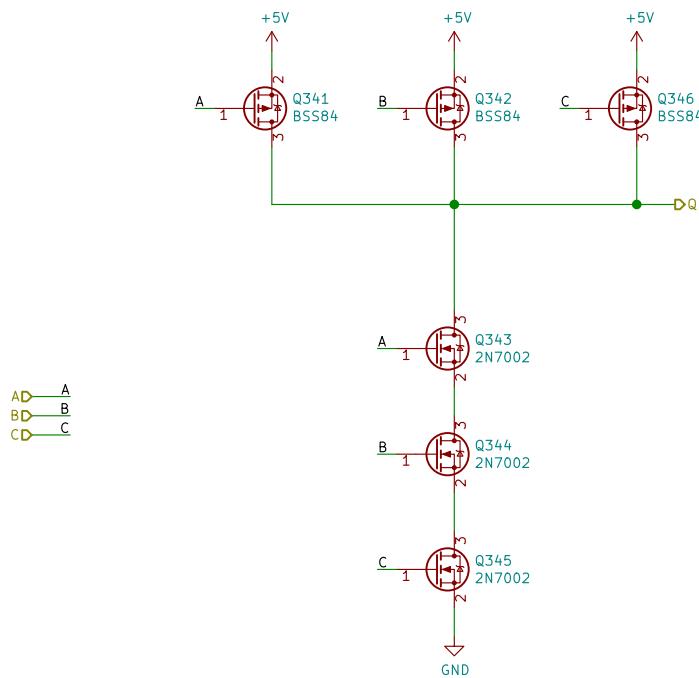
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5E86E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

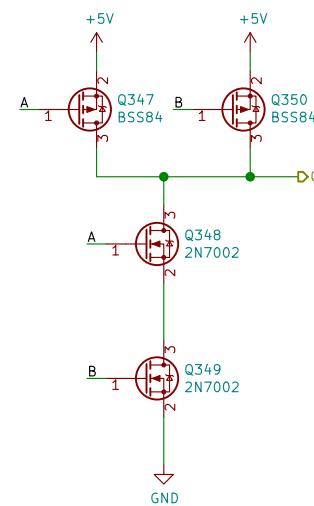
Id: 103/389

A

B

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 104/389

A

A

B

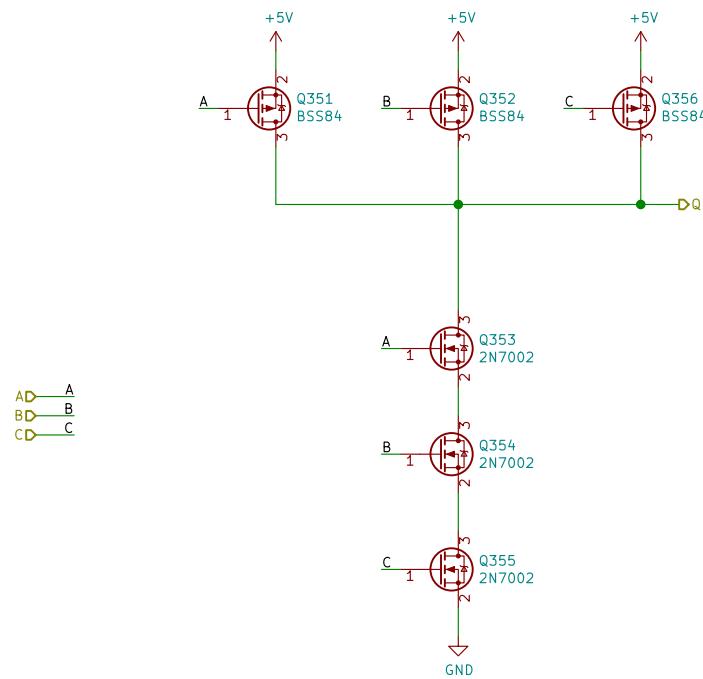
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 105/389

A

A

B

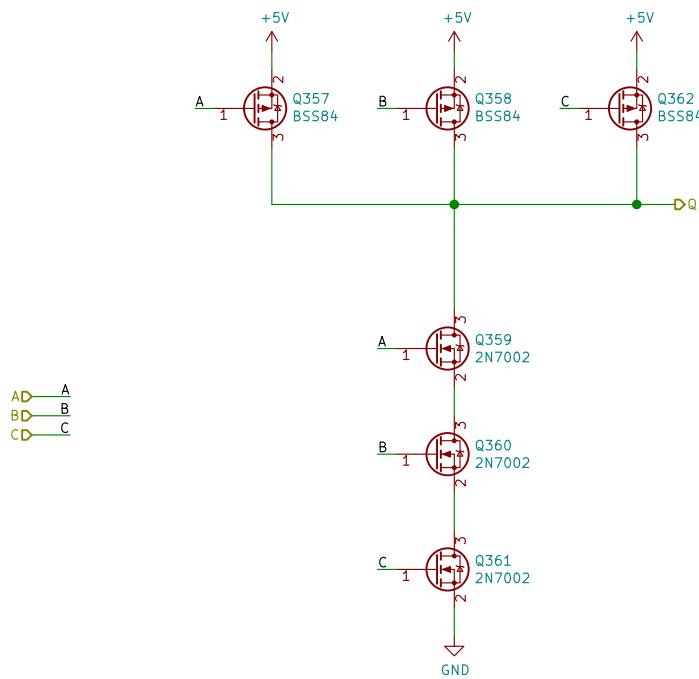
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 106/389

A

A

B

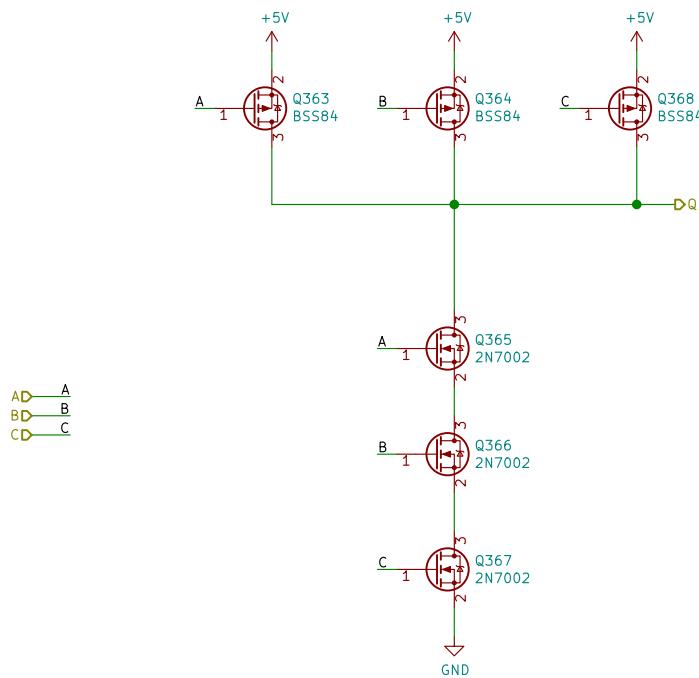
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5EFA5CA7/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

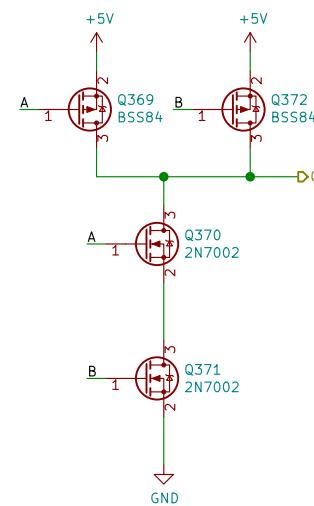
Id: 107/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 108/389

A

B

C

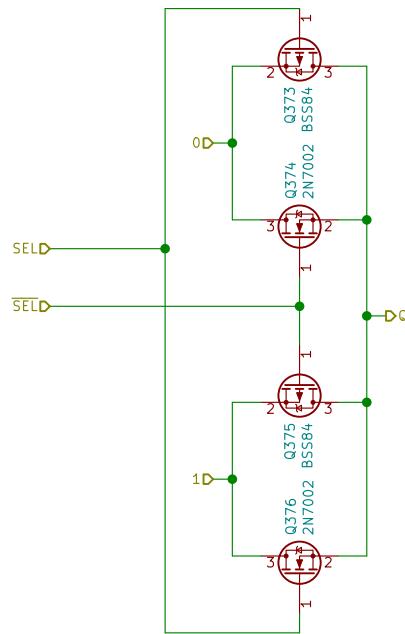
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 109/389

A

A

B

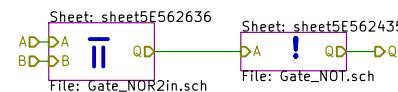
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 110/389

A

B

C

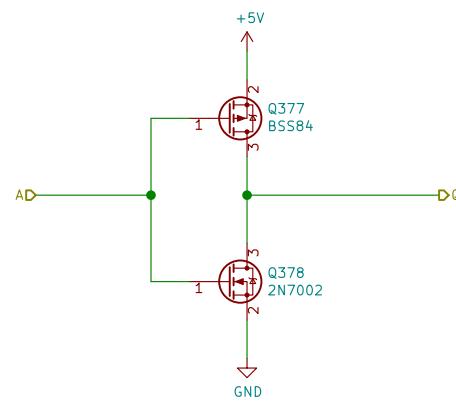
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 111/389

A

A

B

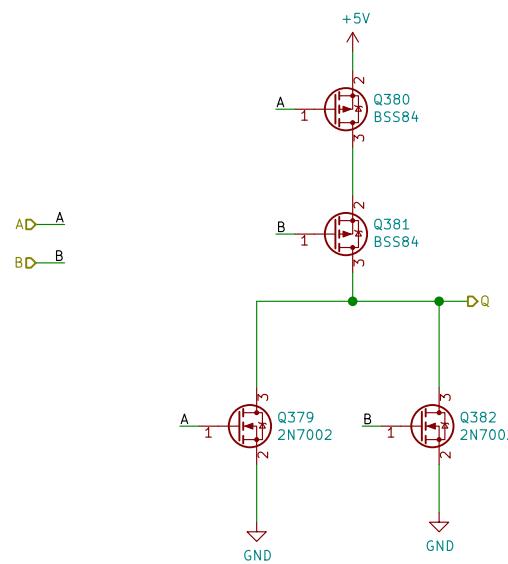
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_1/sheet5F1827A8/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

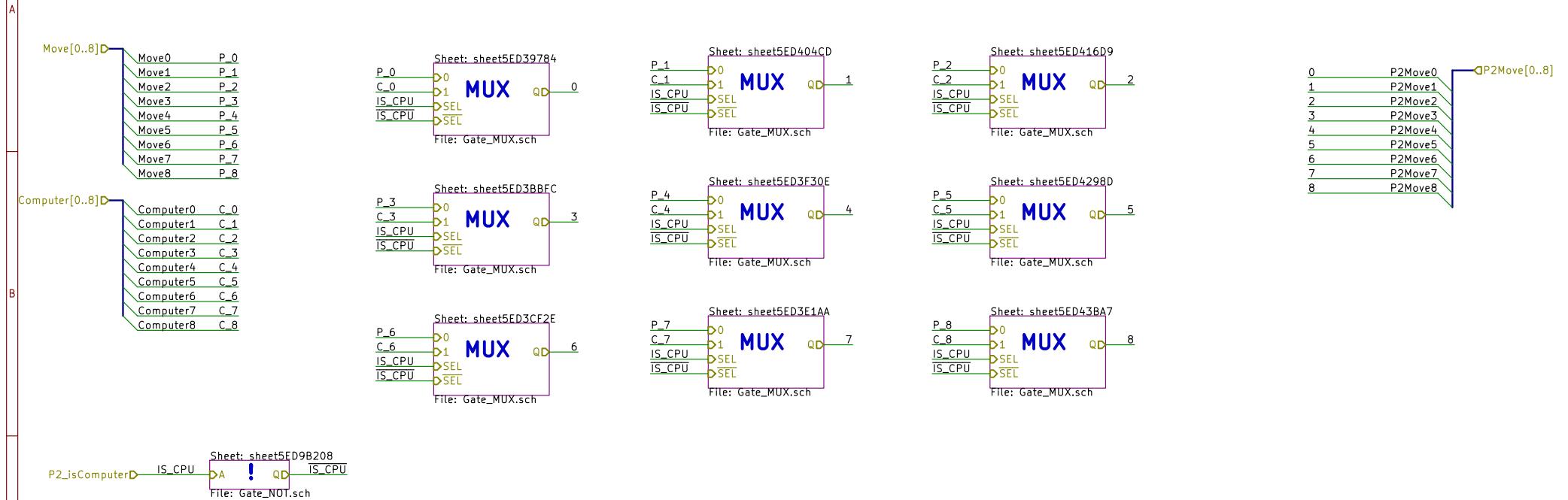
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 112/389



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/

File: P2_Switch.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 113/389

A

B

C

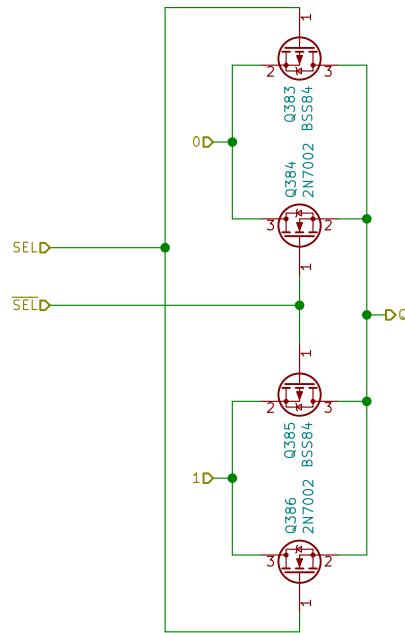
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED39784/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

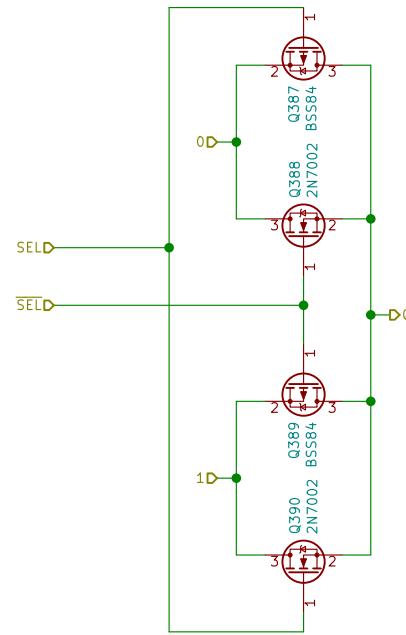
Id: 114/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED3BBFC/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

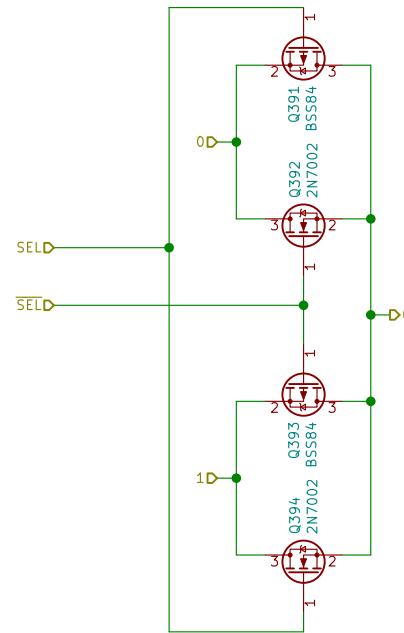
Id: 115/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED3CF2E/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 116/389

A

B

C

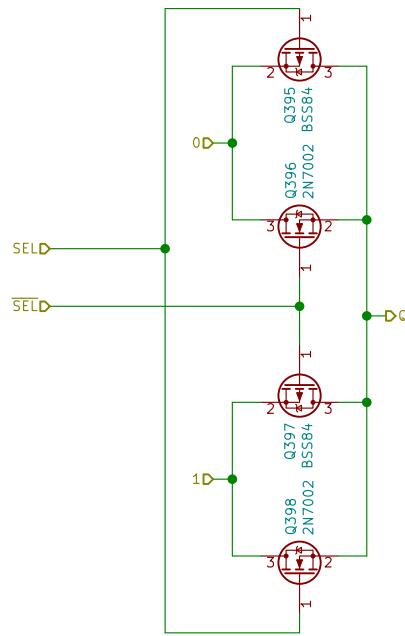
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED3E1AA/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

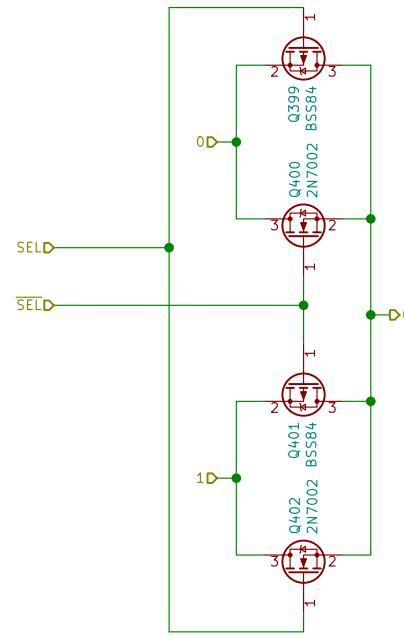
Id: 117/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED3F30E/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

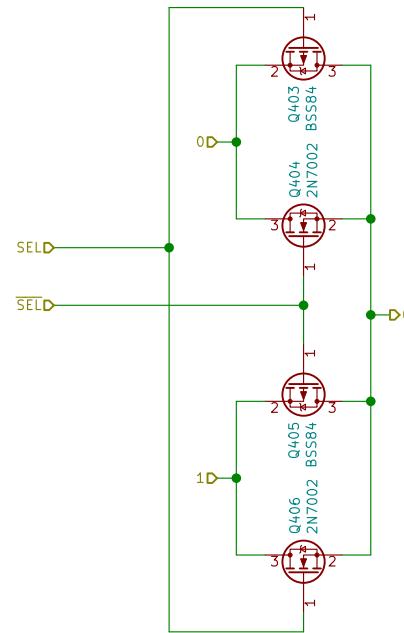
Id: 118/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED404CD/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

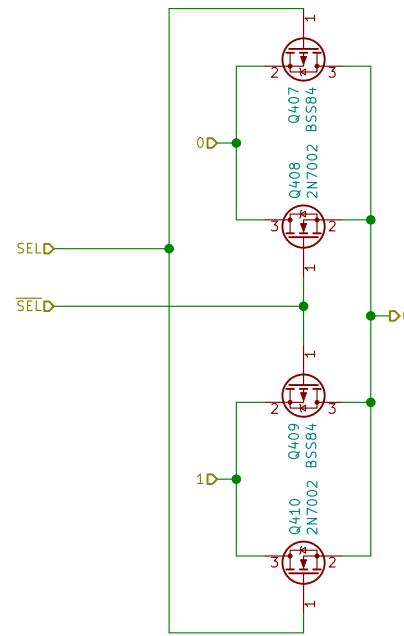
Id: 119/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED416D9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

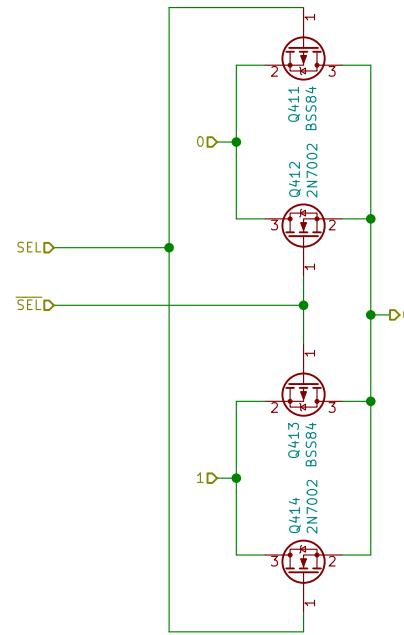
Id: 120/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED4298D/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

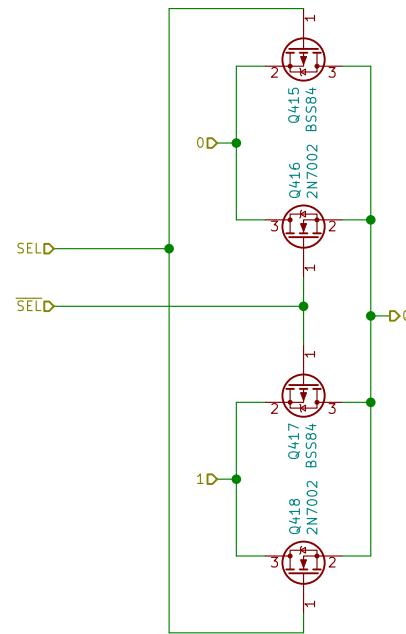
Id: 121/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED43BA7/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 122/389

A

B

C

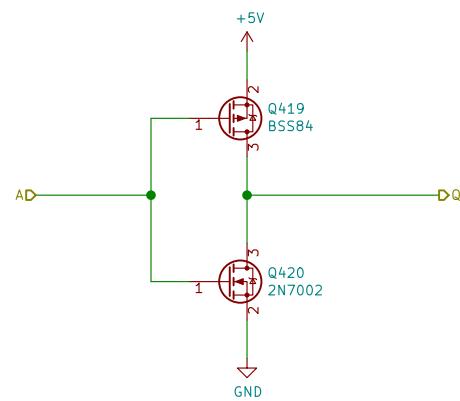
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /P2_Switch/sheet5ED9B208/

File: Gate_NOT.sch

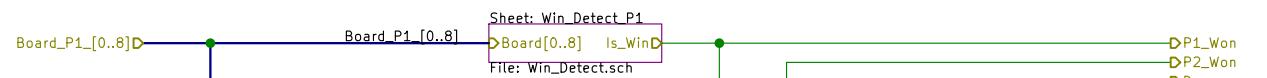
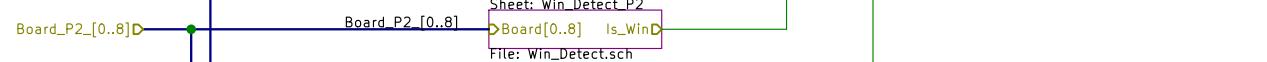
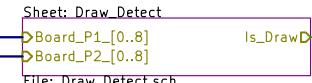
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 123/389

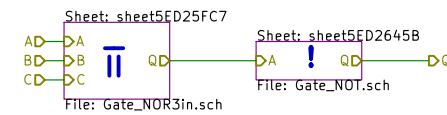
Check if P1 Won**Check if P2 Won****Check if Draw**

Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk
 Sheet: /EndState_Detect/
 File: EndState_Detect.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 124/389



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

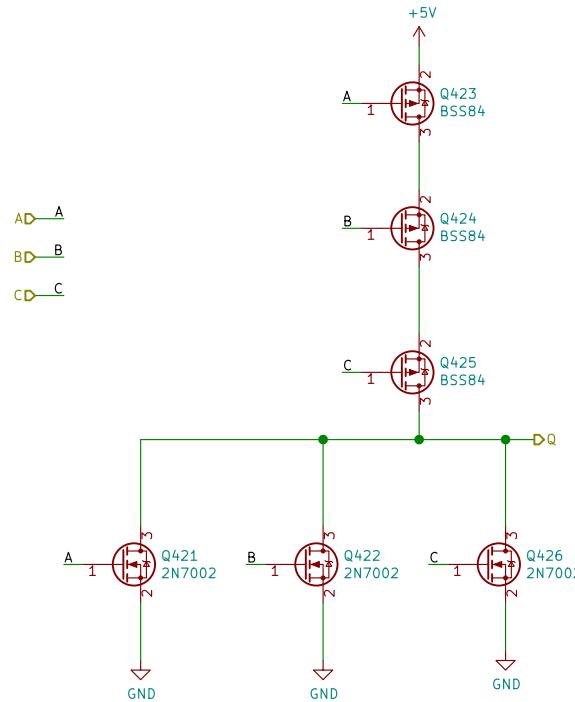
Philipp Schilk

Sheet: /EndState_Detect/sheet5ED298A3/
File: Gate_OR3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 125/389



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/sheet5ED298A3/sheet5ED25FC7/

File: Gate_NOR3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 126/389

A

B

C

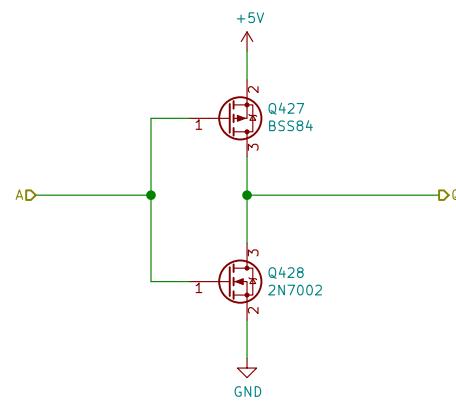
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/sheet5ED298A3/sheet5ED2645B/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

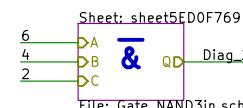
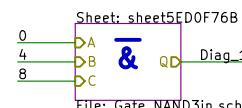
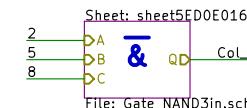
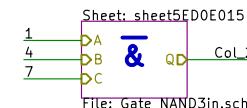
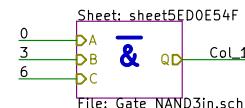
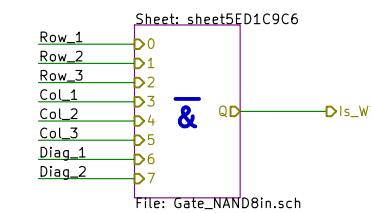
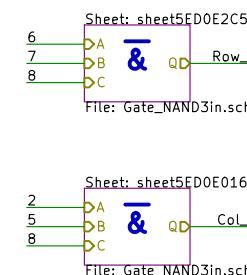
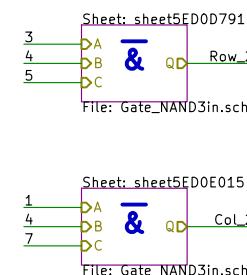
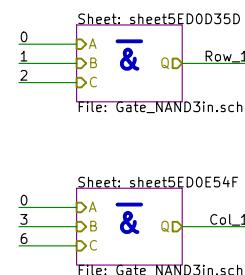
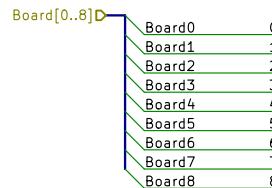
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 127/389

1 2 3 4 5 6

Checks if a Player has won by AND-ing all Rows, Cols, and Diags individually



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /EndState_Detect/Win_Detect_P1/
File: Win_Detect.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 128/389

1 2 3 4 5 6

A

A

B

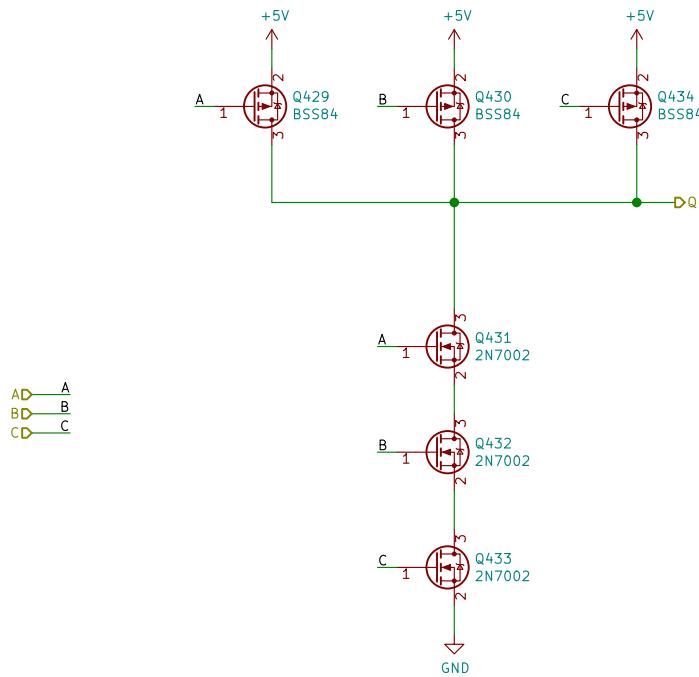
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0D35D/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 129/389

A

A

B

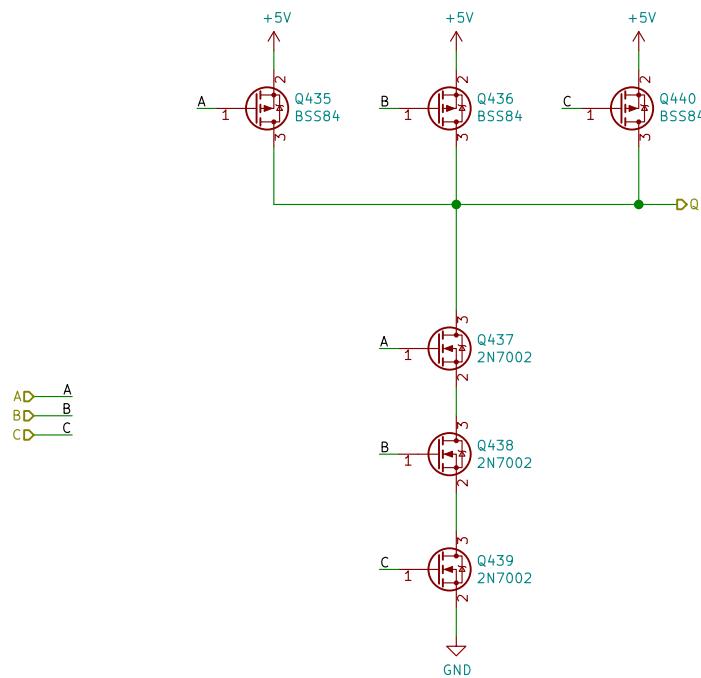
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0D791/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 130/389

A

A

B

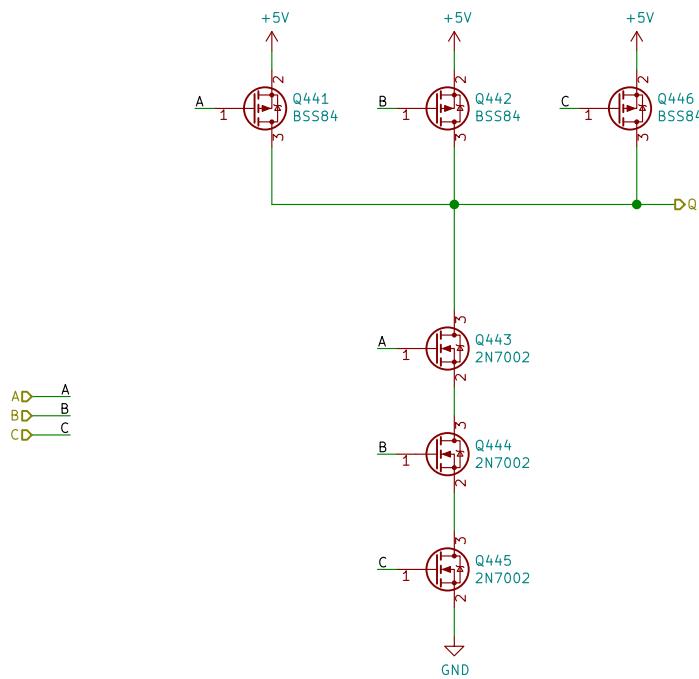
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0E015/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 131/389

A

A

B

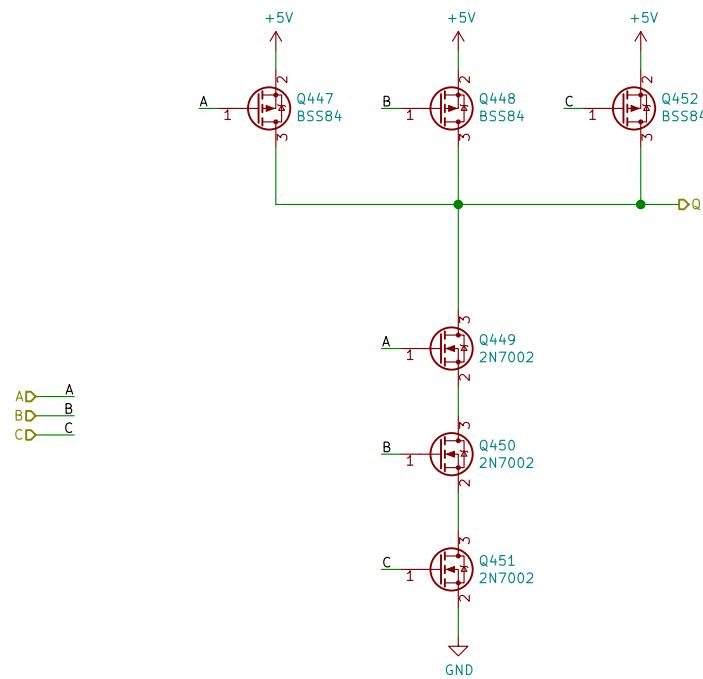
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0E016/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 132/389

A

A

B

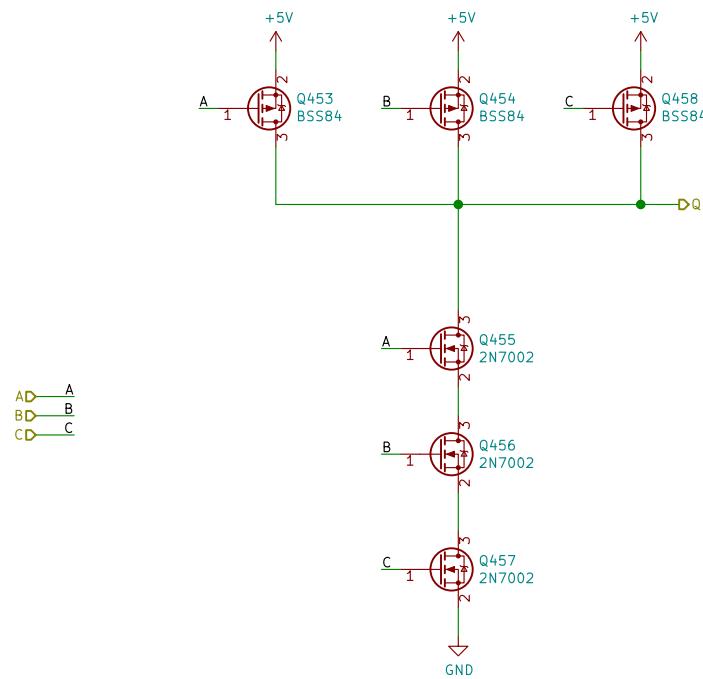
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0E2C5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 133/389

A

A

B

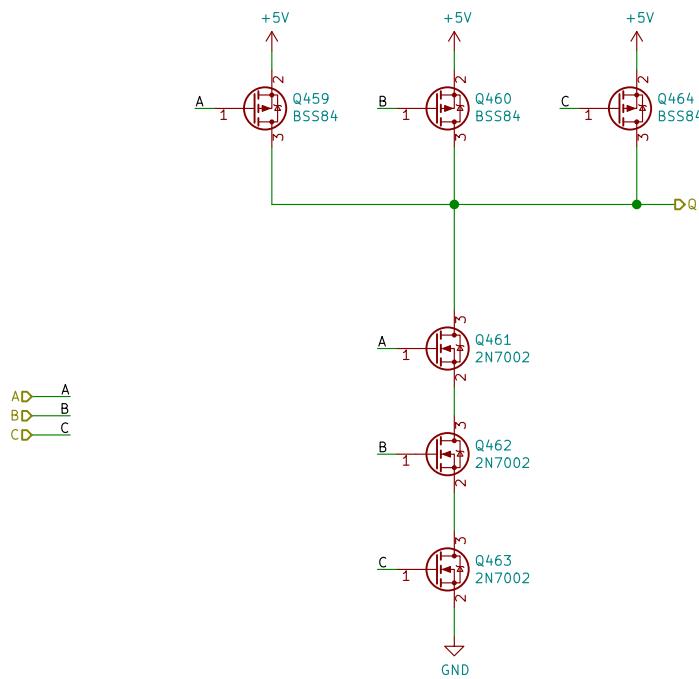
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0E54F/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 134/389

A

A

B

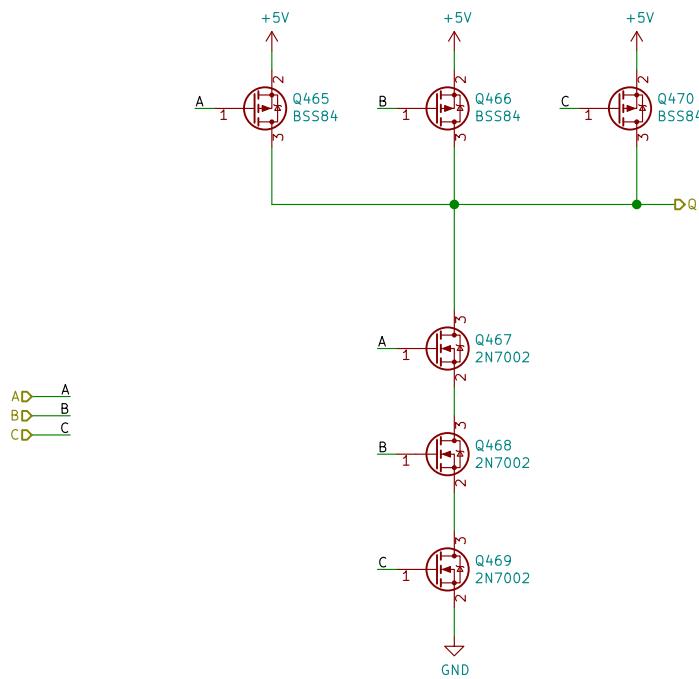
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0F769/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 135/389

A

A

B

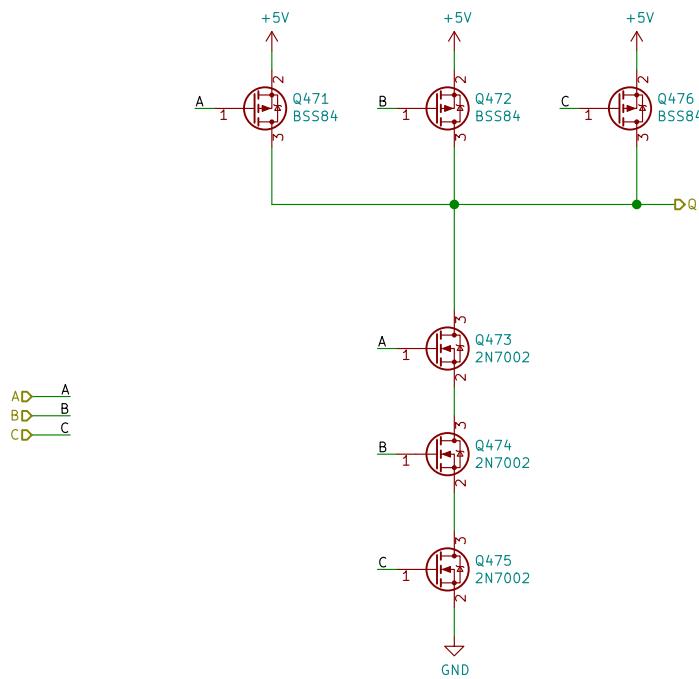
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P1/sheet5ED0F76B/

File: Gate_NAND3in.sch

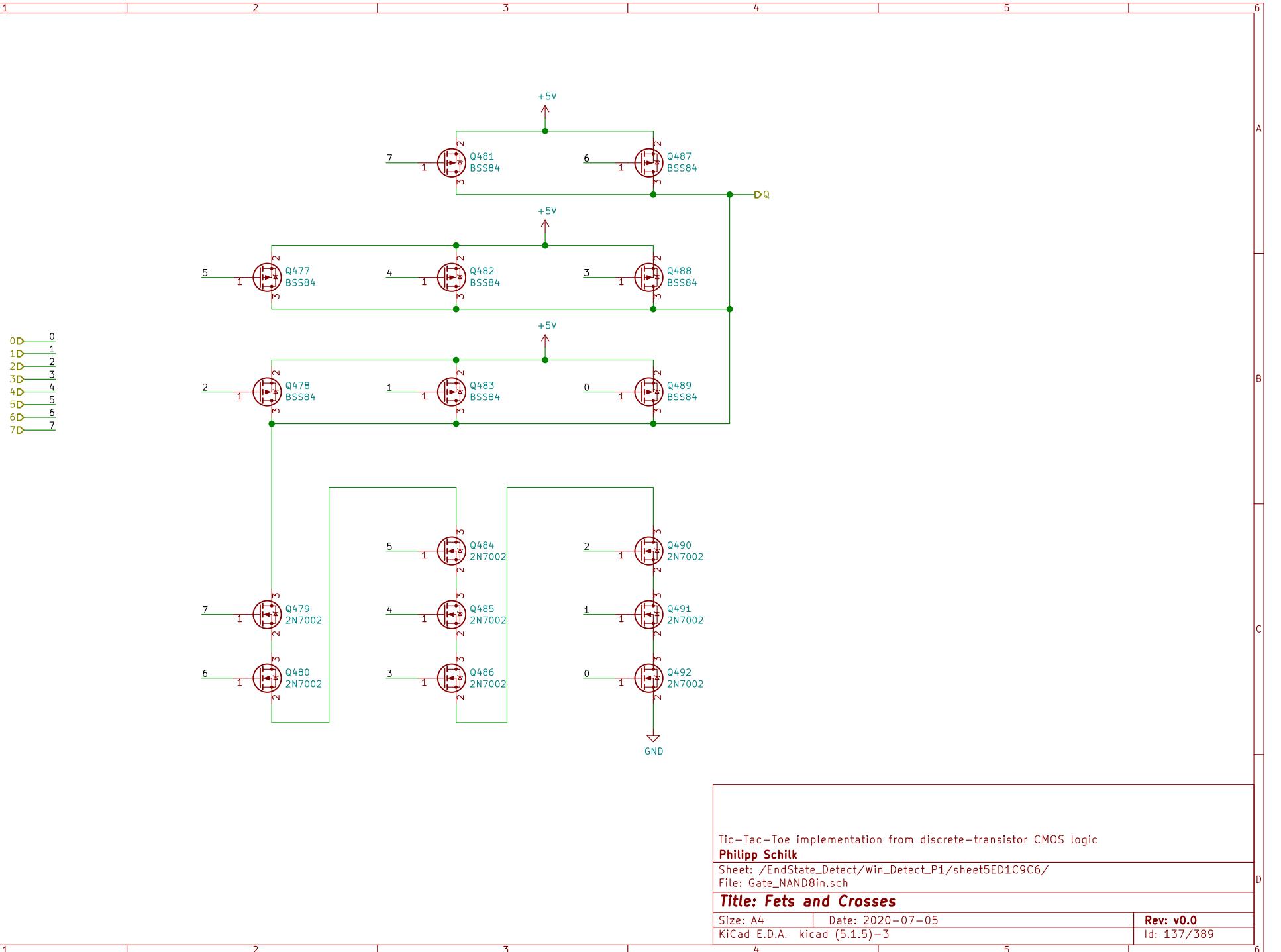
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

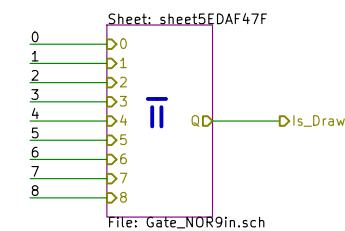
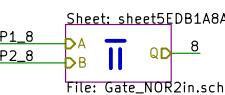
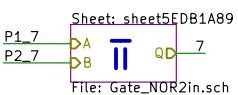
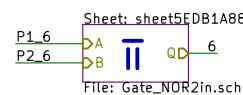
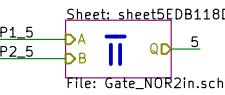
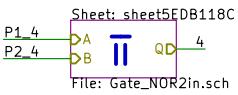
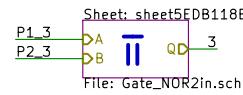
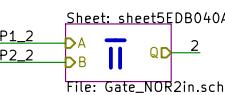
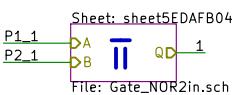
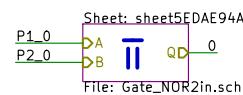
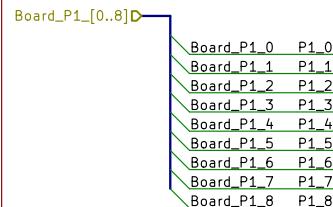
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 136/389



1 2 3 4 5 6



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/

File: Draw_Detect.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 138/389

1 2 3 4 5 6

A

A

B

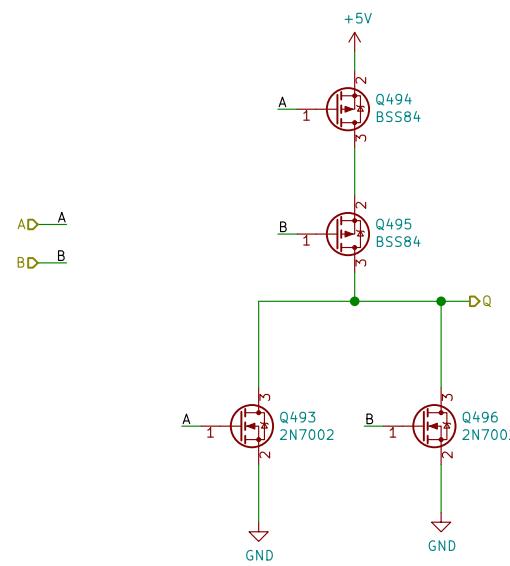
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDAE94A/

File: Gate_NOR2in.sch

Title: Fets and Crosses

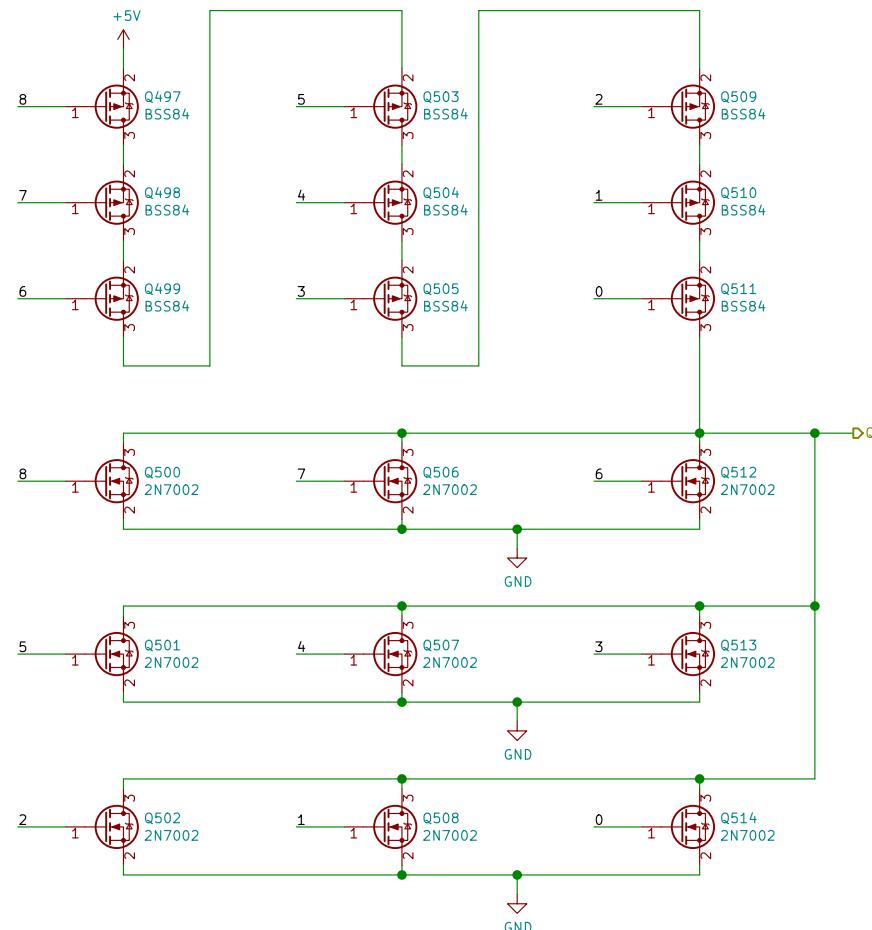
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 139/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDAF47F/

File: Gate_NOR9in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 140/389

A

A

B

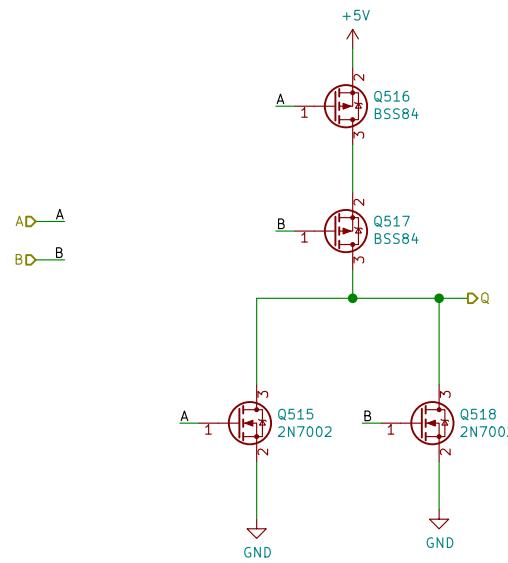
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDAFB04/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 141/389

A

A

B

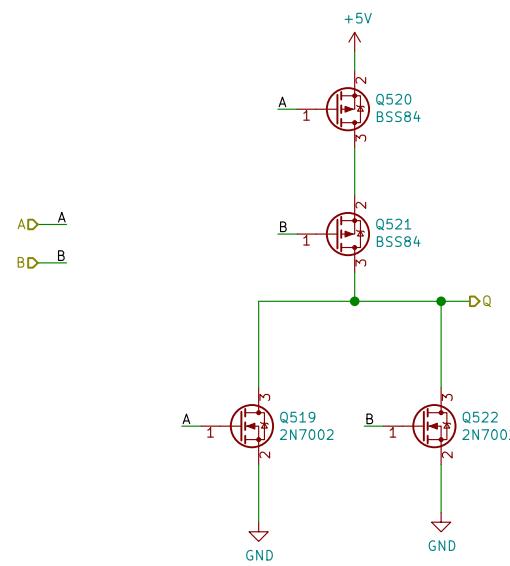
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB118B/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 142/389

A

A

B

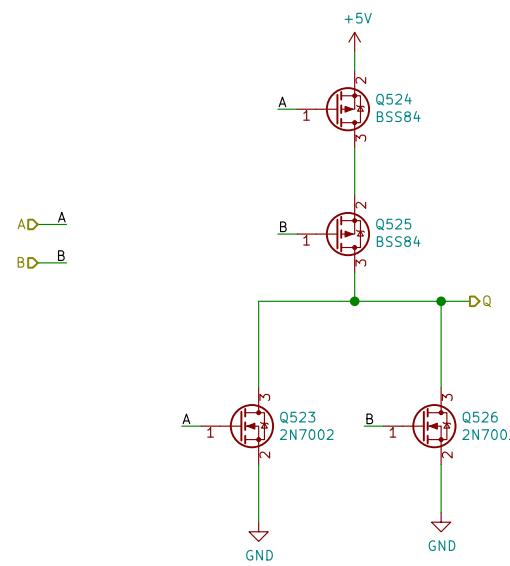
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB118C/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 143/389

A

A

B

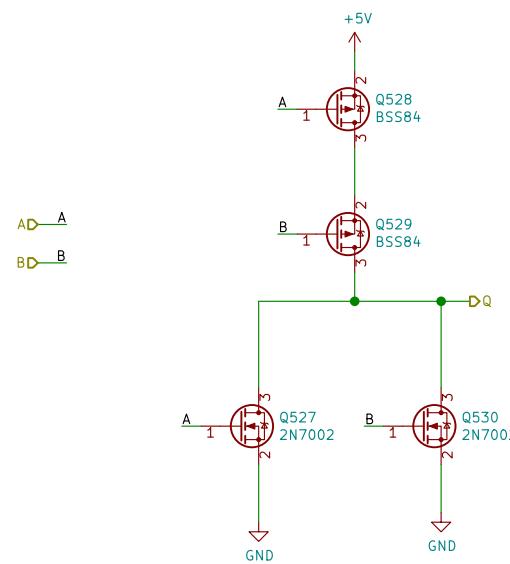
B

C

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB118D/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 144/389

A

A

B

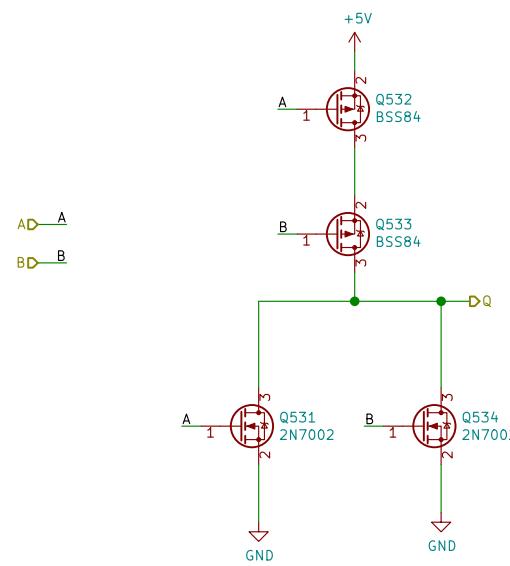
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB1A88/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 145/389

A

A

B

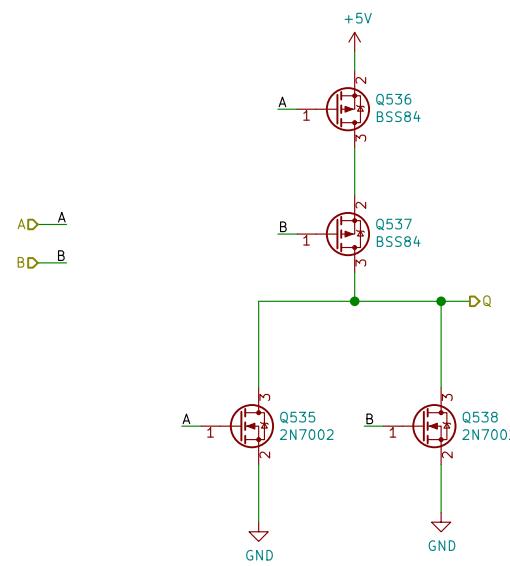
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB1A89/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 146/389

A

A

B

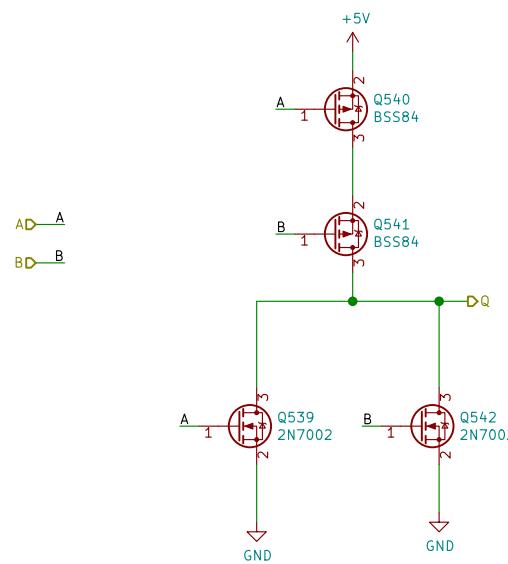
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB1A8A/
 File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 147/389

A

A

B

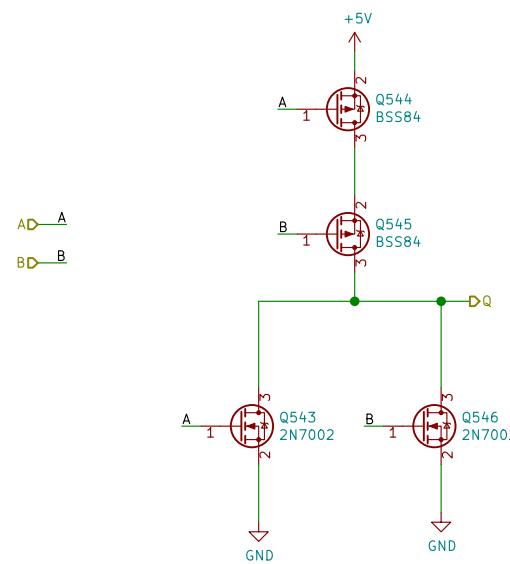
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Draw_Detect/sheet5EDB040A/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

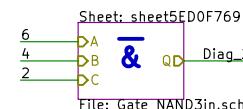
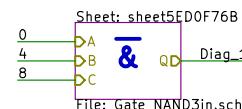
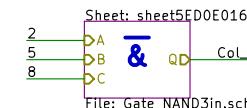
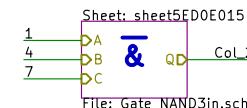
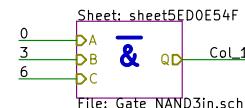
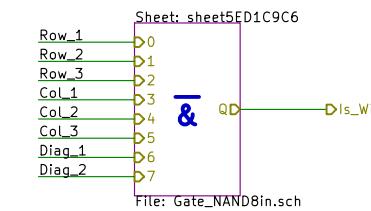
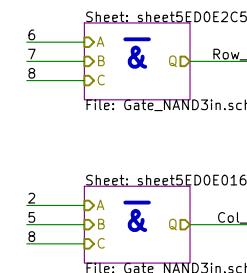
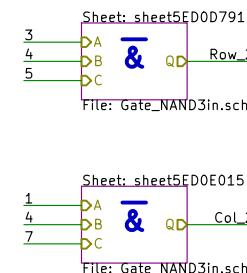
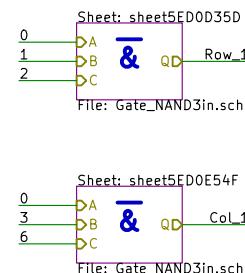
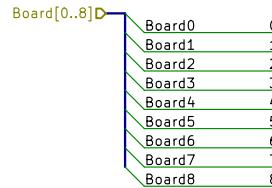
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 148/389

1 2 3 4 5 6

Checks if a Player has won by AND-ing all Rows, Cols, and Diags individually



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /EndState_Detect/Win_Detect_P2/
File: Win_Detect.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 149/389

1 2 3 4 5 6

A

A

B

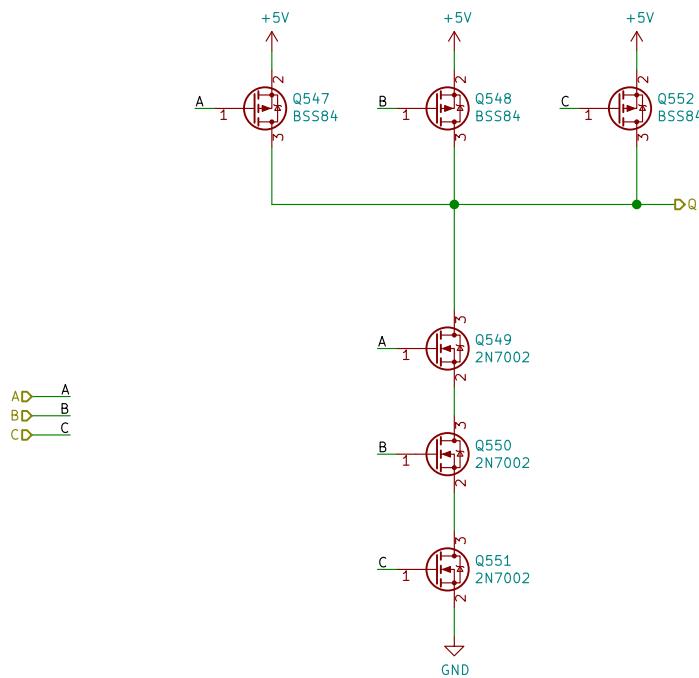
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0D35D/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 150/389

A

A

B

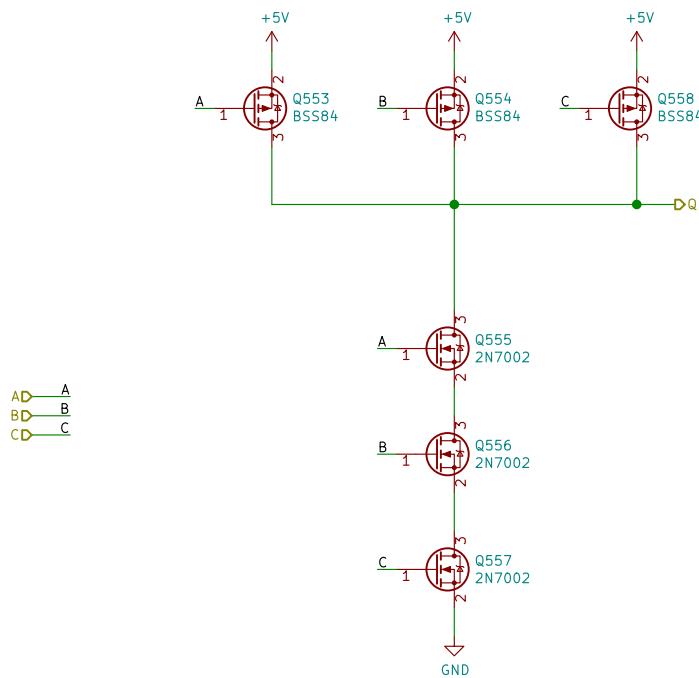
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0D791/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 151/389

A

A

B

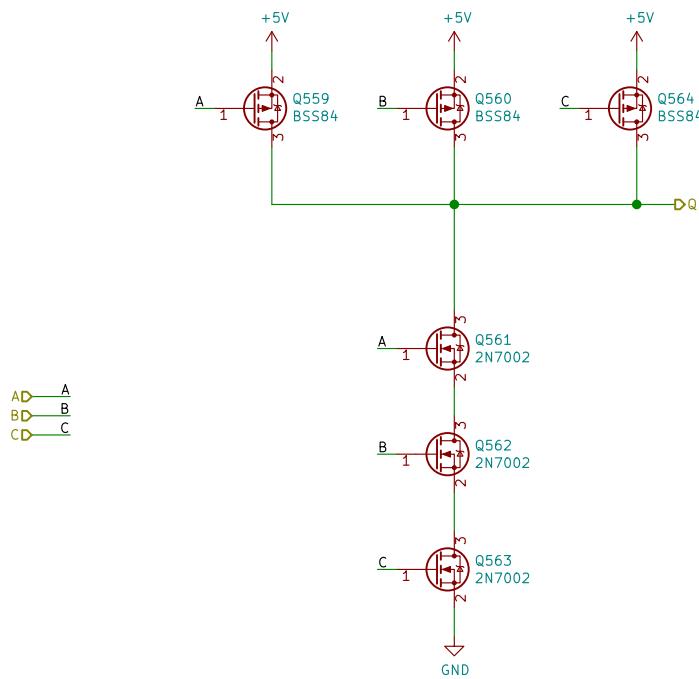
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0E015/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 152/389

A

A

B

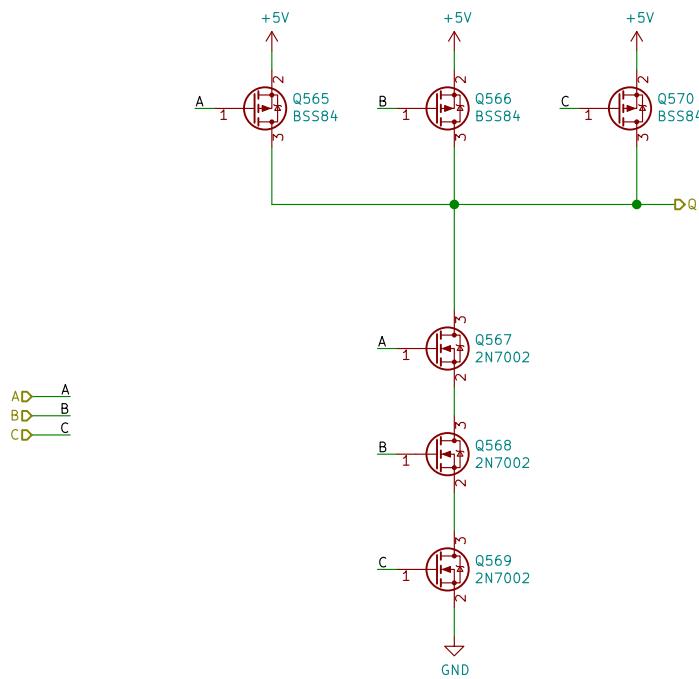
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0E016/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 153/389

A

A

B

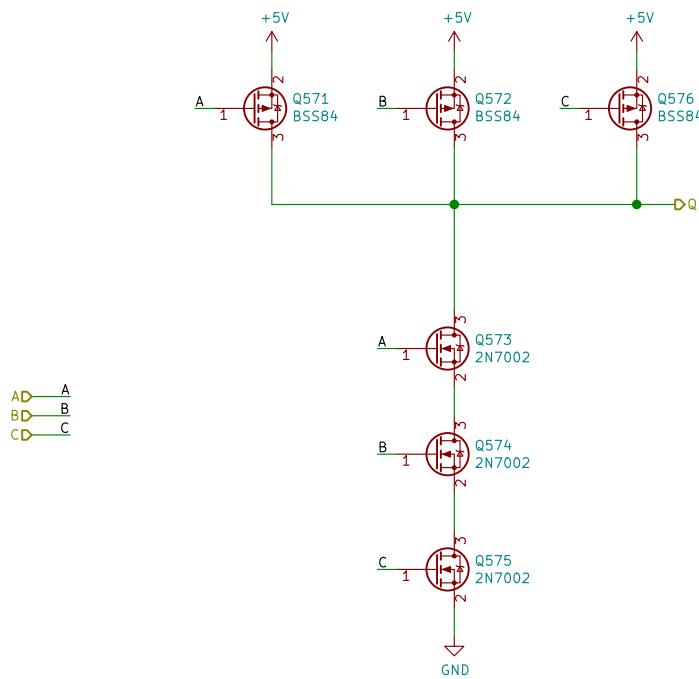
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0E2C5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 154/389

A

A

B

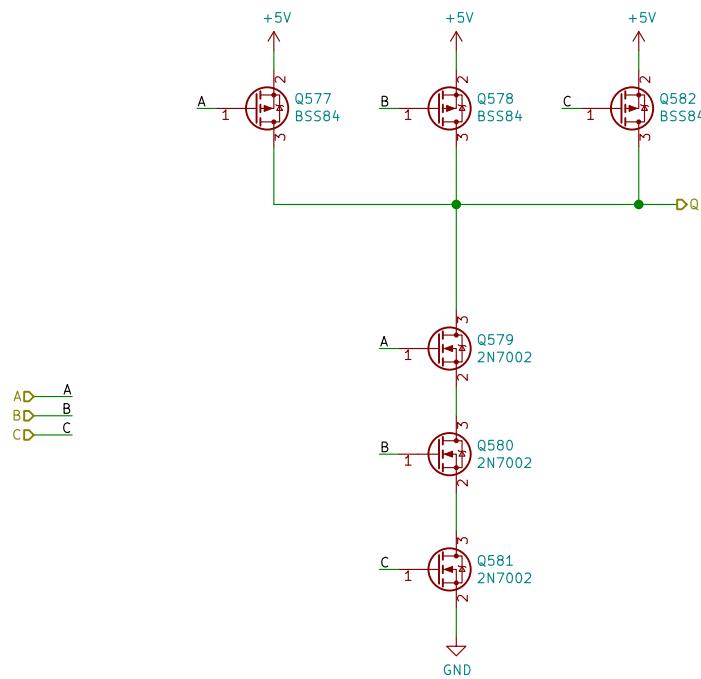
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0E54F/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 155/389

A

A

B

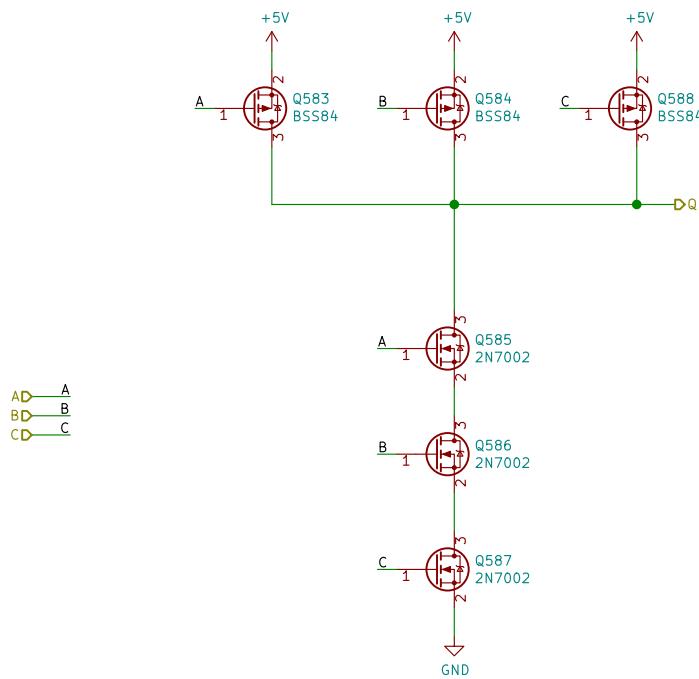
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0F769/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 156/389

A

A

B

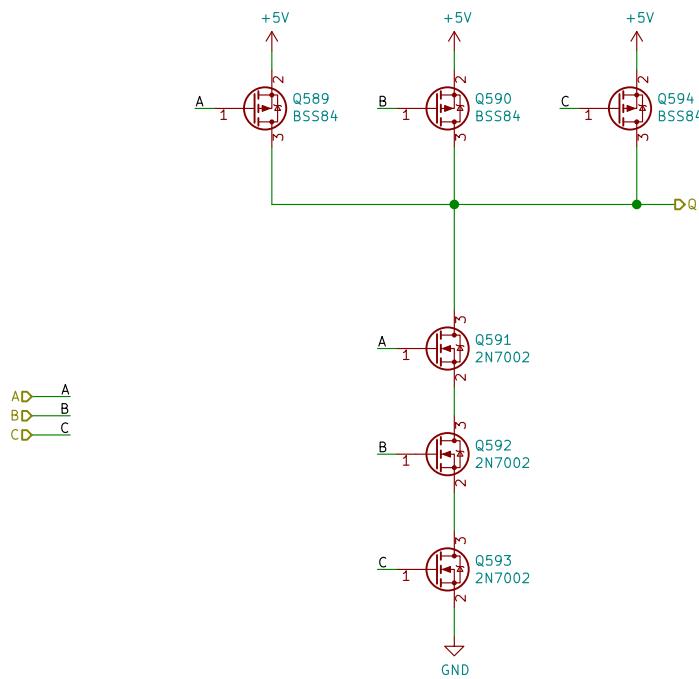
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED0F76B/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

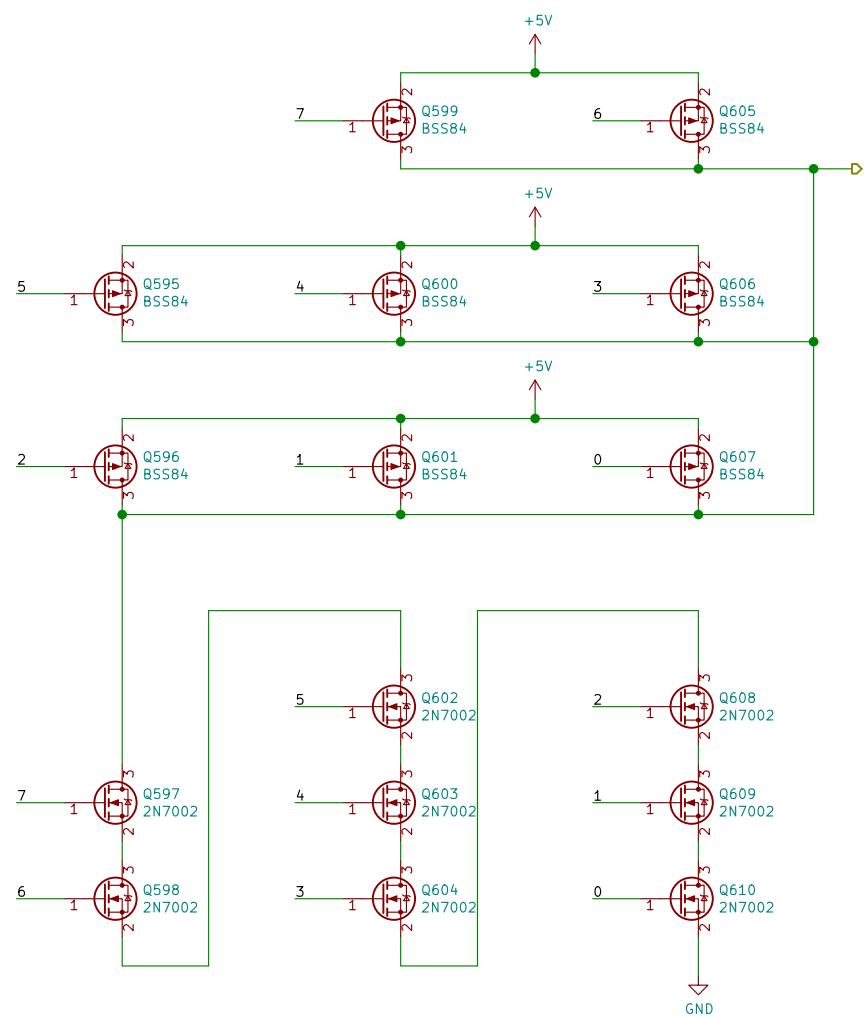
Id: 157/389

1 2 3 4 5 6

A

A

0D 0
1D 1
2D 2
3D 3
4D 4
5D 5
6D 6
7D 7



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /EndState_Detect/Win_Detect_P2/sheet5ED1C9C6/

File: Gate_NAND8in.sch

Title: Fets and Crosses

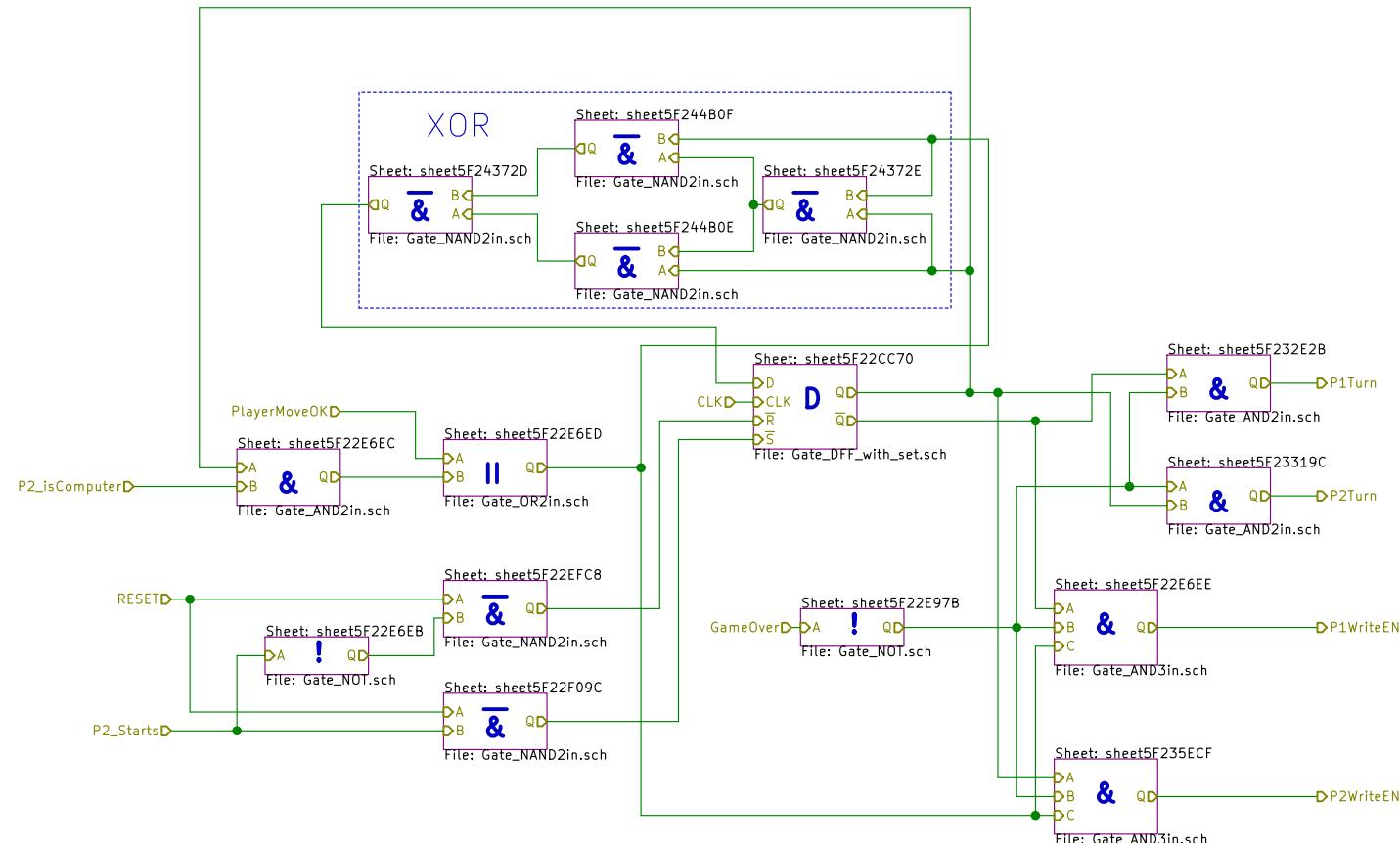
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 158/389

1 2 3 4 5 6



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philip Schilk

Sheet: /StateMaschine/
File: StateMaschine.s

Title: Fats and Carbohydrates

Title: Pets and Crosses

KiCad EDA kicad (5.1.5)-3

Page 9

Rev: v0.0

A

A

B

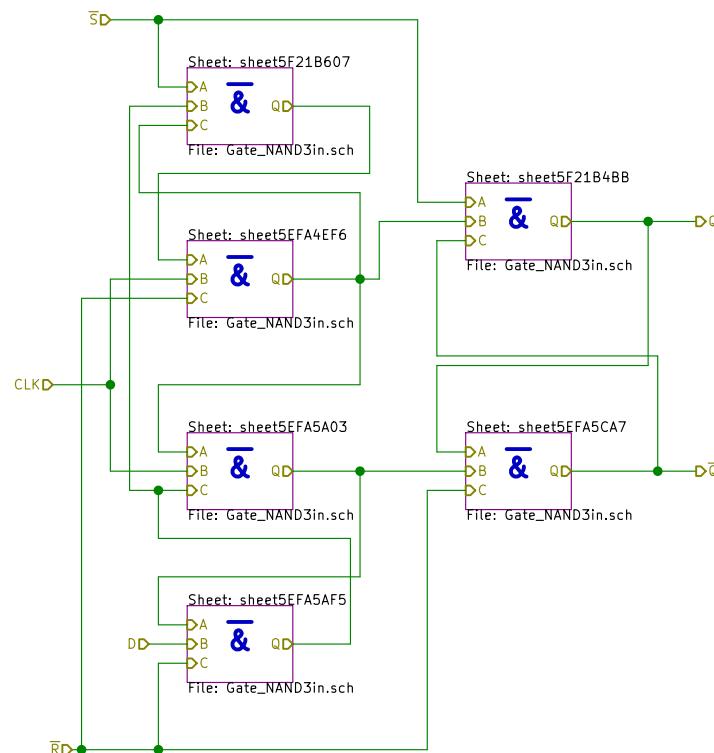
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /StateMaschine/sheet5F22CC70/
File: Gate_DFF_with_set.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 160/389

A

A

B

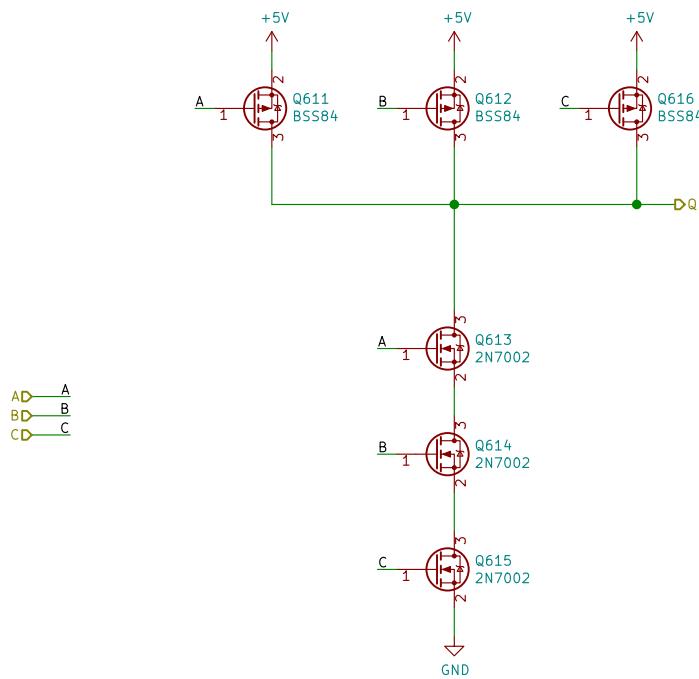
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 161/389

A

A

B

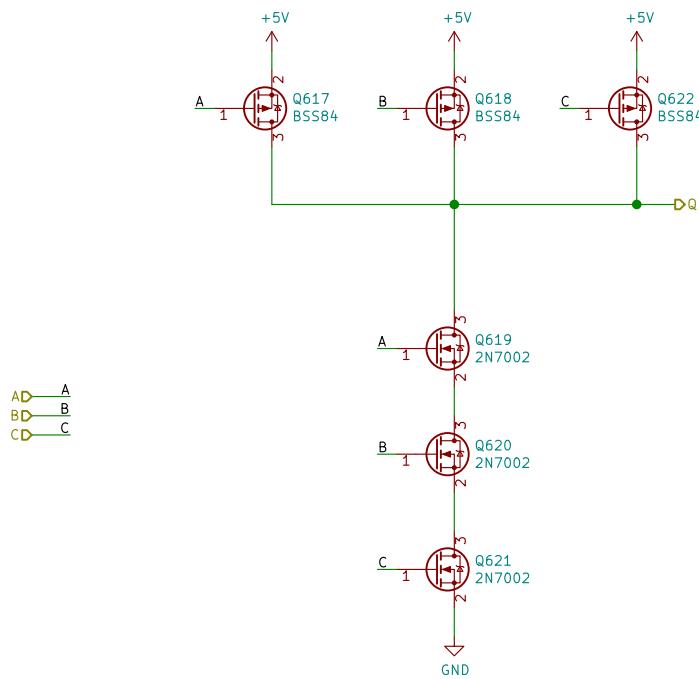
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 162/389

A

A

B

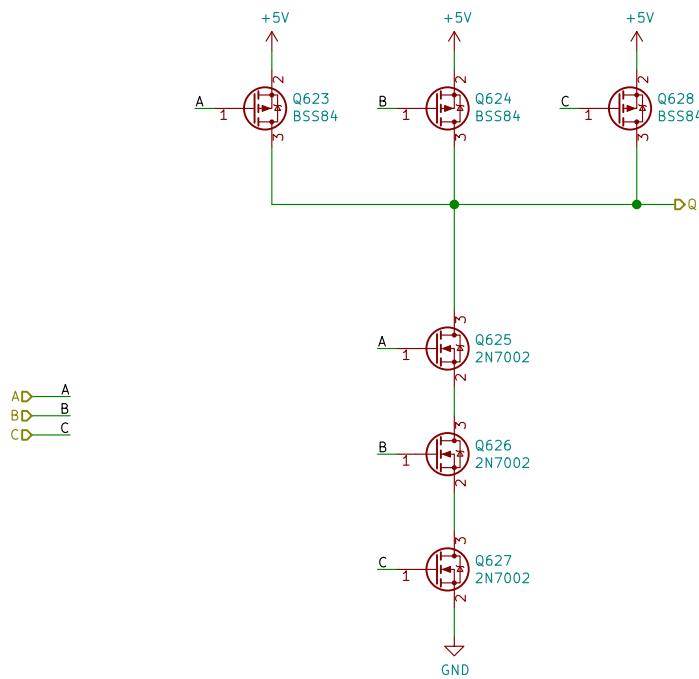
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 163/389

A

A

B

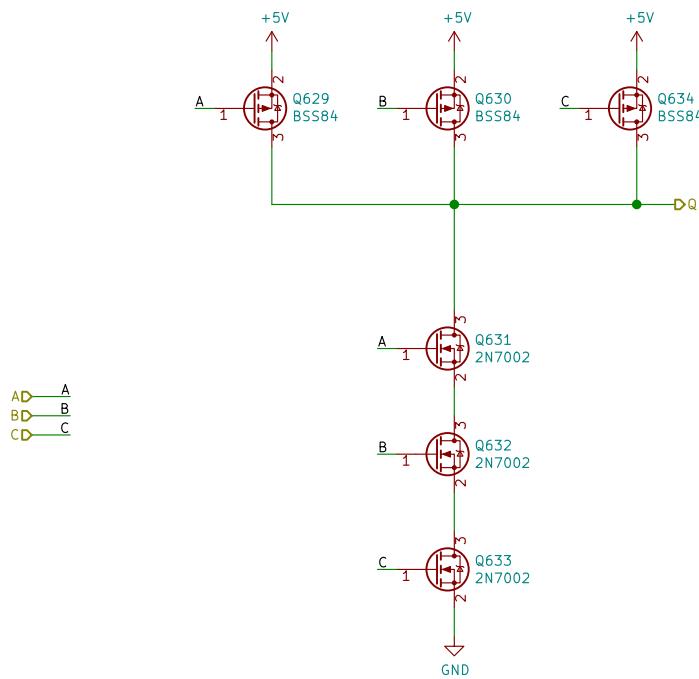
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 164/389

A

A

B

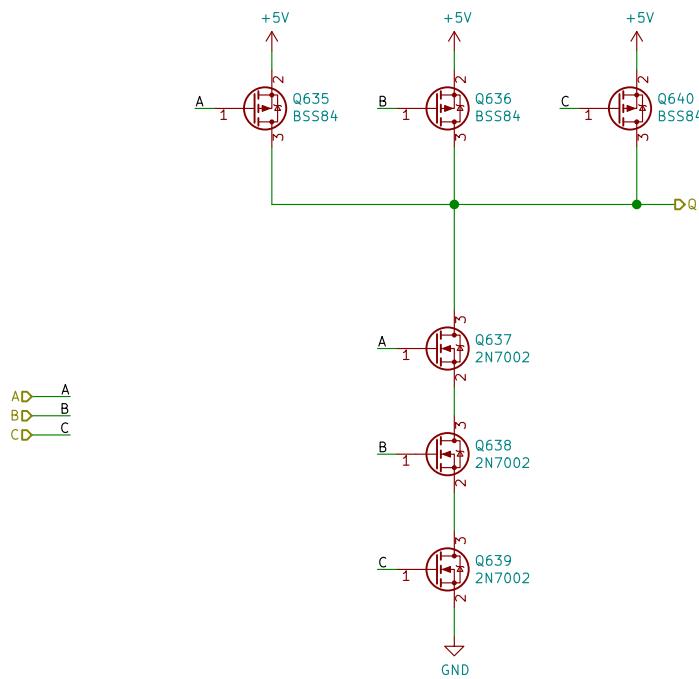
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5F21B4BB/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 165/389

A

A

B

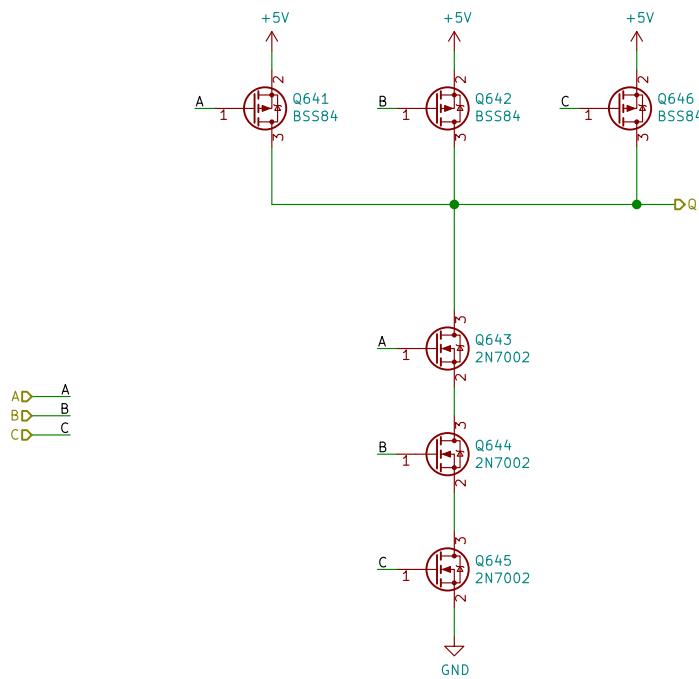
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22CC70/sheet5F21B607/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 166/389

A

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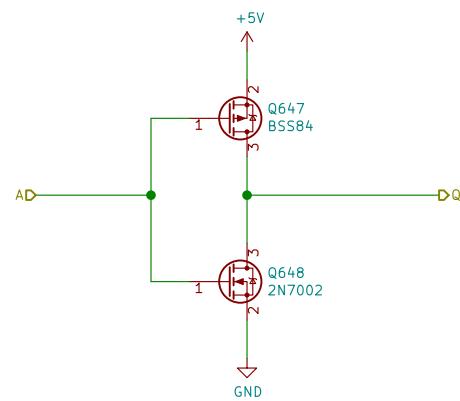
D

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C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EB/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 167/389

A

A

B

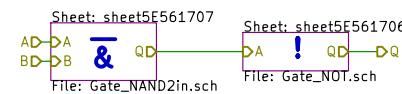
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EC/
File: Gate_AND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 168/389

A

B

C

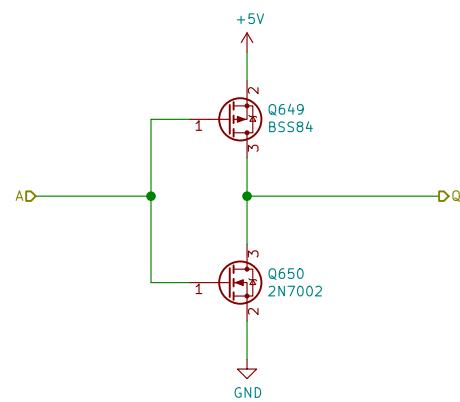
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EC/sheet5E561706/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

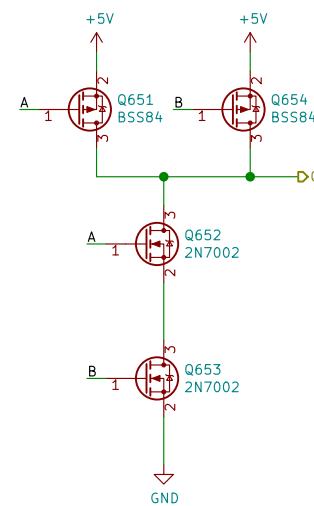
Id: 169/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EC/sheet5E561707/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 170/389

A

A

B

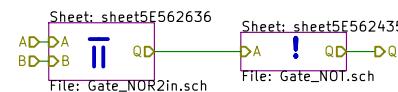
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6ED/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 171/389

A

B

C

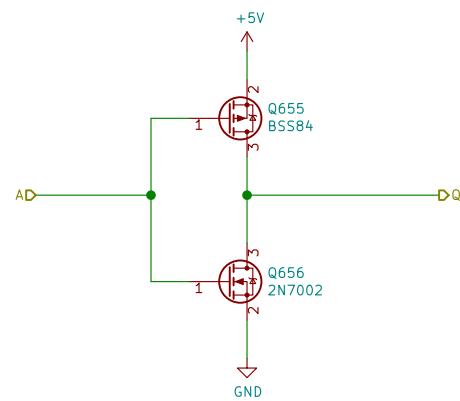
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6ED/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 172/389

A

A

B

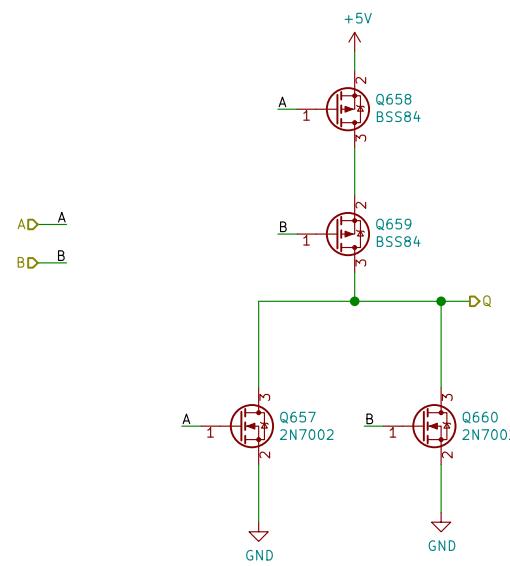
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6ED/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 173/389

A

B

C

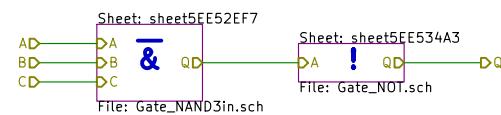
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk
Sheet: /StateMaschine/sheet5F22E6EE/
File: Gate_AND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 174/389

A

A

B

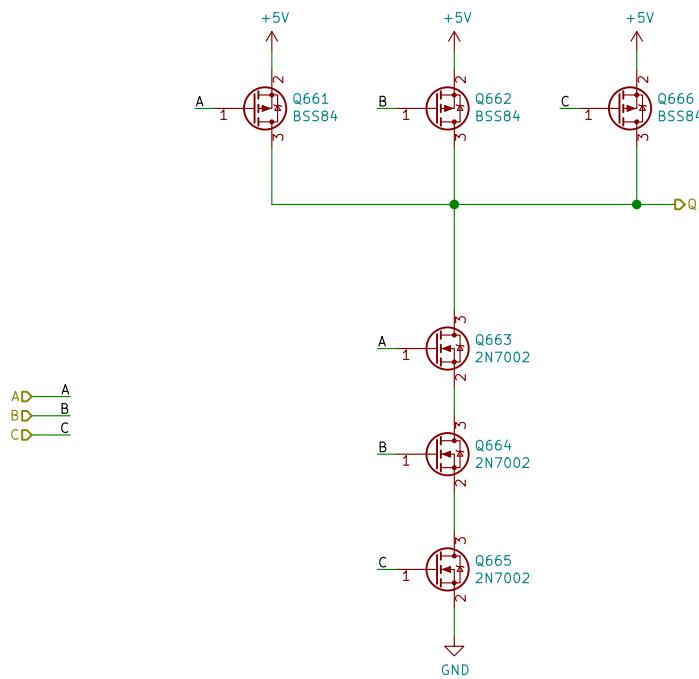
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EE/sheet5EE52EF7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 175/389

A

B

C

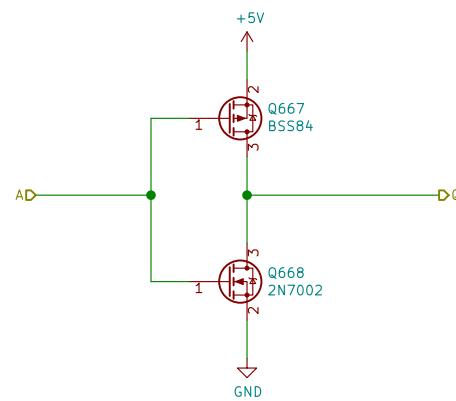
D

A

B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E6EE/sheet5EE534A3/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 176/389

A

B

C

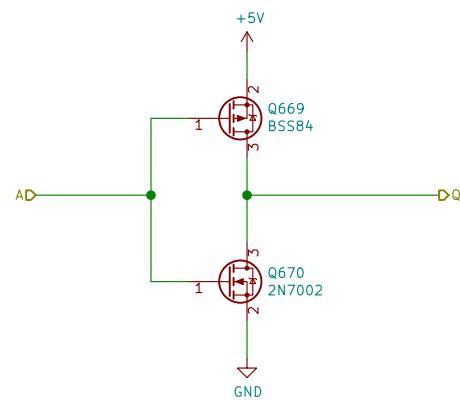
D

A

B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22E97B/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

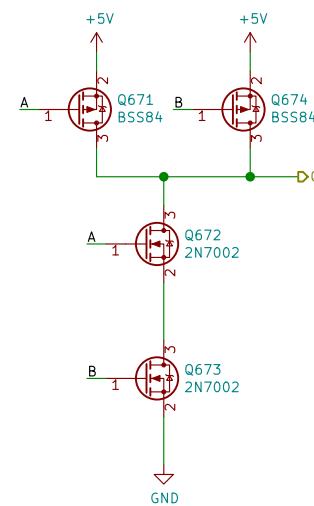
Id: 177/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /StateMaschine/sheet5F22EFC8/
File: Gate_NAND2in.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 178/389

A

B

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D

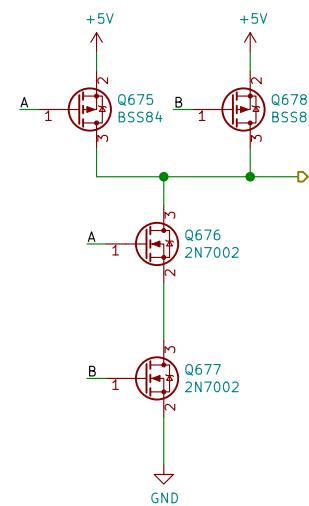
A

B

C

D

AD—A
BD—B



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F22F09C/
File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 179/389

A

A

B

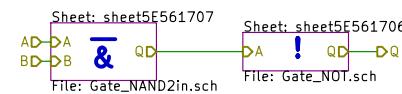
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F232E2B/
File: Gate_AND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 180/389

A

B

C

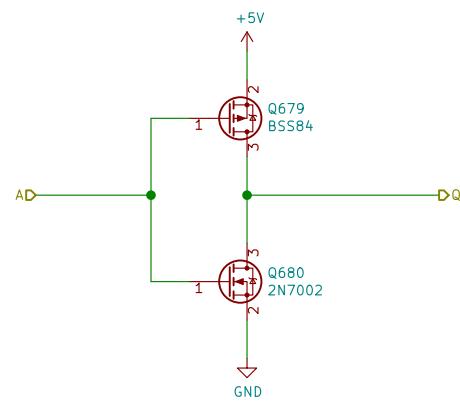
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F232E2B/sheet5E561706/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

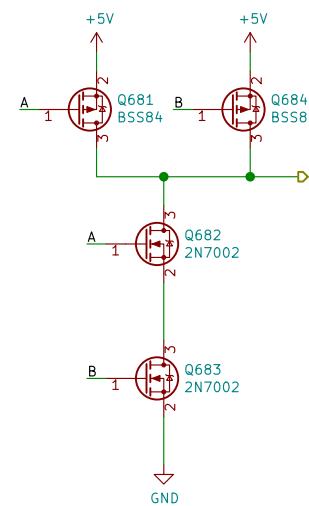
Id: 181/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F232E2B/sheet5E561707/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 182/389

A

A

B

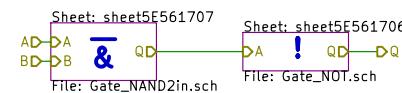
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F23319C/

File: Gate_AND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 183/389

A

B

C

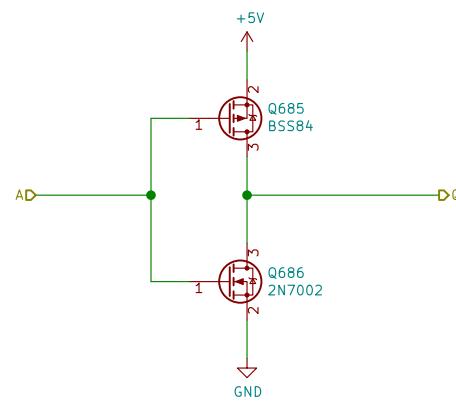
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F23319C/sheet5E561706/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

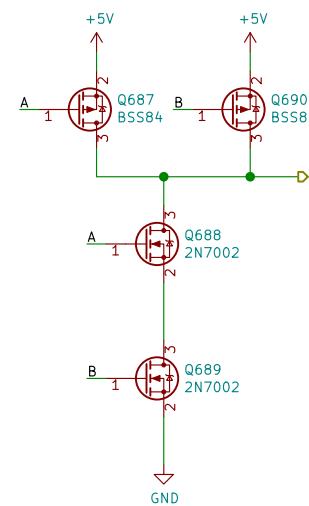
Id: 184/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F23319C/sheet5E561707/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 185/389

A

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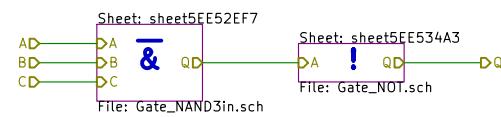
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F235ECF/

File: Gate_AND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 186/389

A

A

B

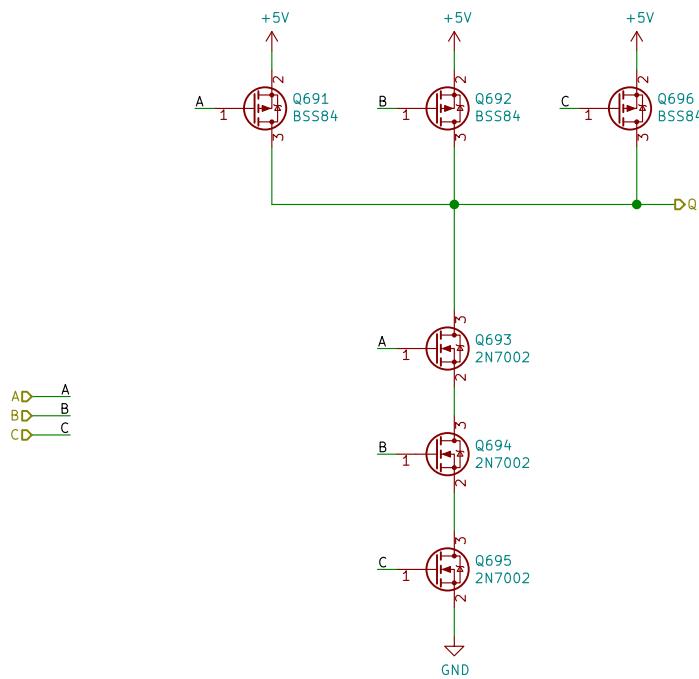
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F235ECF/sheet5EE52EF7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 187/389

A

B

C

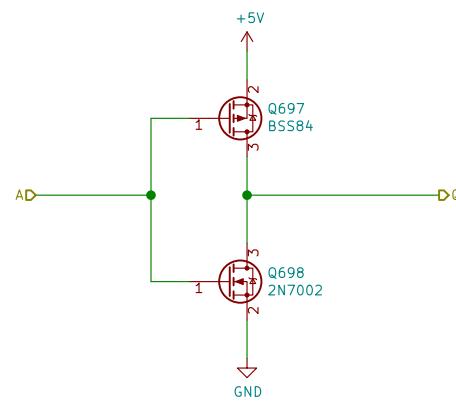
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F235ECF/sheet5EE534A3/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

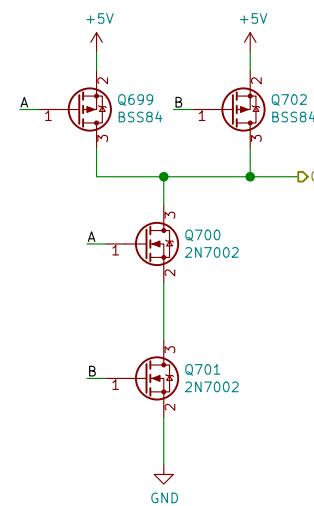
Id: 188/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /StateMaschine/sheet5F24372D/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

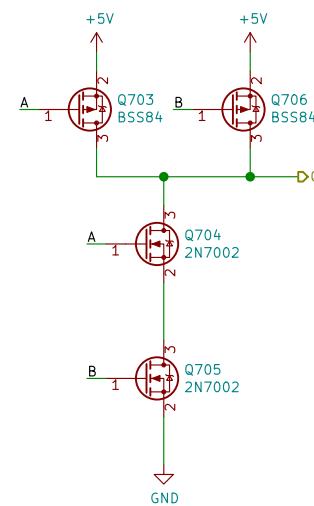
Id: 189/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

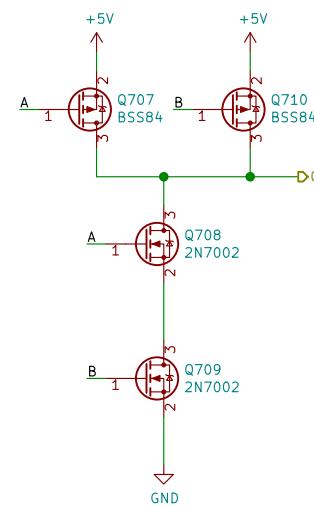
Philipp SchilkSheet: /StateMaschine/sheet5F24372E/
File: Gate_NAND2in.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 190/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

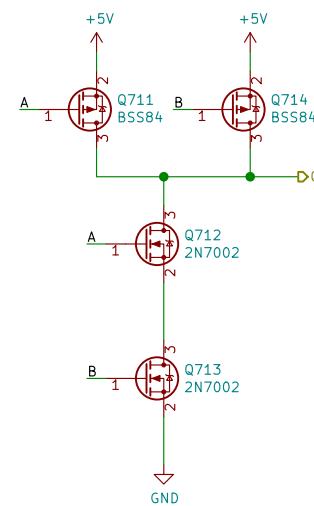
Philipp SchilkSheet: /StateMaschine/sheet5F244B0E/
File: Gate_NAND2in.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 191/389

A

B

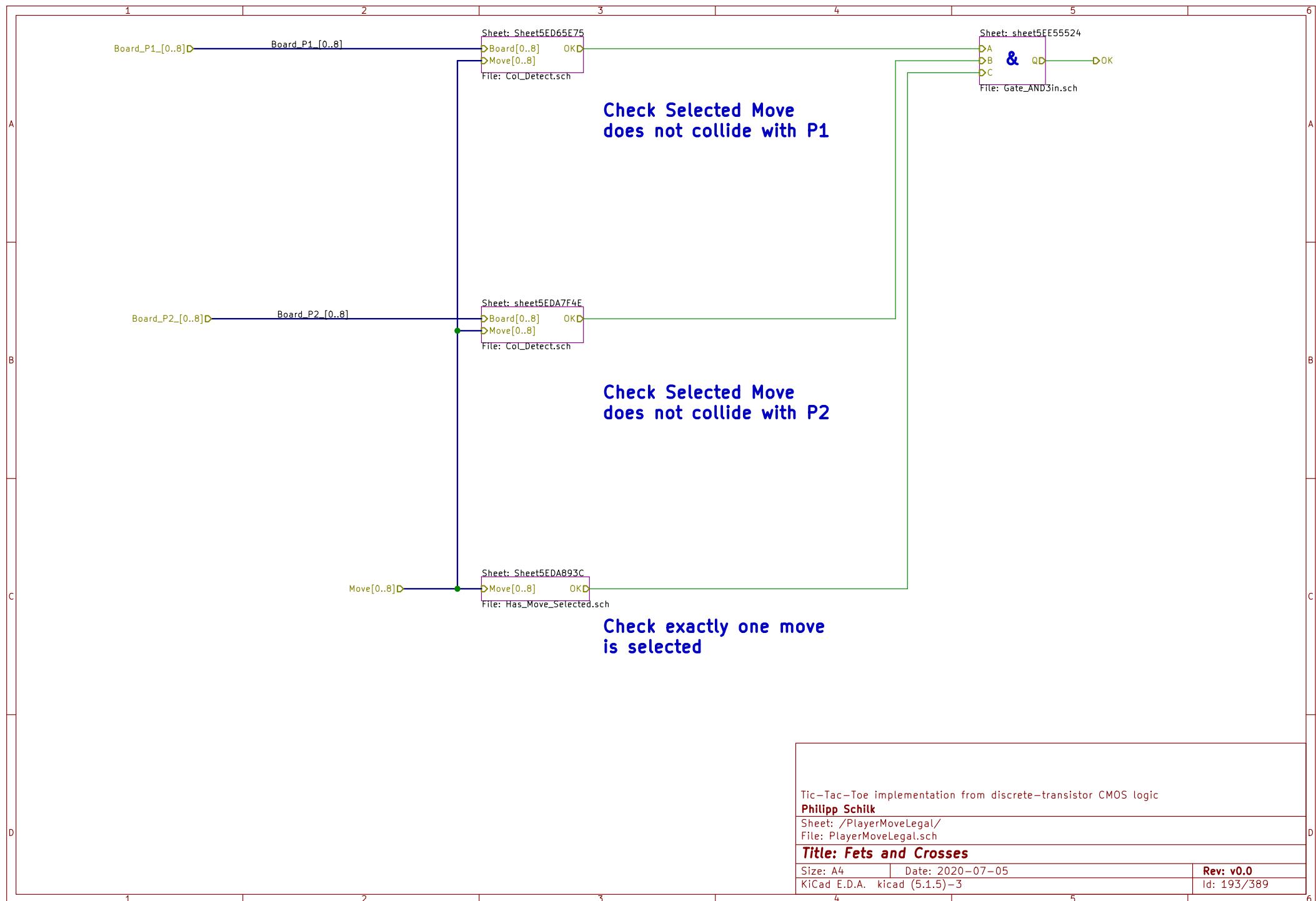
C

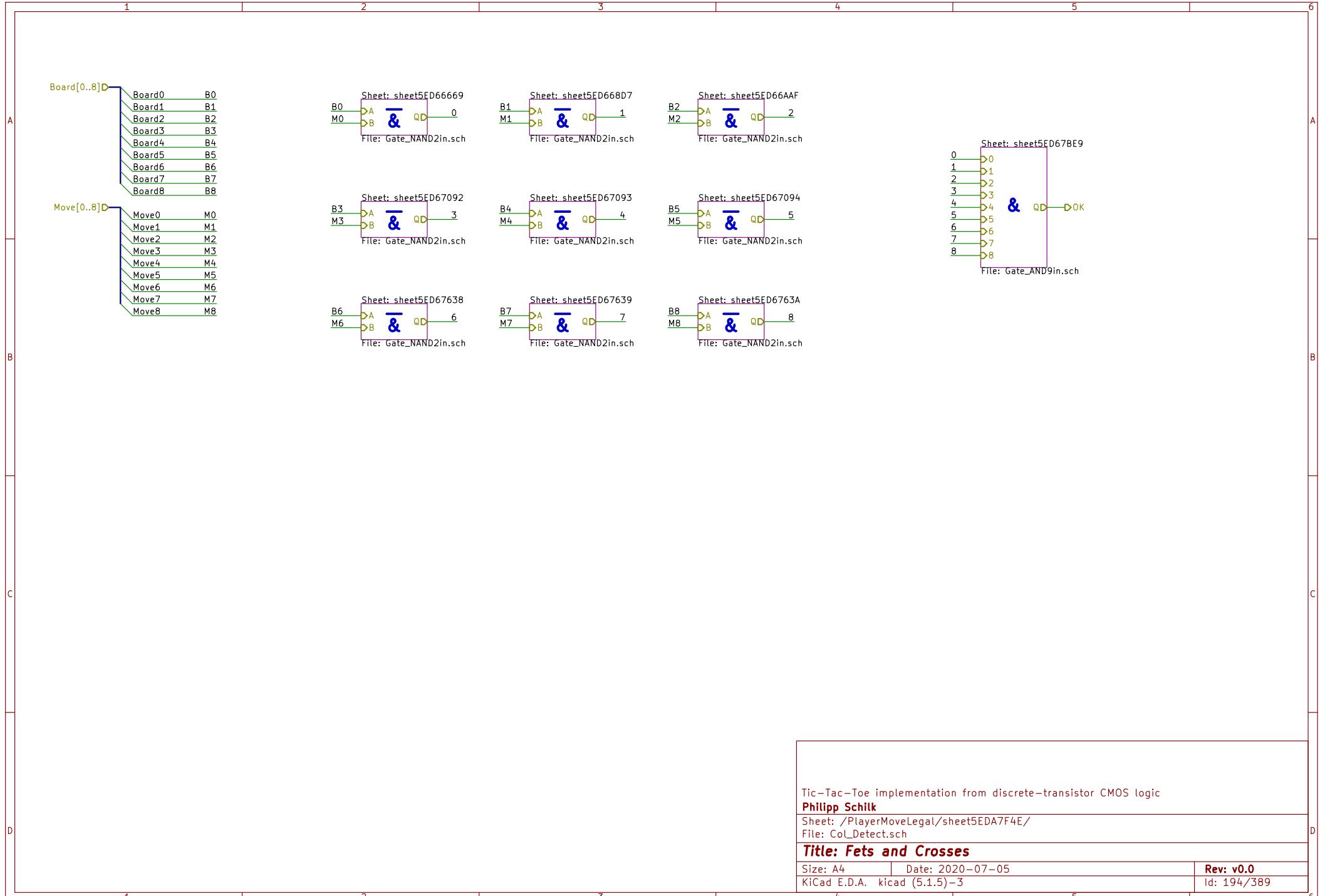
D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /StateMaschine/sheet5F244B0F/
File: Gate_NAND2in.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 192/389



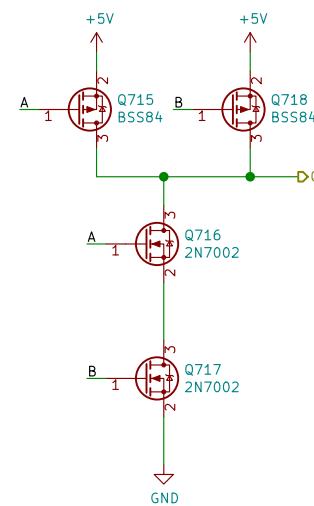


A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED66669/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

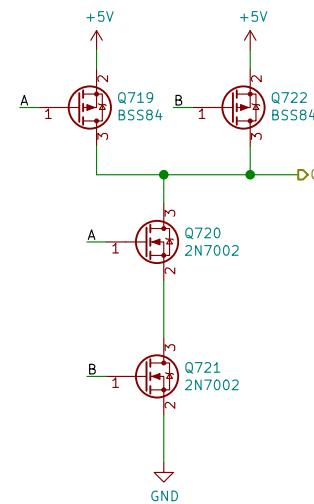
Id: 195/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED66AAF/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

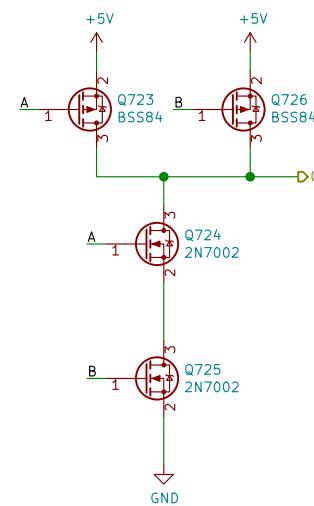
Id: 196/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67092/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

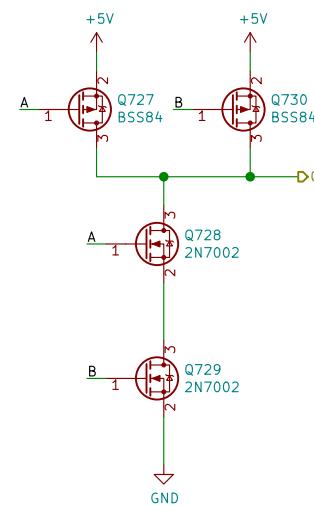
Id: 197/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67093/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

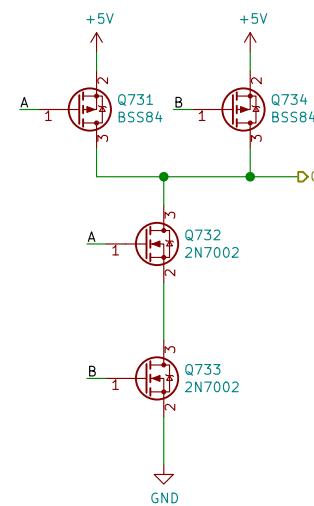
Id: 198/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67094/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

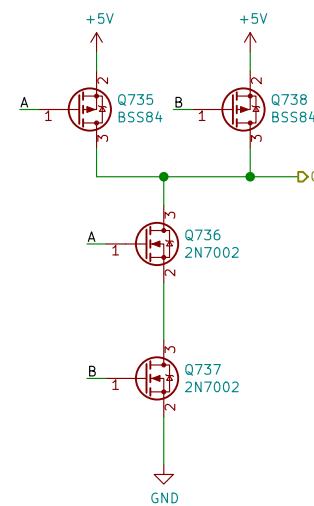
Id: 199/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67638/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

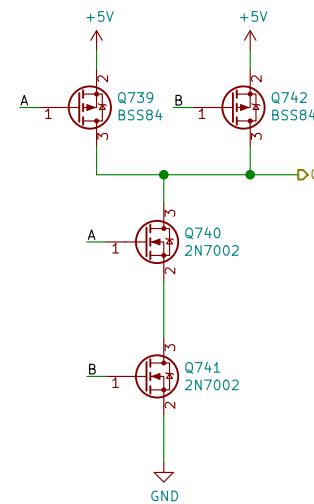
Id: 200/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67639/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

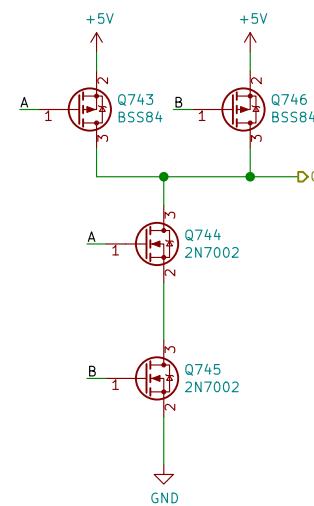
Id: 201/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED6763A/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 202/389

A

A

B

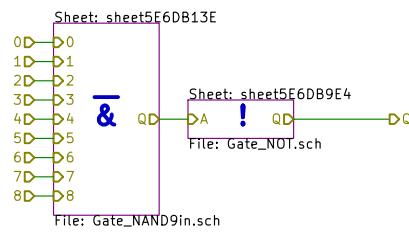
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67BE9/

File: Gate_AND9in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 203/389

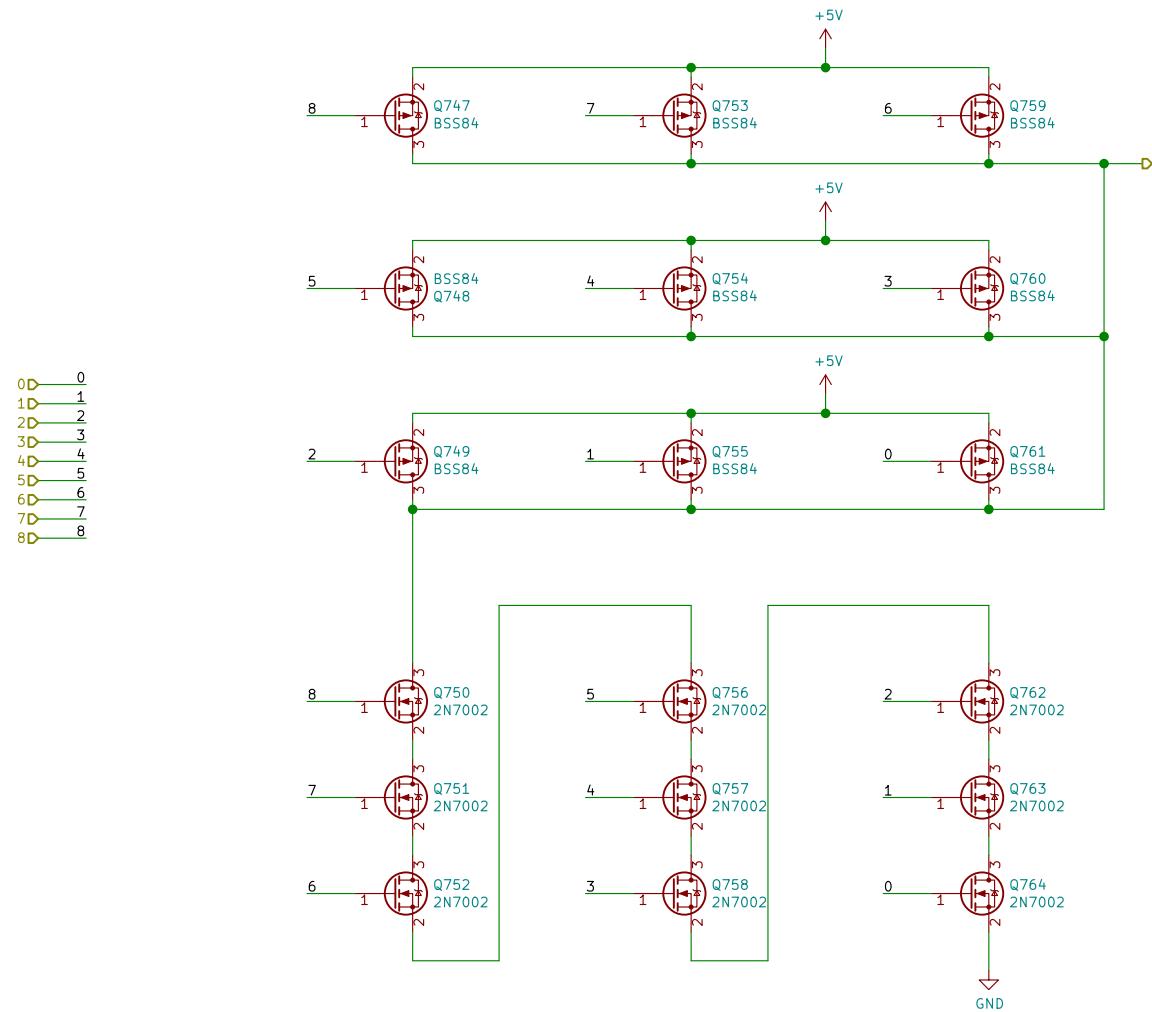
1 2 3 4 5 6

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67BE9/sheet5E6DB13E/
File: Gate_NAND9in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 204/389

1 2 3 4 5 6

A

B

C

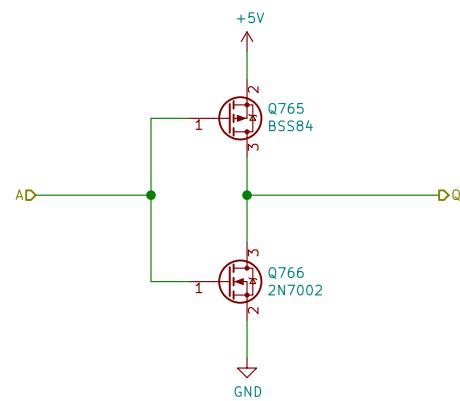
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED67BE9/sheet5E6DB9E4/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

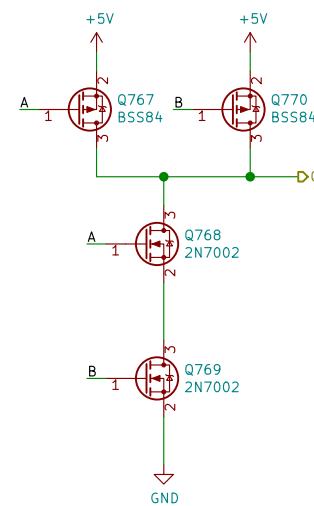
Id: 205/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EDA7F4E/sheet5ED668D7/

File: Gate_NAND2in.sch

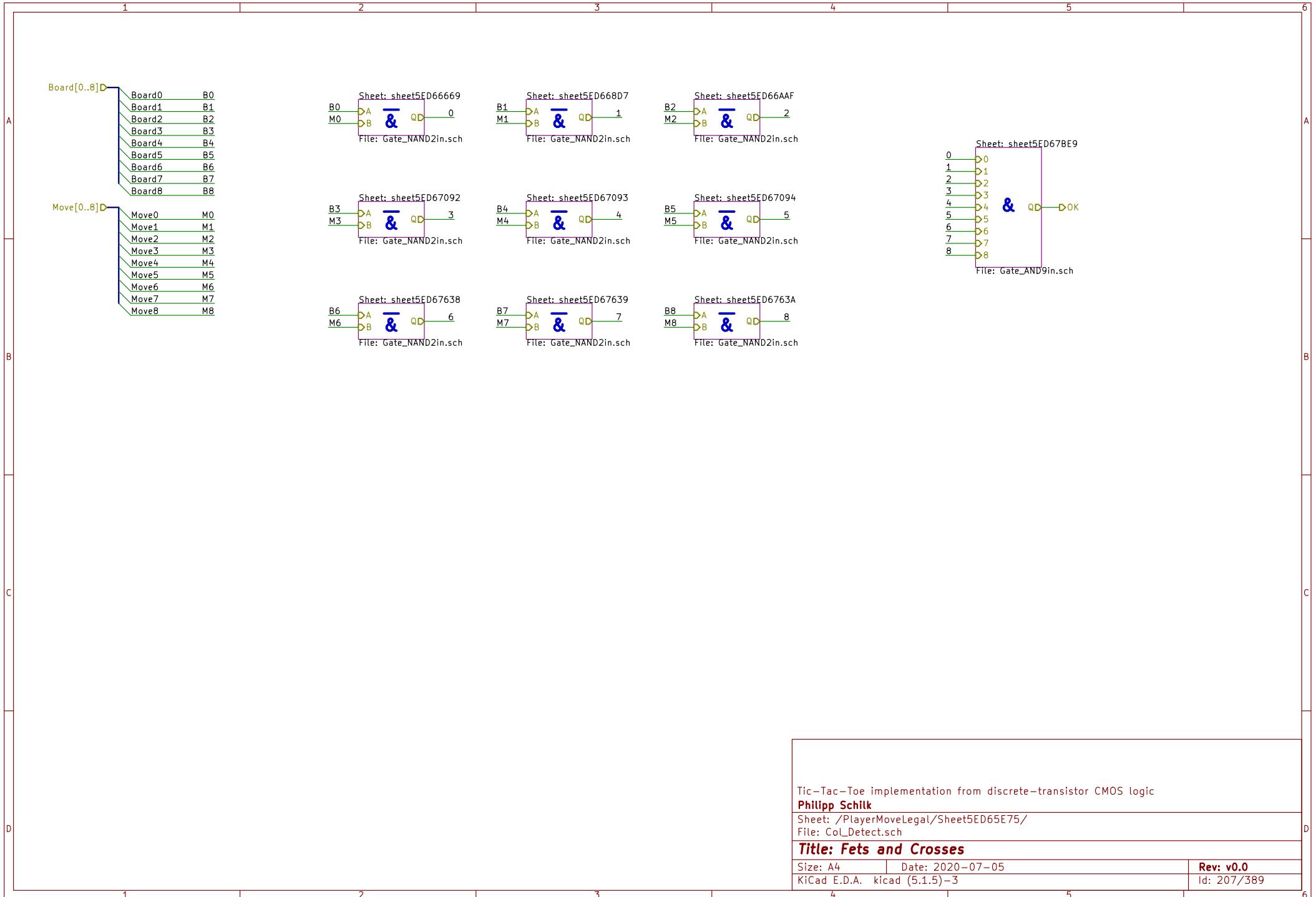
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 206/389

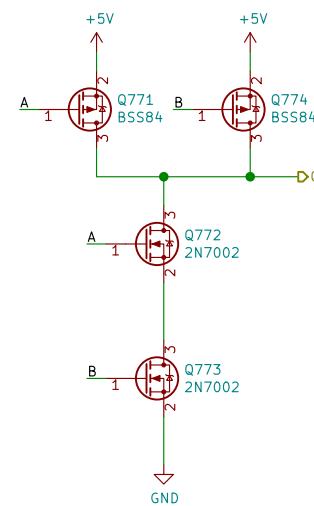


A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED66669/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

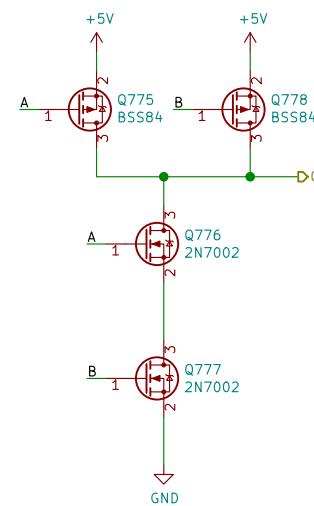
Id: 208/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

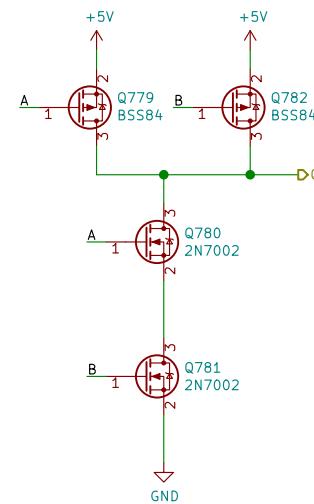
Id: 209/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED67092/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

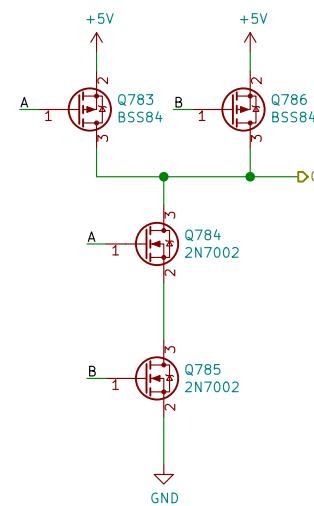
Id: 210/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

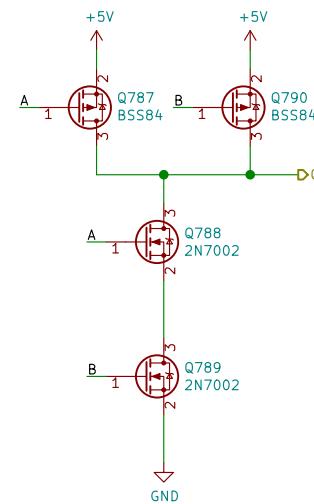
Id: 211/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

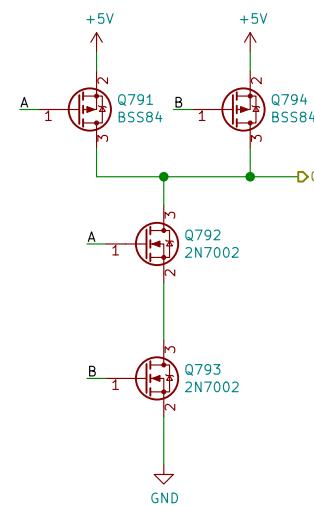
Id: 212/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED67638/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

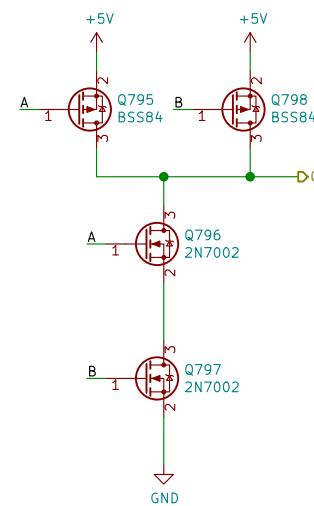
Id: 213/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

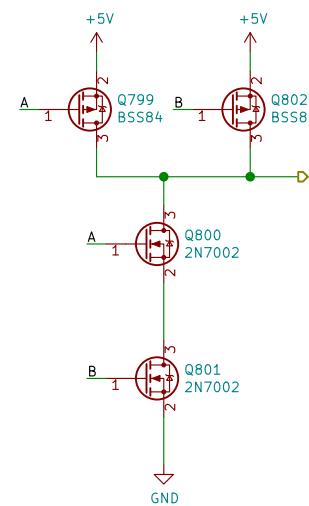
Id: 214/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 215/389

A

A

B

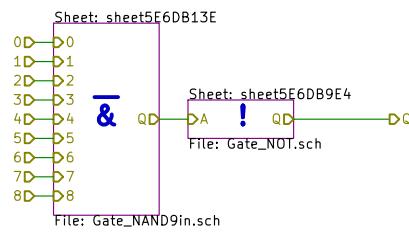
B

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C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED67BE9/

File: Gate_AND9in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 216/389

A

B

C

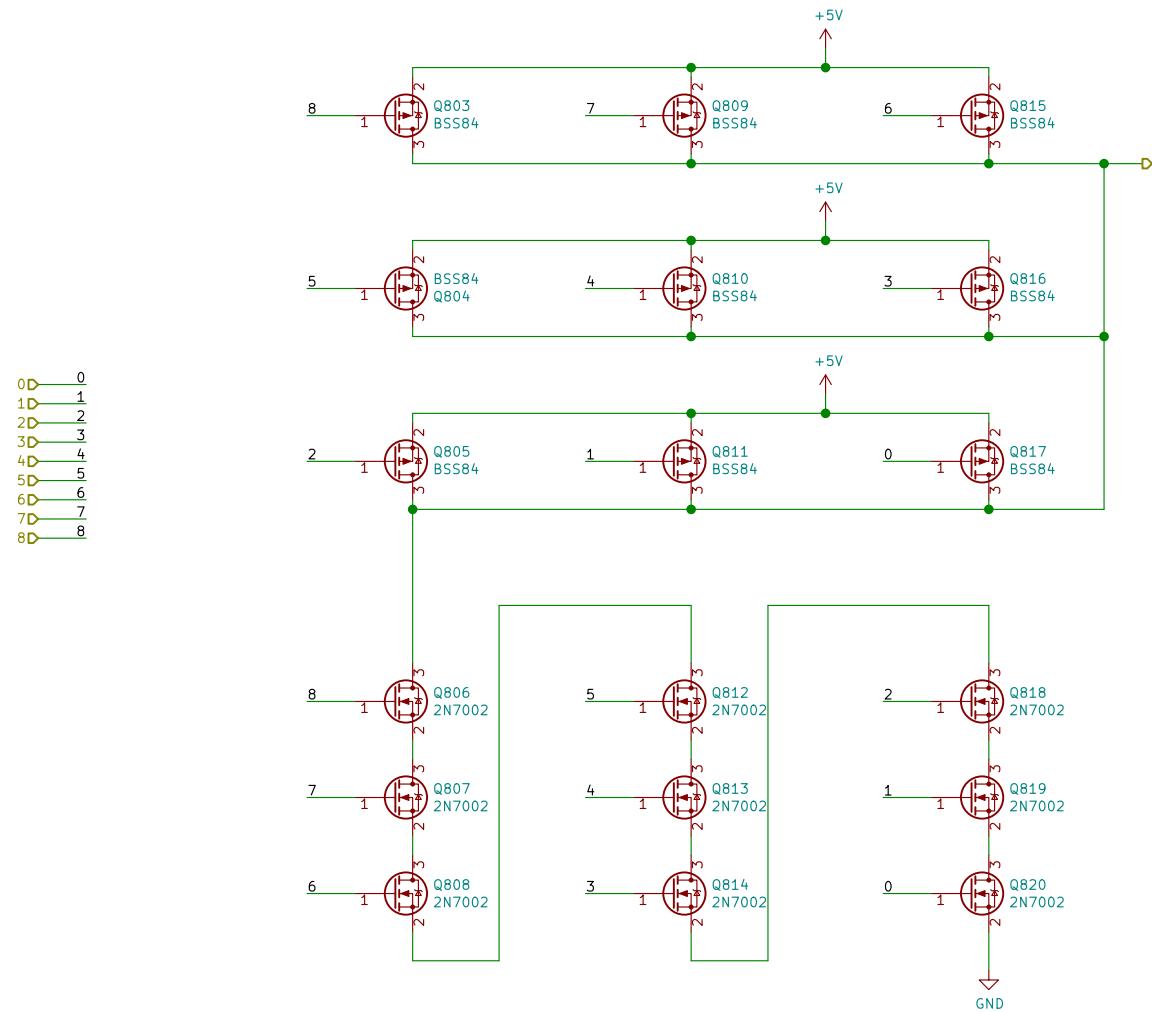
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED67BE9/sheet5E6DB13E/

File: Gate_NAND9in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 217/389

A

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C

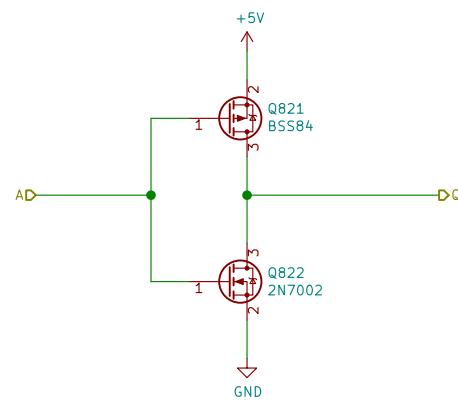
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

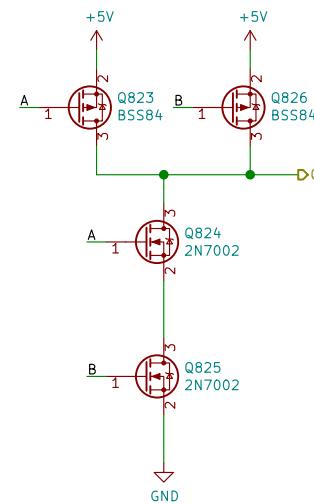
Id: 218/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5ED65E75/sheet5ED668D7/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 219/389

A

A

B

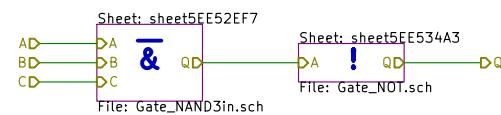
B

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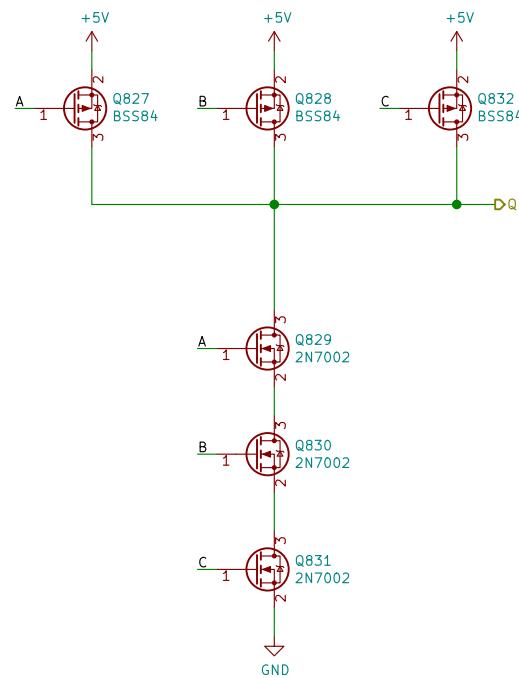
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EE55524/
File: Gate_AND3in.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 220/389

A



B

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A

B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EE55524/sheet5EE52EF7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 221/389

A

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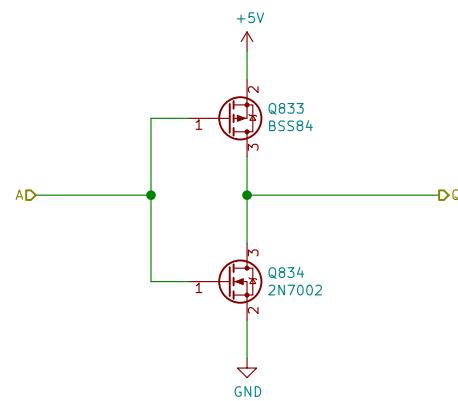
D

A

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/sheet5EE55524/sheet5EE534A3/

File: Gate_NOT.sch

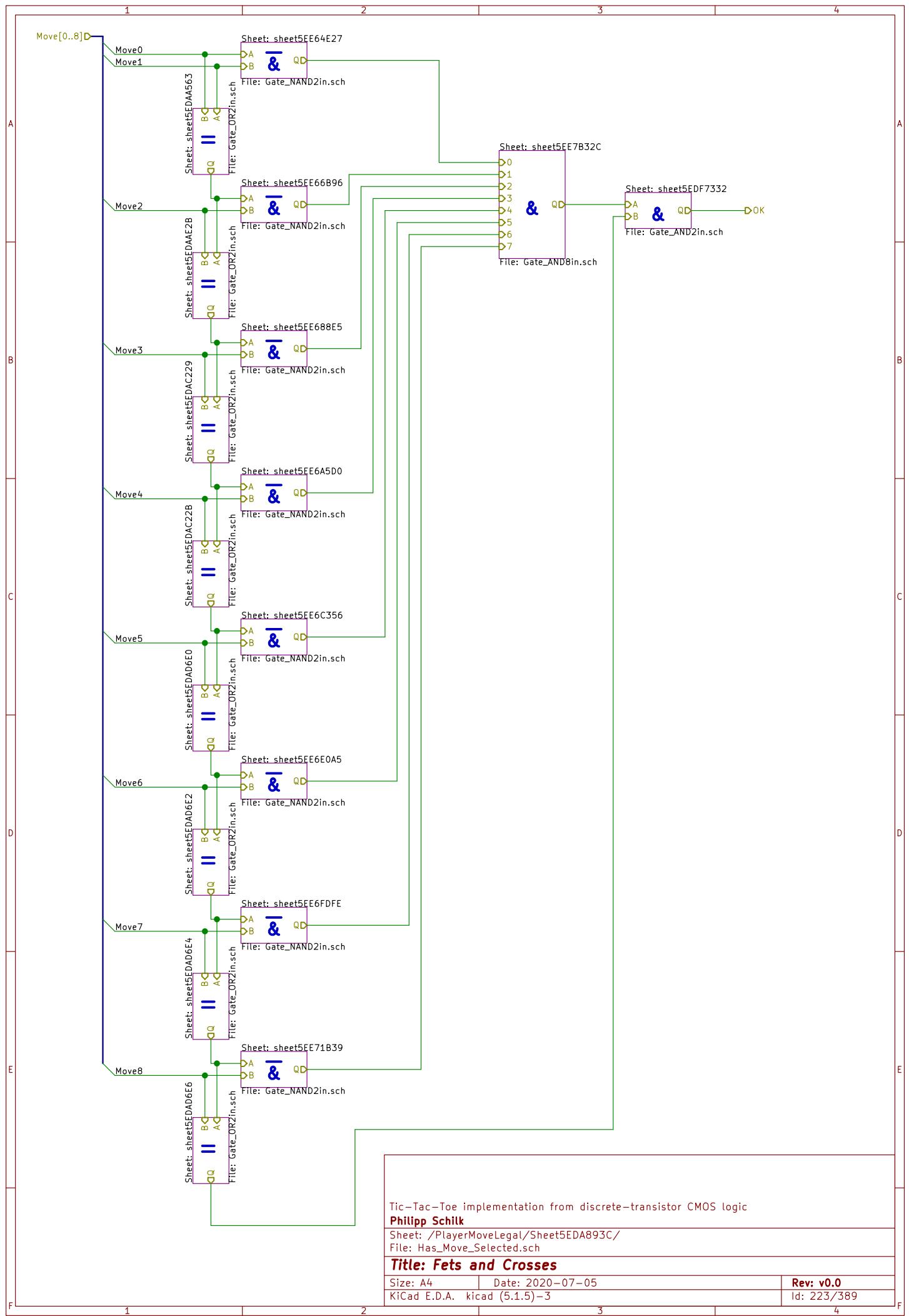
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 222/389



A

A

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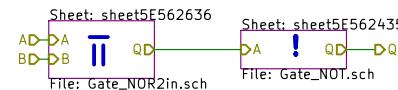
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAAE2B/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 224/389

A

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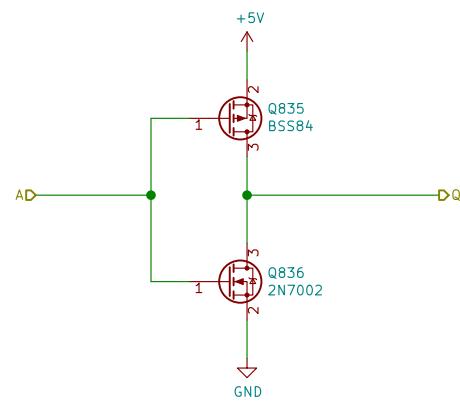
D

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAAE2B/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 225/389

A

A

B

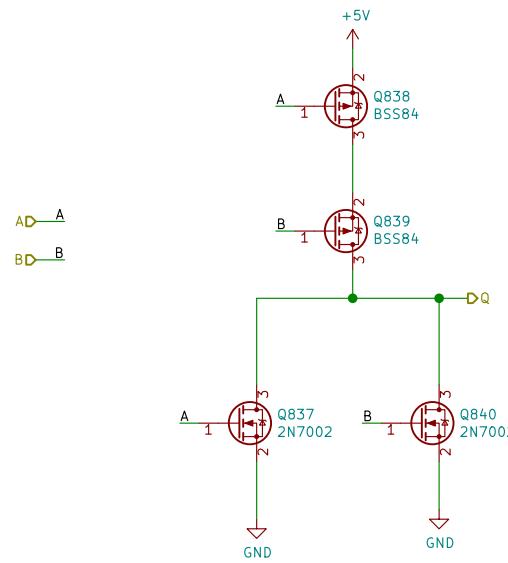
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAAE2B/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 226/389

A

A

B

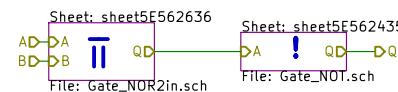
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAC229/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 227/389

A

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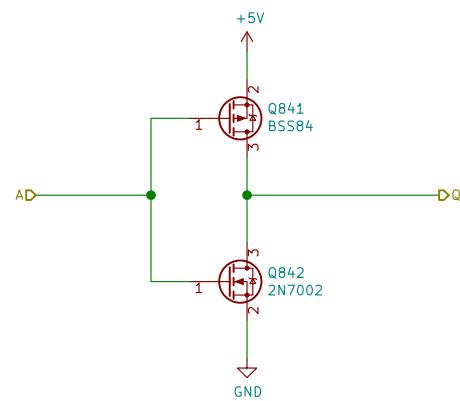
D

A

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAC229/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 228/389

A

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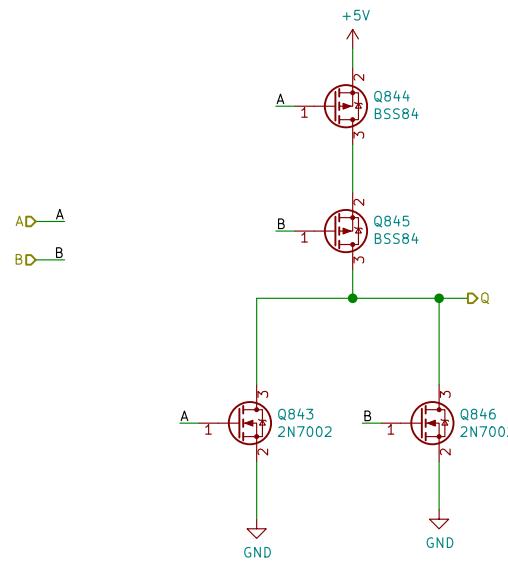
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

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File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 229/389

A

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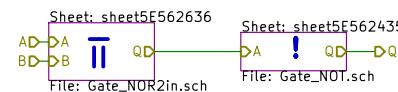
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 230/389

A

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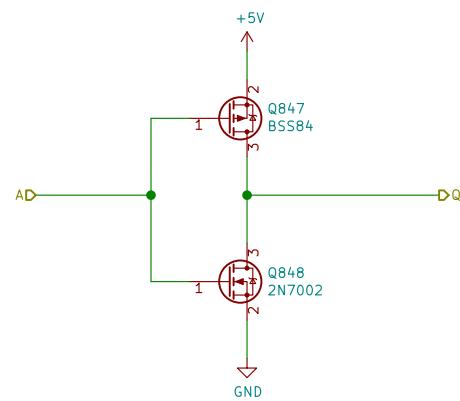
D

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

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File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 231/389

A

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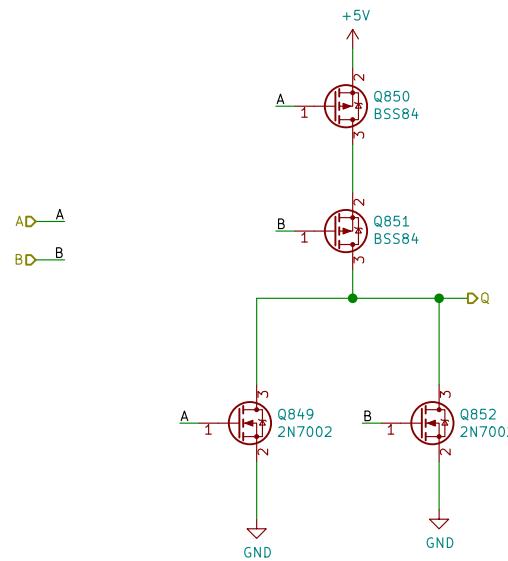
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

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File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 232/389

A

A

B

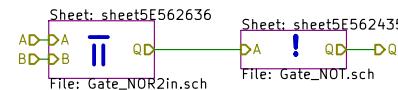
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 233/389

A

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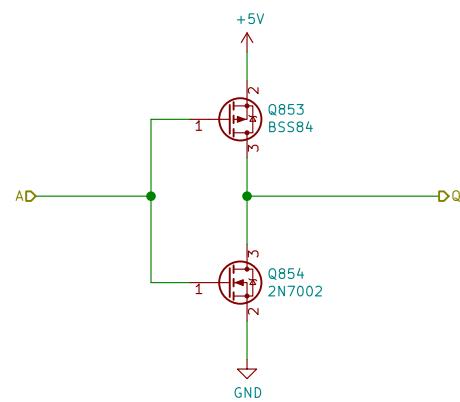
D

A

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

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File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 234/389

A

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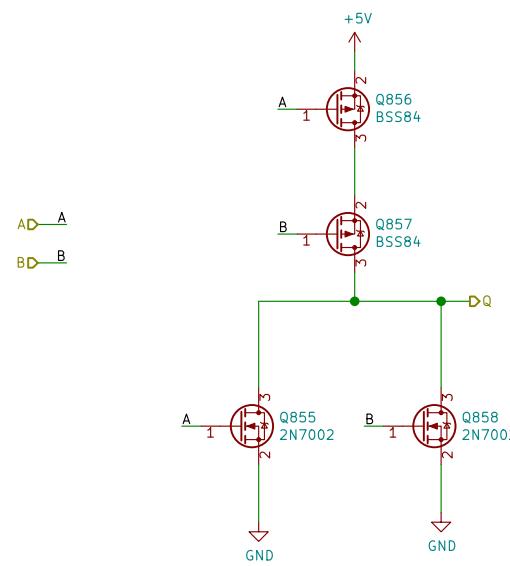
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E0/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 235/389

A

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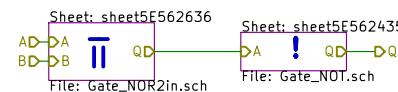
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

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File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 236/389

A

A

B

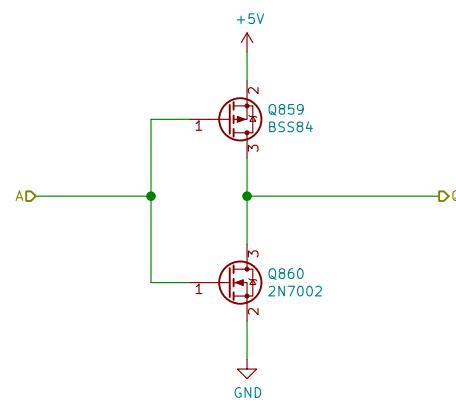
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E2/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 237/389

A

A

B

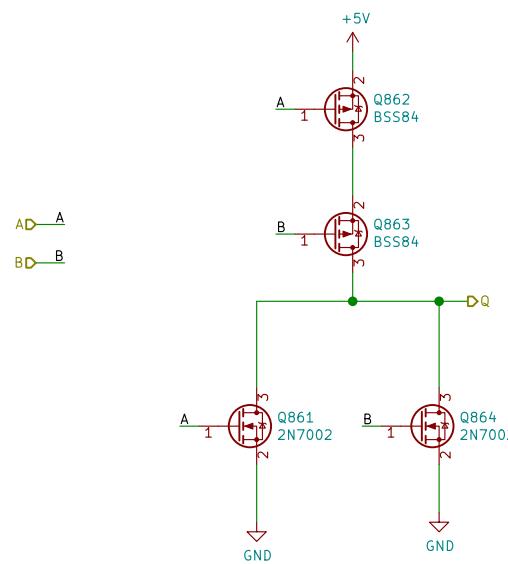
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E2/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 238/389

A

A

B

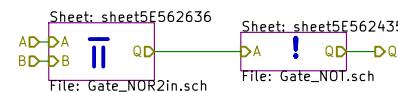
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E4/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 239/389

A

B

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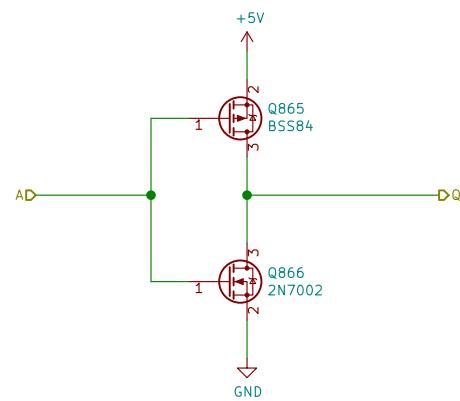
D

A

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E4/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 240/389

A

A

B

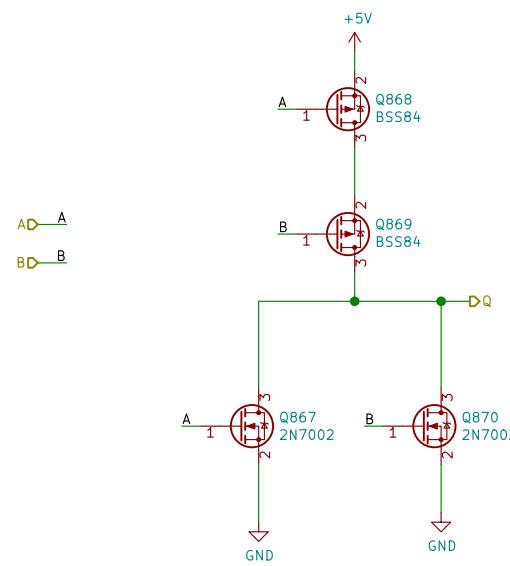
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

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File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 241/389

A

A

B

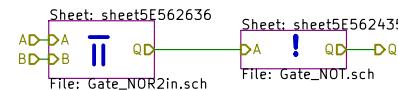
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E6/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 242/389

A

B

C

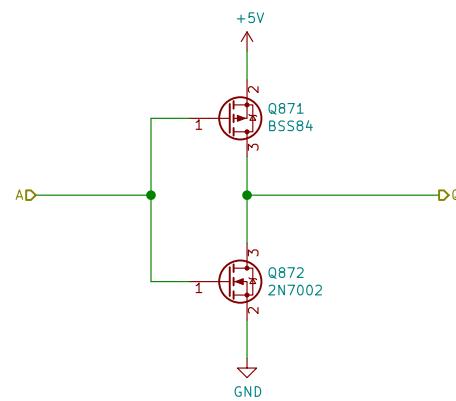
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E6/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 243/389

A

A

B

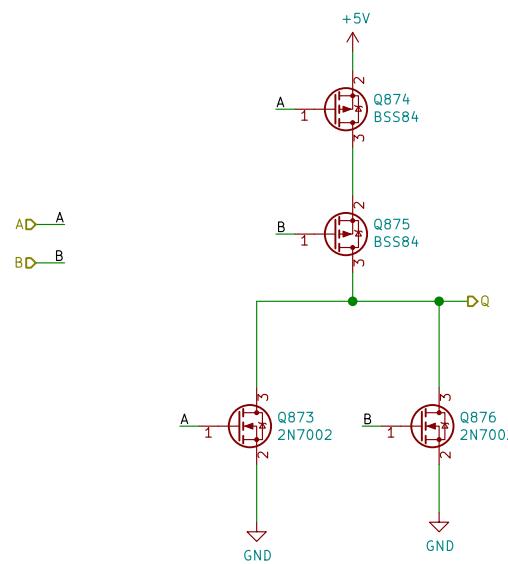
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAD6E6/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 244/389

A

B

C

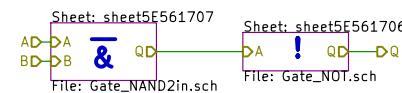
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDF7332/

File: Gate_AND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 245/389

A

A

B

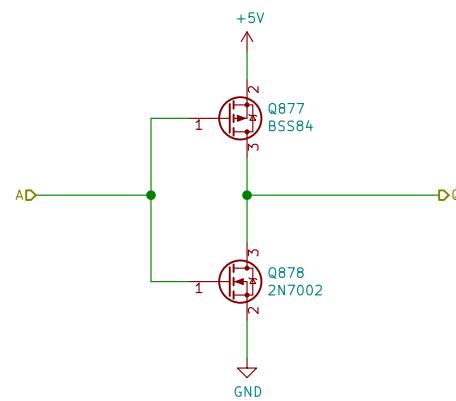
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDF7332/sheet5E561706/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

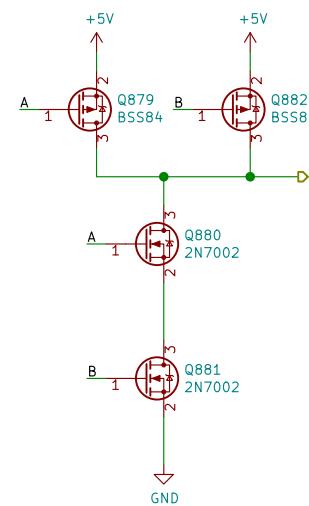
Id: 246/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDF7332/sheet5E561707/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 247/389

A

A

B

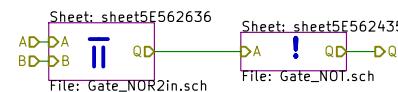
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAA563/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 248/389

A

B

C

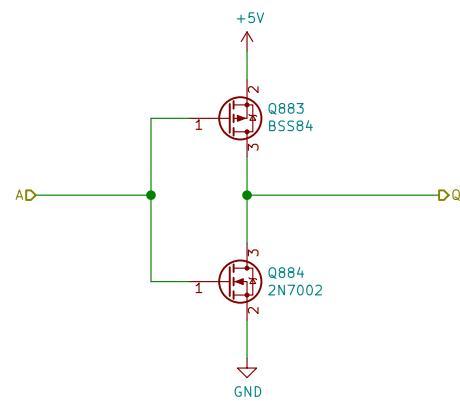
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAA563/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 249/389

A

A

B

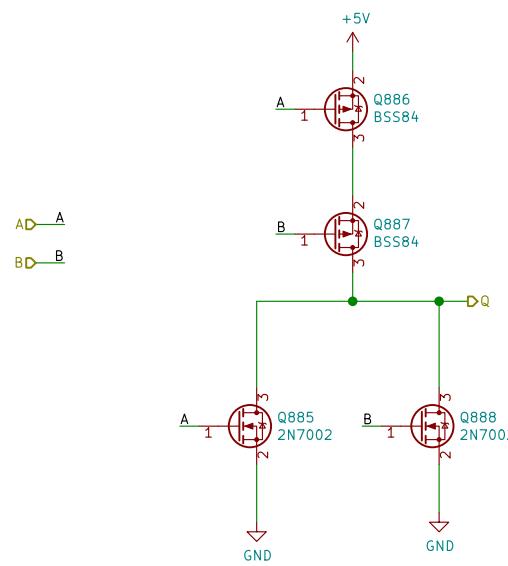
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EDAA563/sheet5E562636/
File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

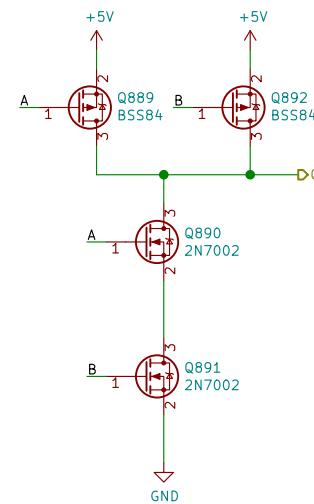
Id: 250/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE64E27/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

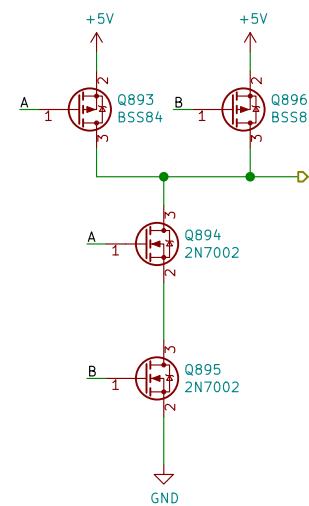
Id: 251/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE66B96/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 252/389

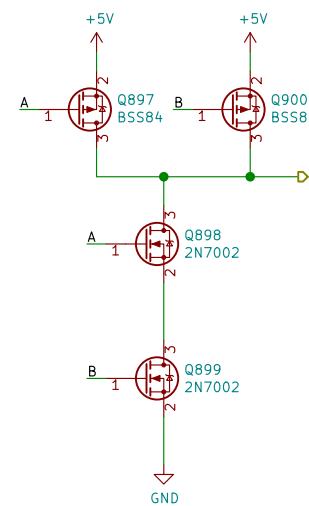
A

B

C

D

AD—A
BD—B



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE688E5/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

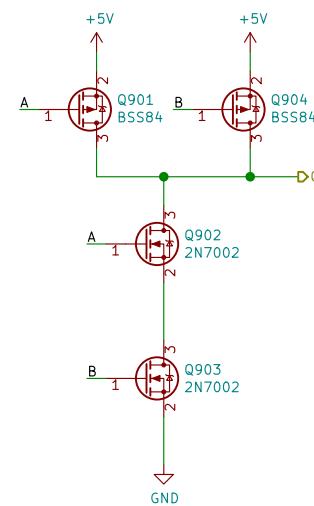
Id: 253/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE6A5D0/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

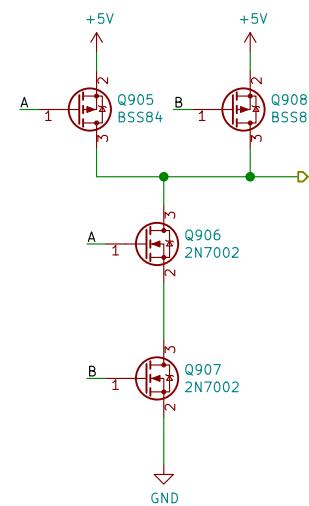
Id: 254/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE6C356/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

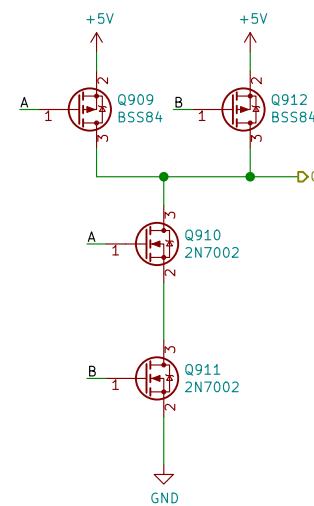
Id: 255/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE6E0A5/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

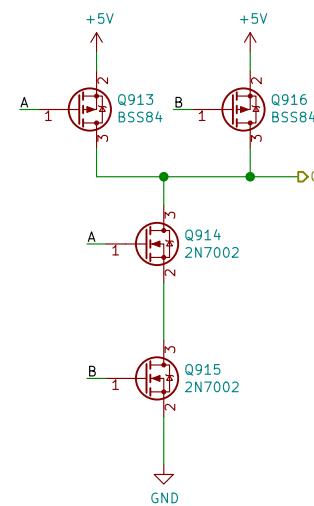
Id: 256/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE6FDDE/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

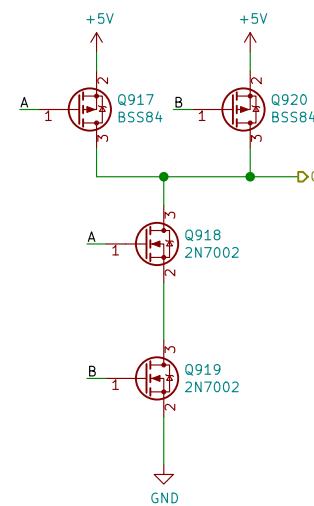
Id: 257/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE71B39/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 258/389

A

A

B

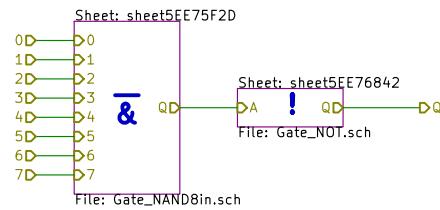
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE7B32C/

File: Gate_AND8in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

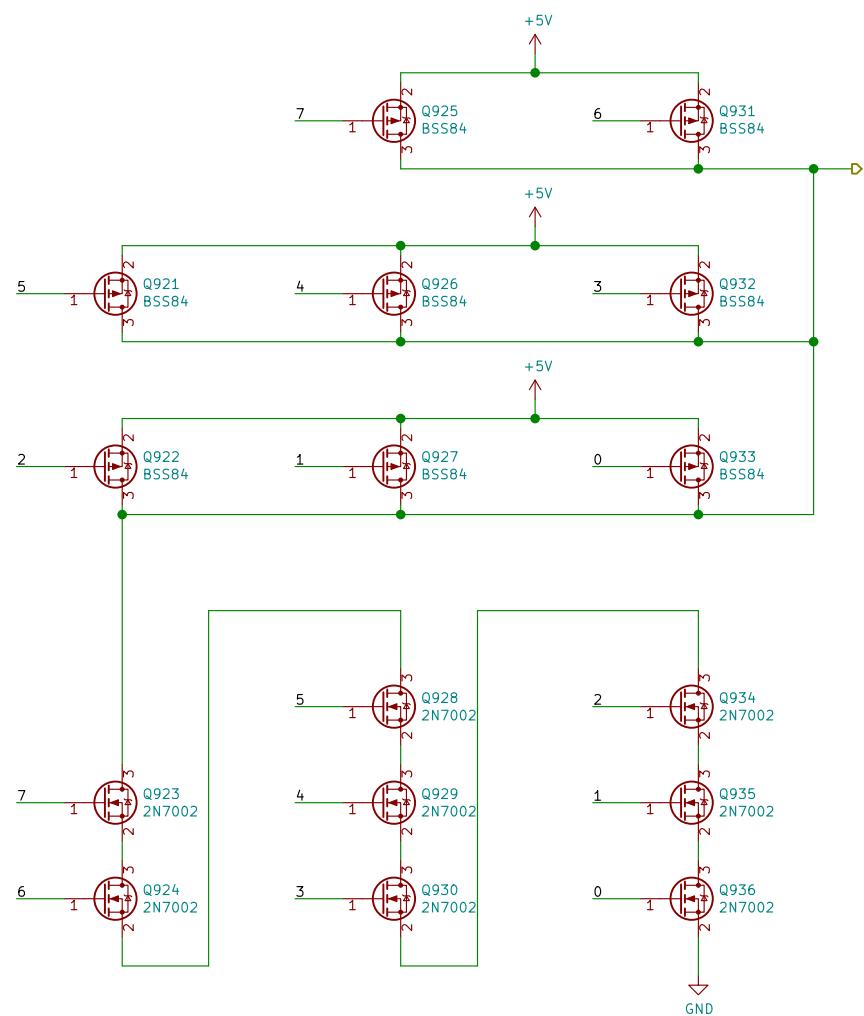
Id: 259/389

1 2 3 4 5 6

A

A

0D 0
1D 1
2D 2
3D 3
4D 4
5D 5
6D 6
7D 7



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE7B32C/sheet5EE75F2D/
File: Gate_NAND8in.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 260/389

1 2 3 4 5 6

A

B

C

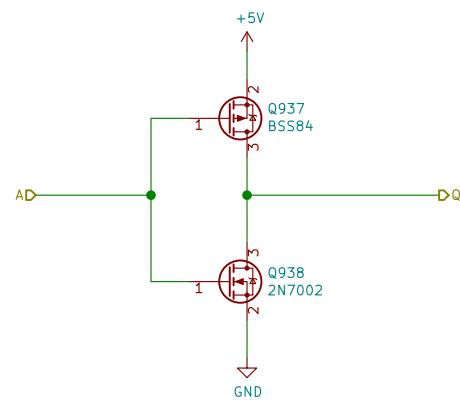
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMoveLegal/Sheet5EDA893C/sheet5EE7B32C/sheet5EE76842/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

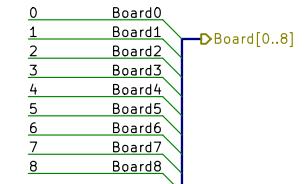
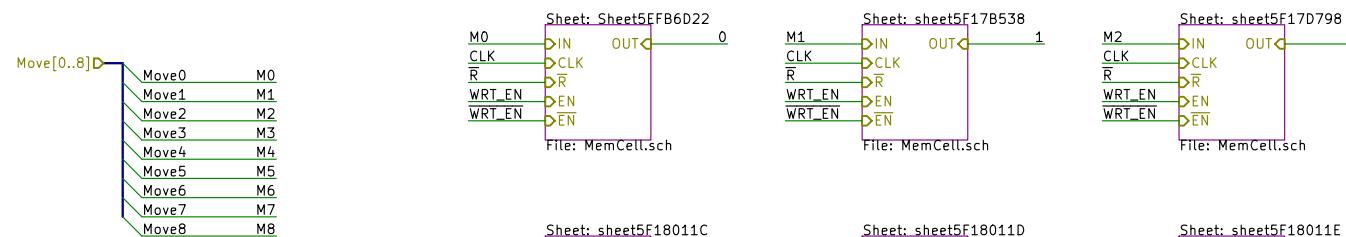
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

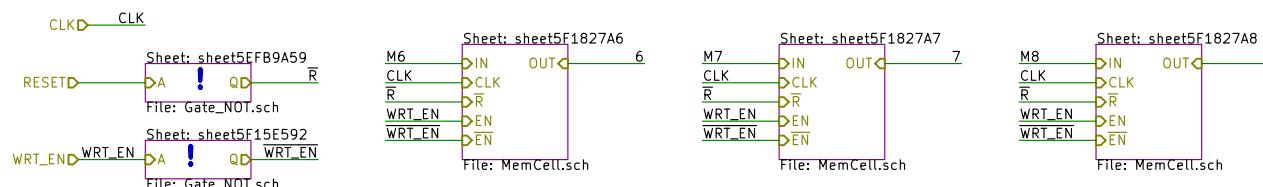
Id: 261/389

1 2 3 4 5 6

A



B



C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk
Sheet: /PlayerMem_2/
File: PlayerMem.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 262/389

1 2 3 4 5 6

A

B

C

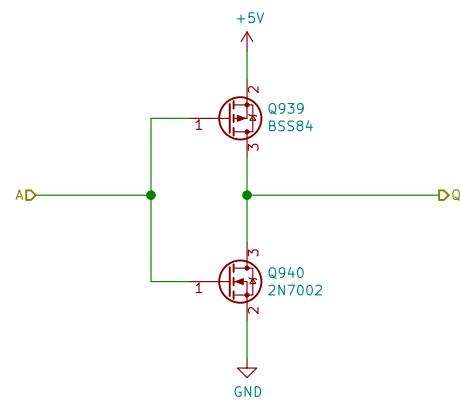
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5EFB9A59/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 263/389

A

B

C

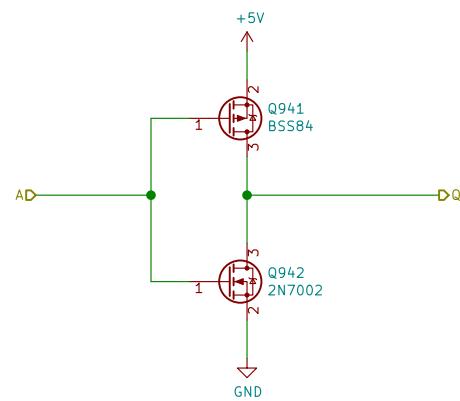
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F15E592/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 264/389

A

A

B

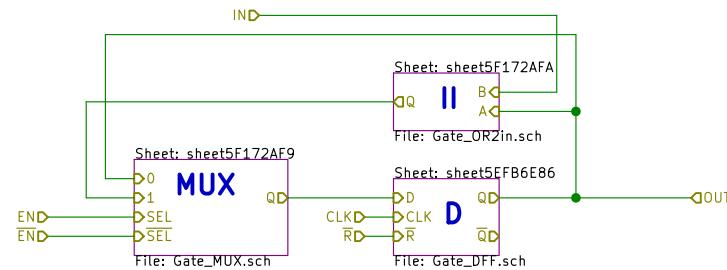
B

C

C

D

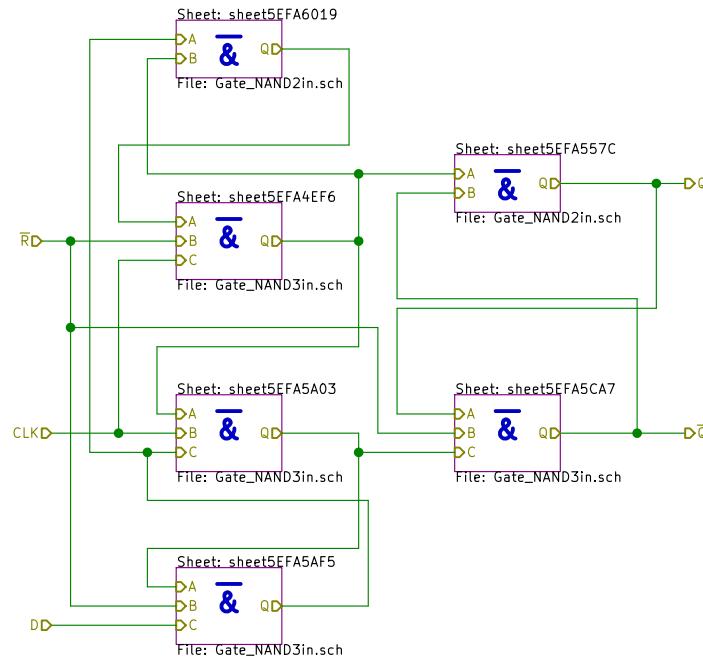
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/Sheet5EFB6D22/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 265/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5EFB6E86/
File: Gate_DFF.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 266/389

A

A

B

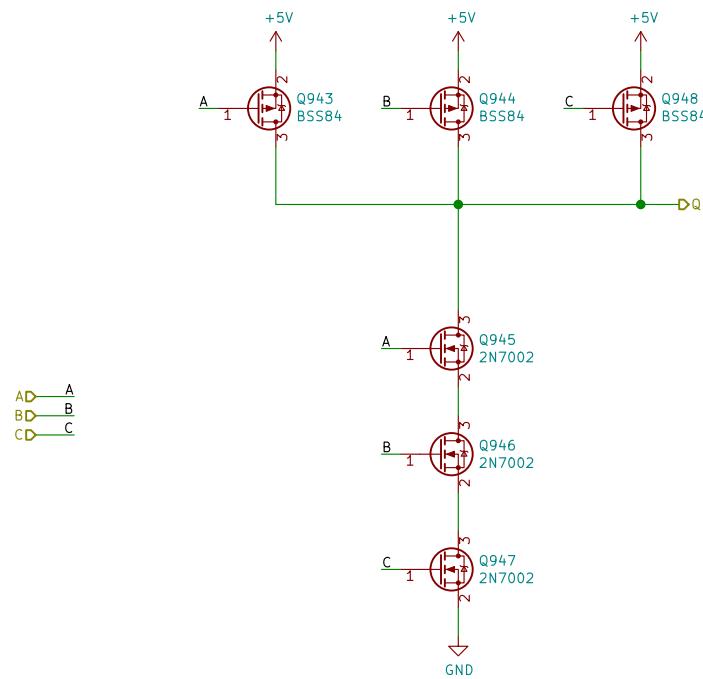
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

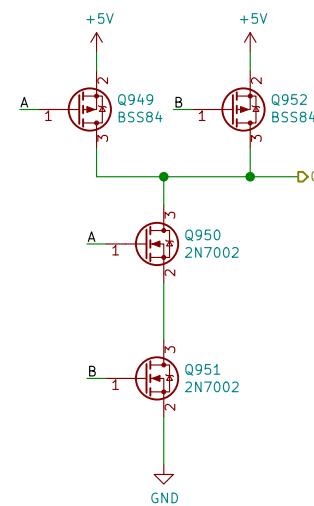
Id: 267/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/Sheet5EFA557C/sheet5EFA557C/
File: Gate_NAND2in.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 268/389

A

A

B

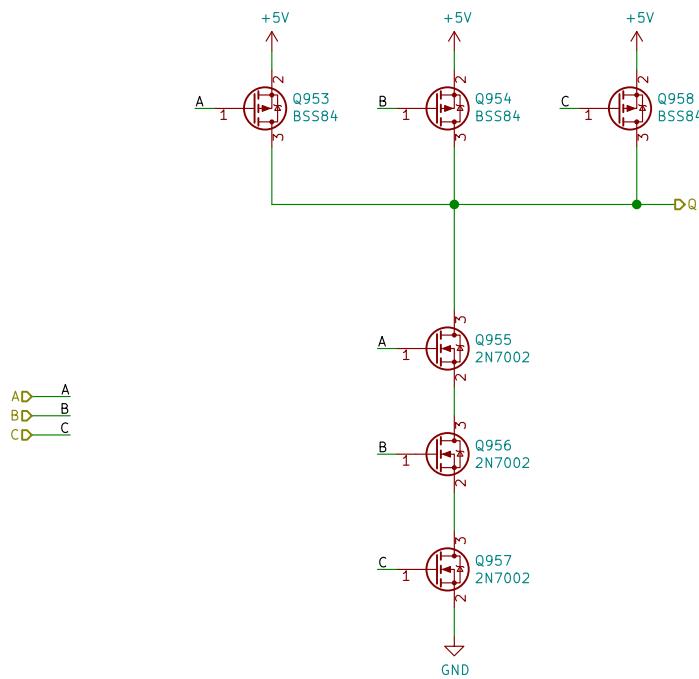
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFA6D22/sheet5EFA6E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 269/389

A

A

B

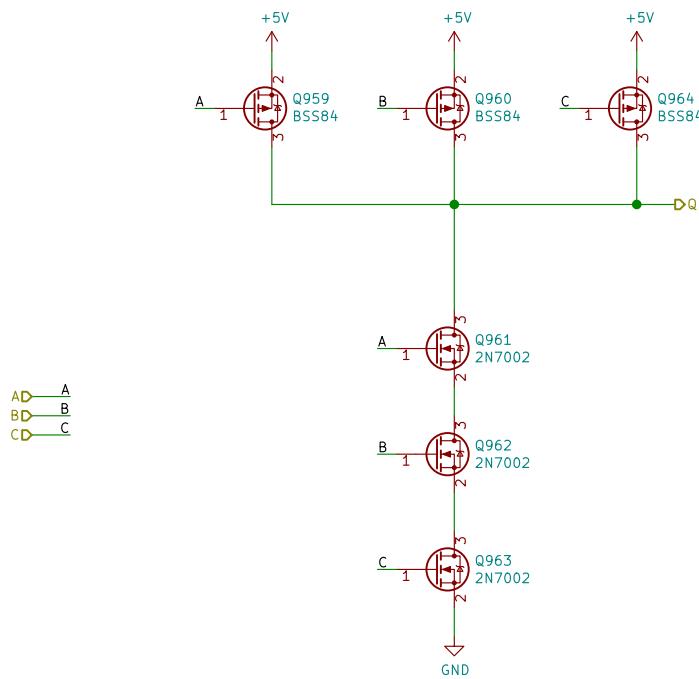
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFA5AF5/sheet5EFA5AF5/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 270/389

A

A

B

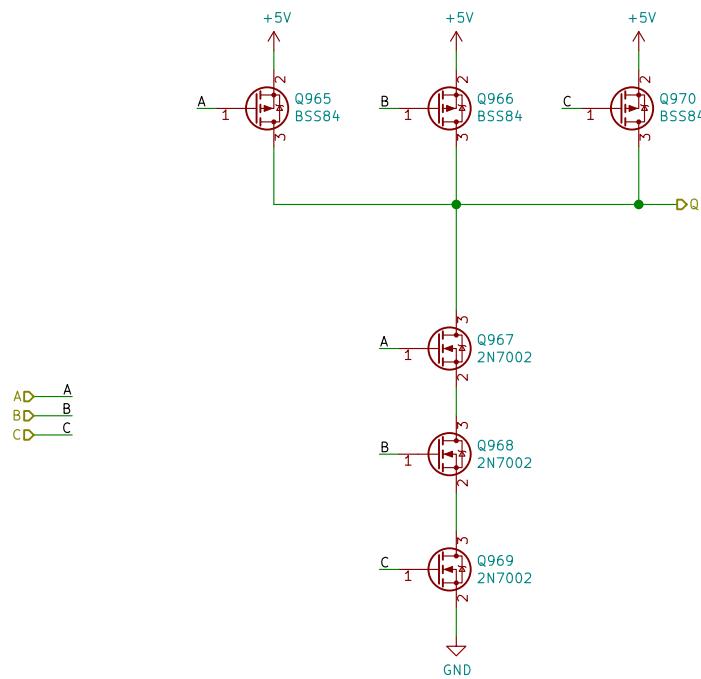
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFA5CA7/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

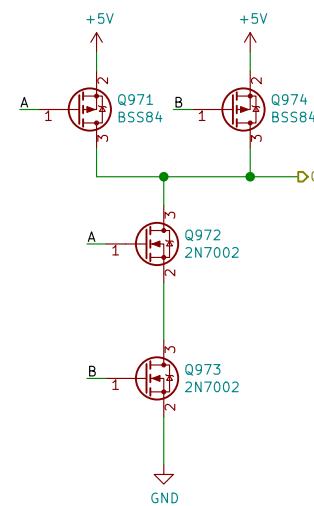
Rev: v0.0
Id: 271/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFA6D22/sheet5EFA6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 272/389

A

B

C

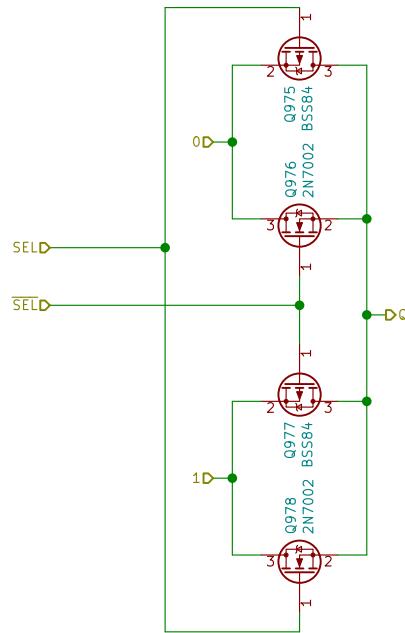
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 273/389

A

A

B

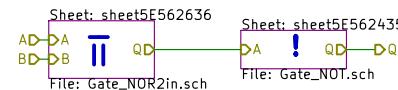
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5F172AFA/
File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 274/389

A

B

C

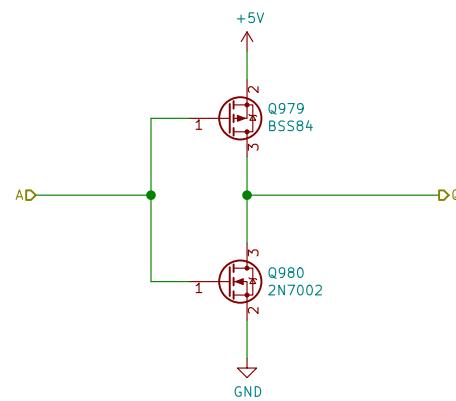
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 275/389

A

A

B

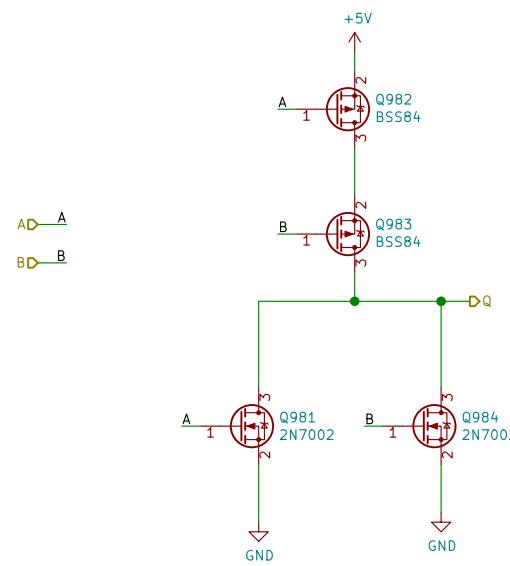
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/Sheet5EFB6D22/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 276/389

A

A

B

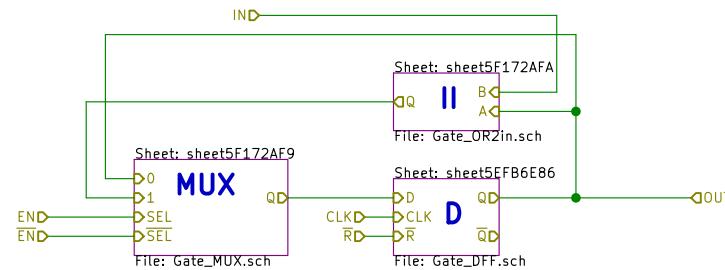
B

C

C

D

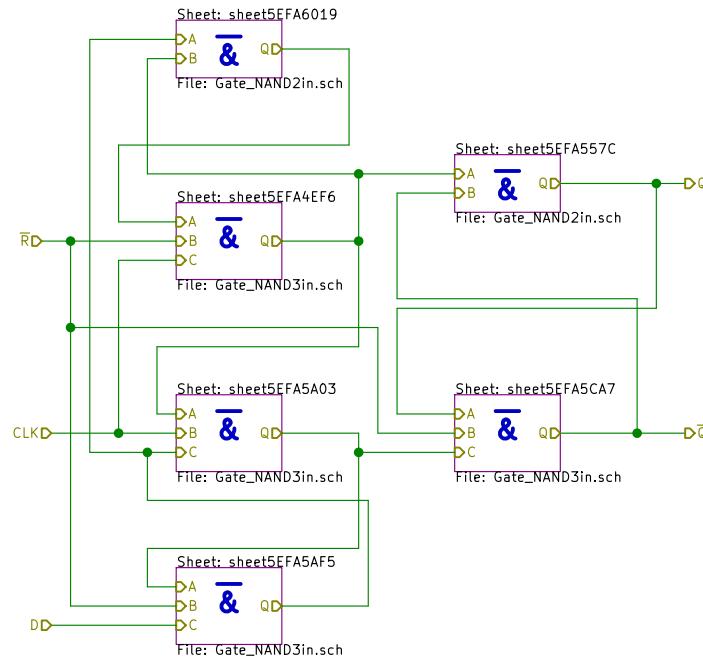
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F17B538/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 277/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F17B538/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 278/389

A

A

B

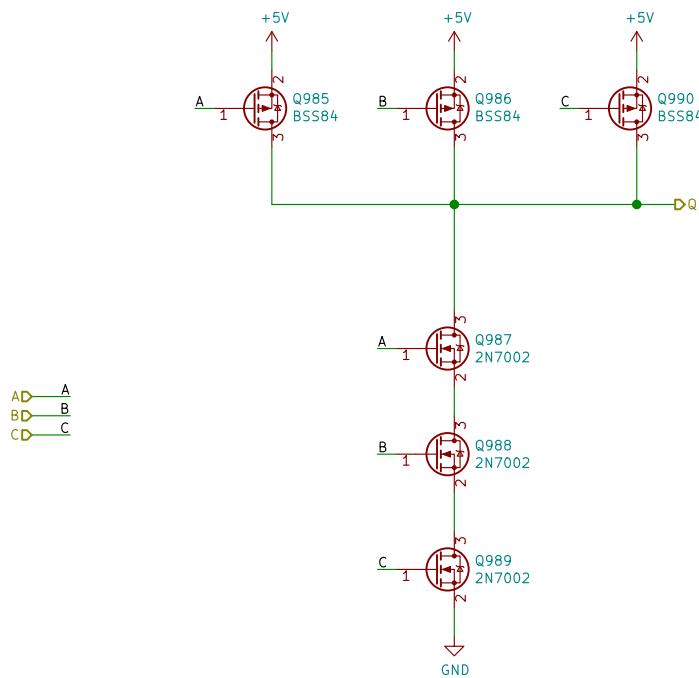
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

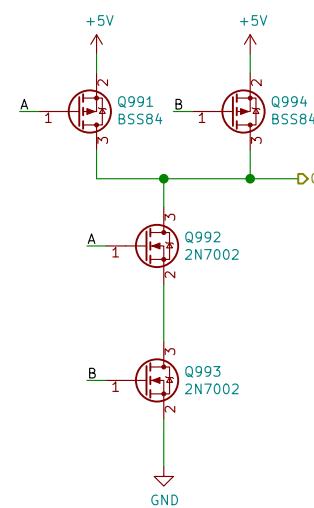
Id: 279/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 280/389

A

A

B

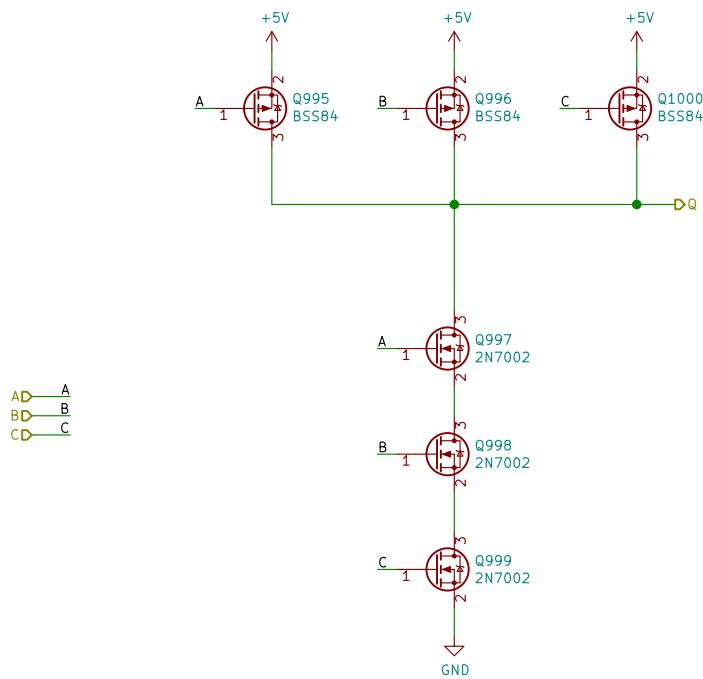
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 281/389

A

A

B

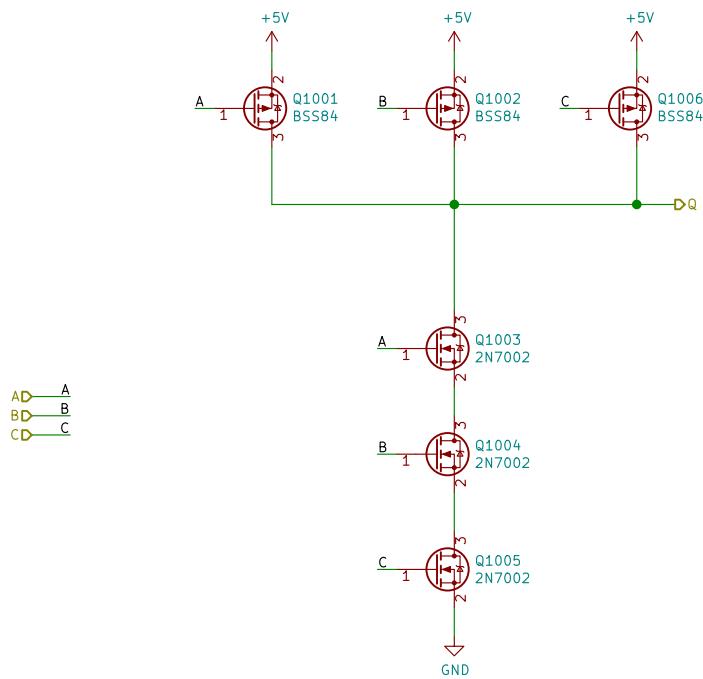
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5E8FB6E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 282/389

A

A

B

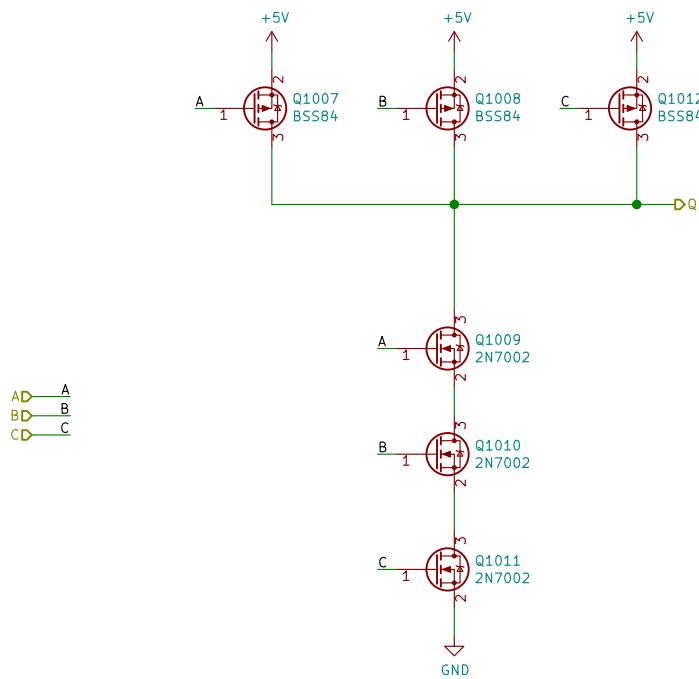
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5EFA5CA7/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

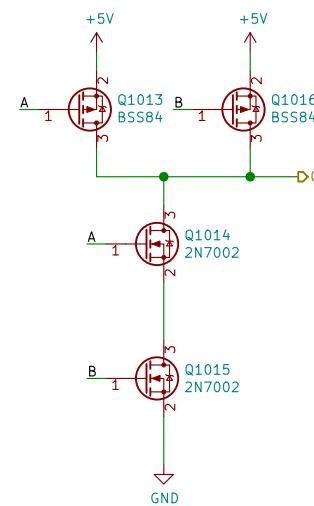
Id: 283/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5EFA6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

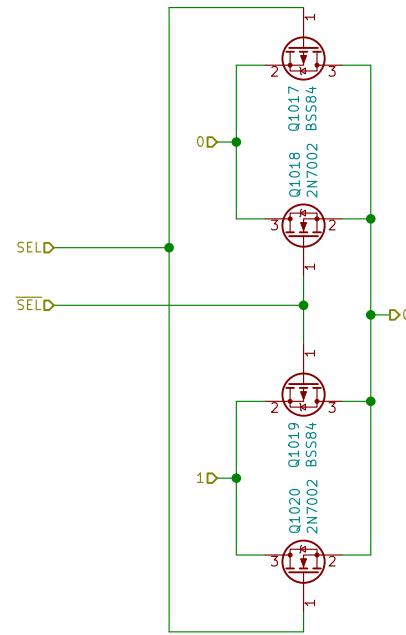
Id: 284/389

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 285/389

A

A

B

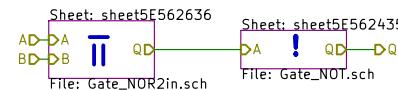
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 286/389

A

B

C

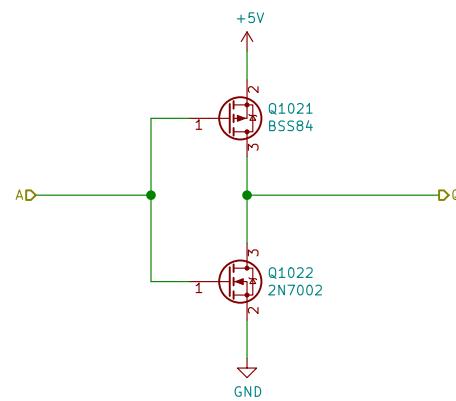
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17B538/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 287/389

A

A

B

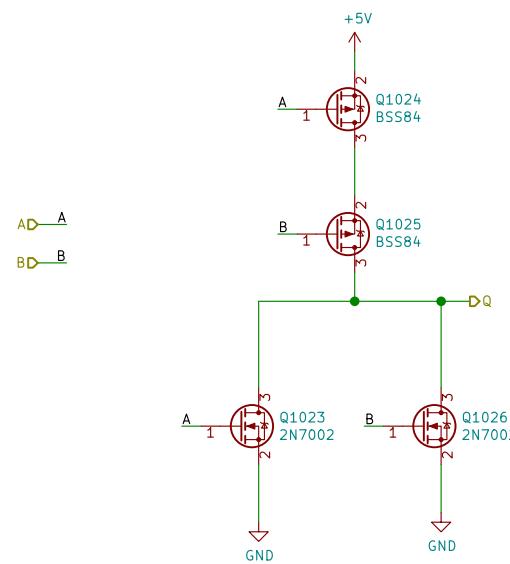
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F17B538/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 288/389

A

A

B

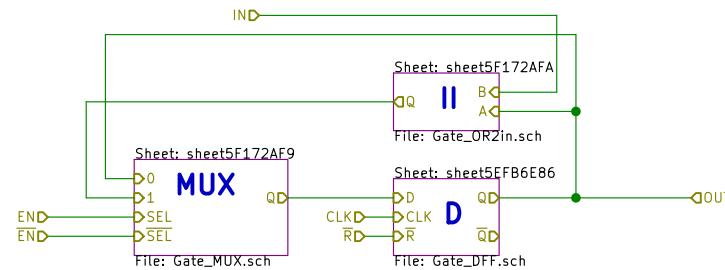
B

C

C

D

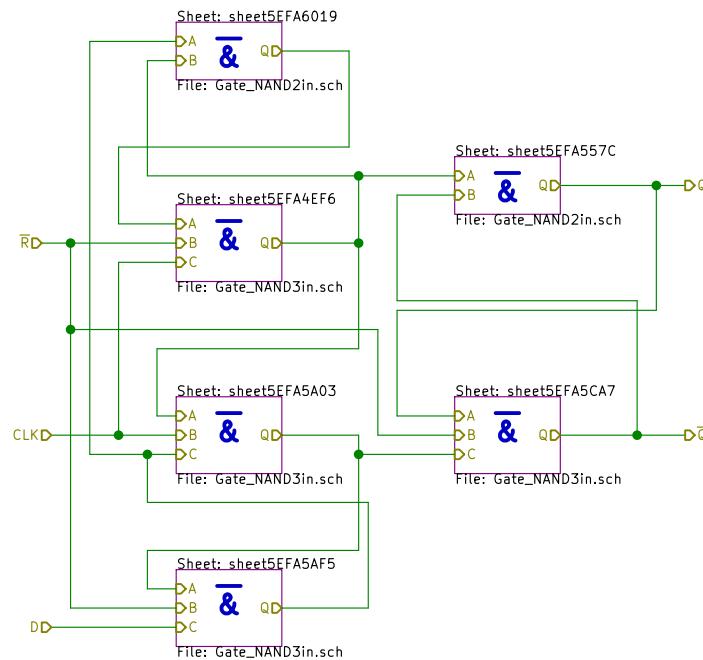
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F17D798/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 289/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F17D798/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 290/389

A

A

B

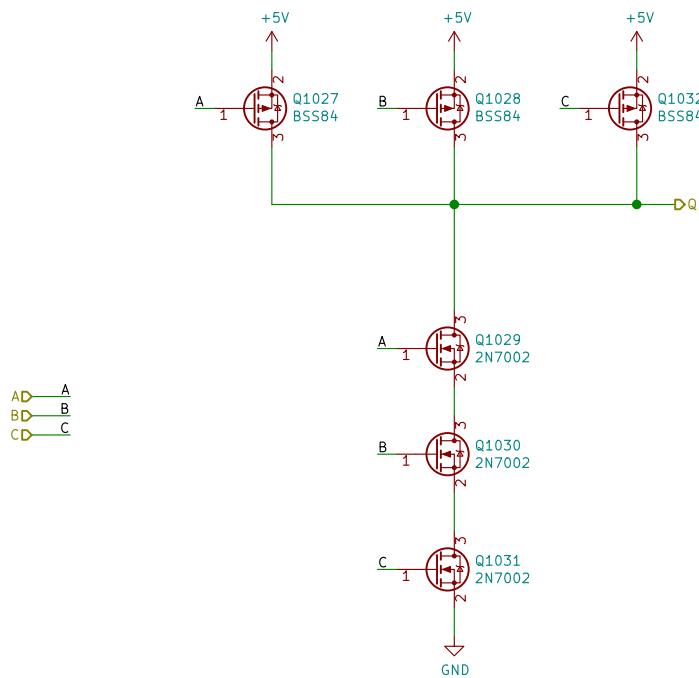
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFB6E86/sheet5EFA4EF6/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

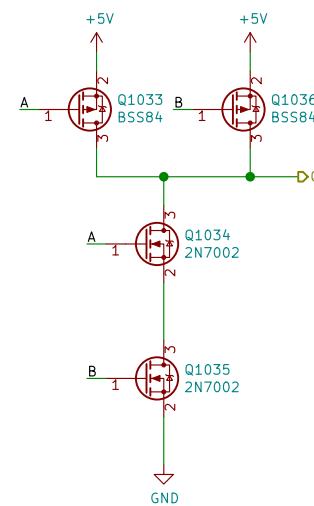
Rev: v0.0
Id: 291/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 292/389

A

A

B

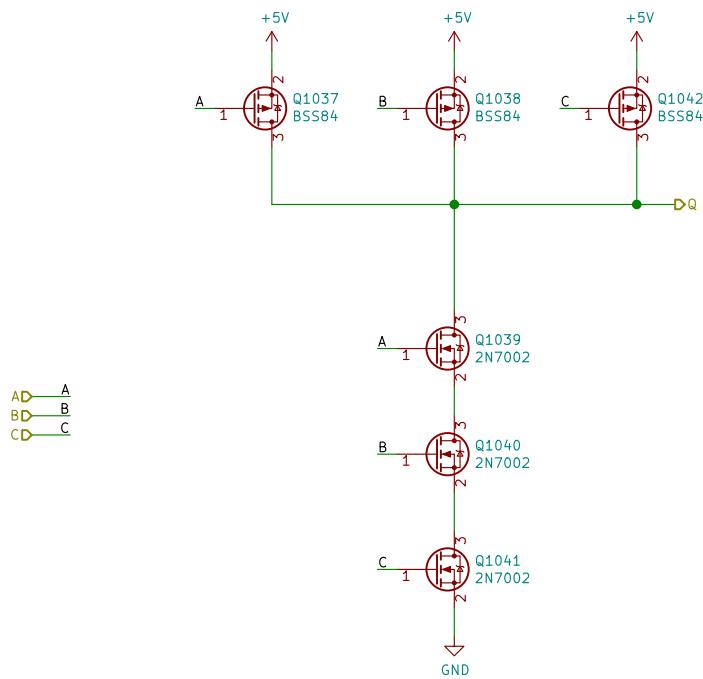
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 293/389

A

A

B

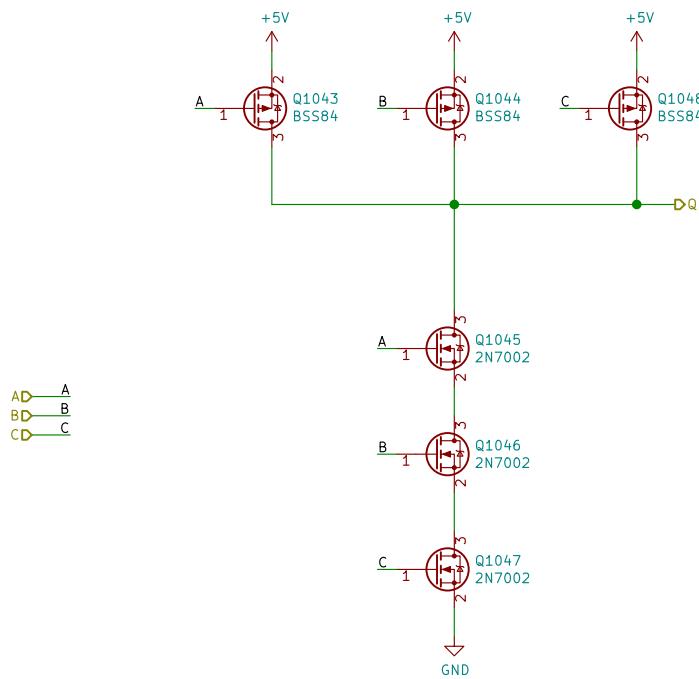
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFA5AF5/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 294/389

A

A

B

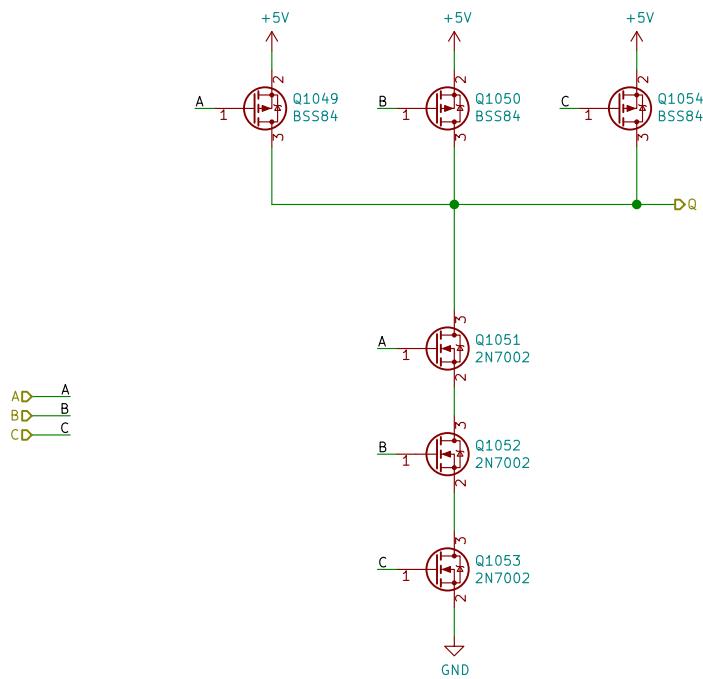
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

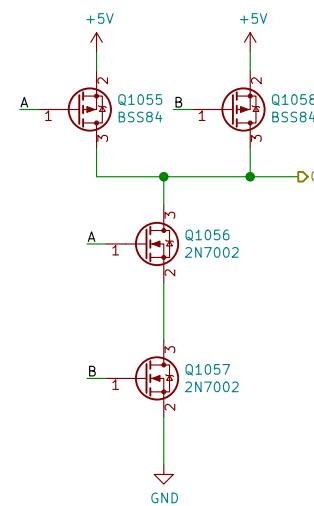
Id: 295/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 296/389

A

B

C

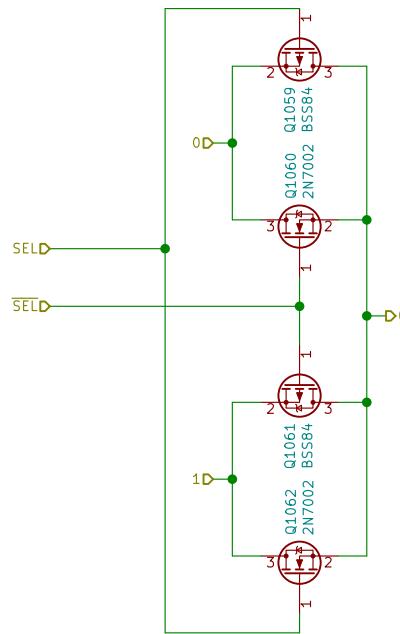
D

A

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C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 297/389

A

A

B

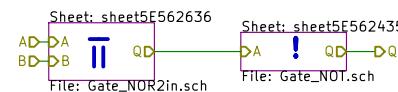
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 298/389

A

A

B

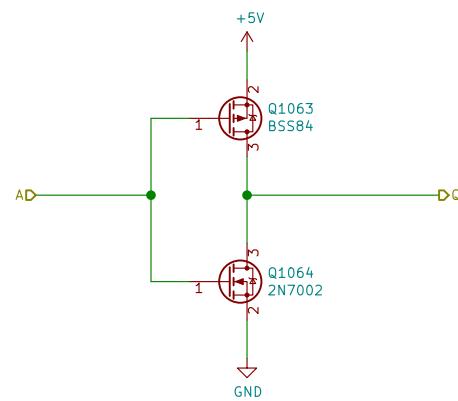
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F17D798/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 299/389

A

A

B

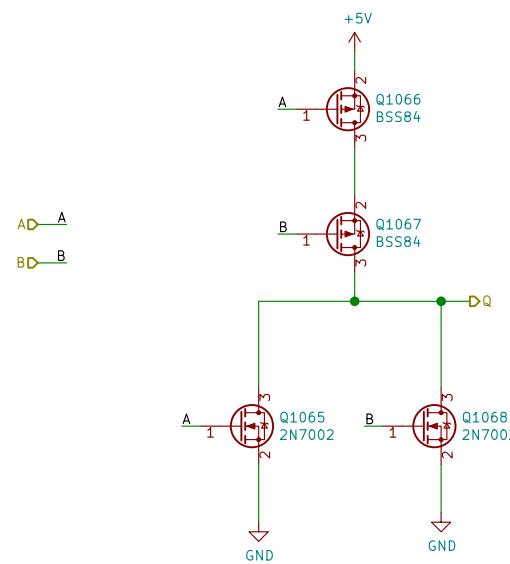
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F17D798/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 300/389

A

A

B

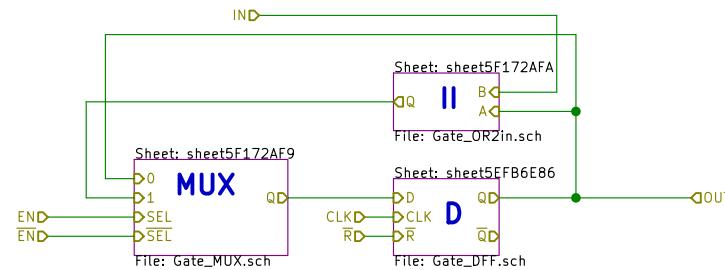
B

C

C

D

D



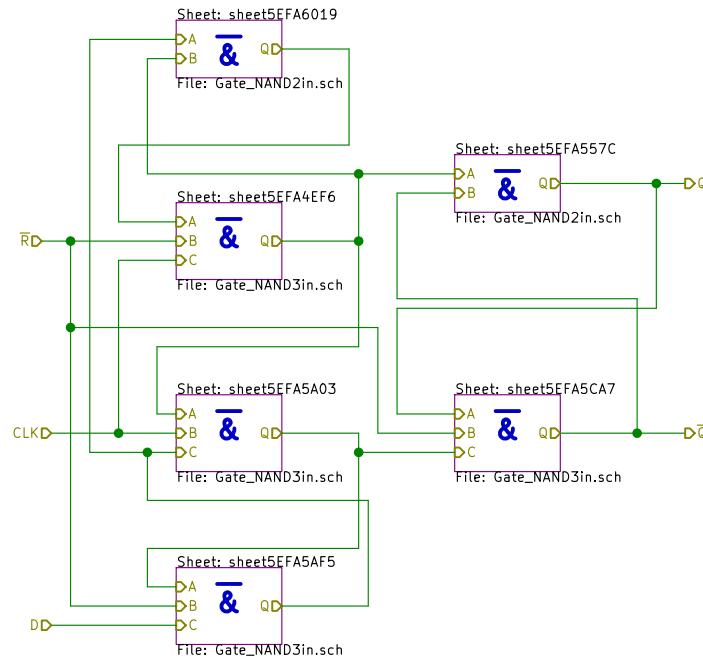
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/
File: MemCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 301/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F18011C/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 302/389

A

A

B

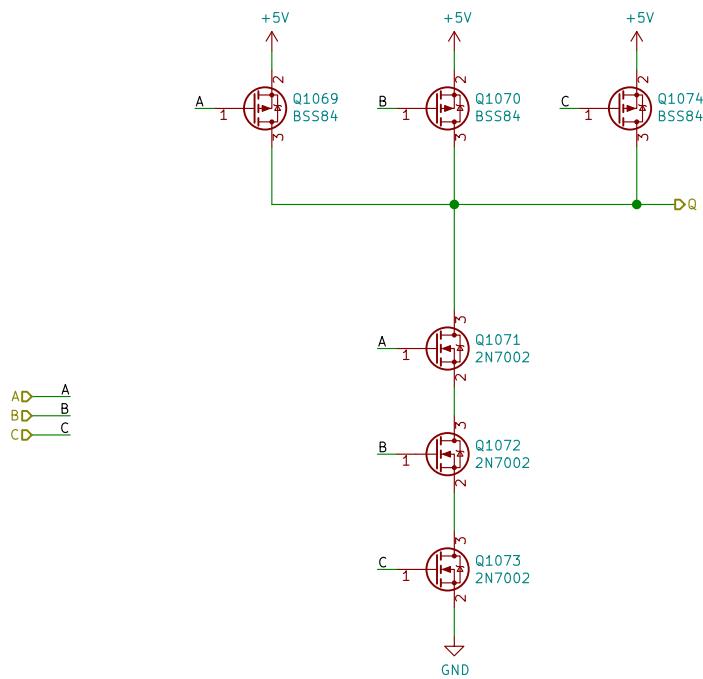
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

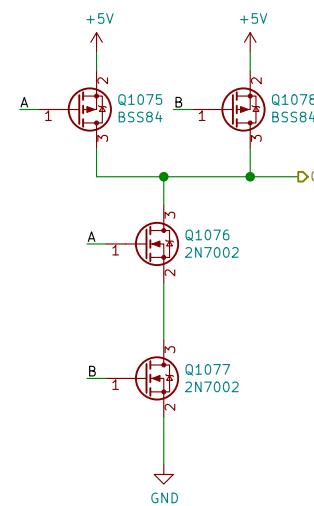
Id: 303/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5E86E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 304/389

A

A

B

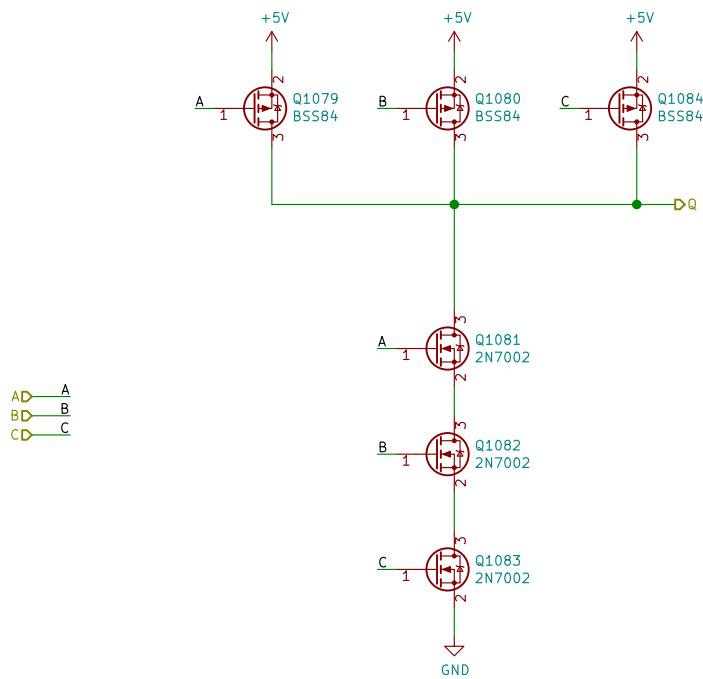
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 305/389

A

A

B

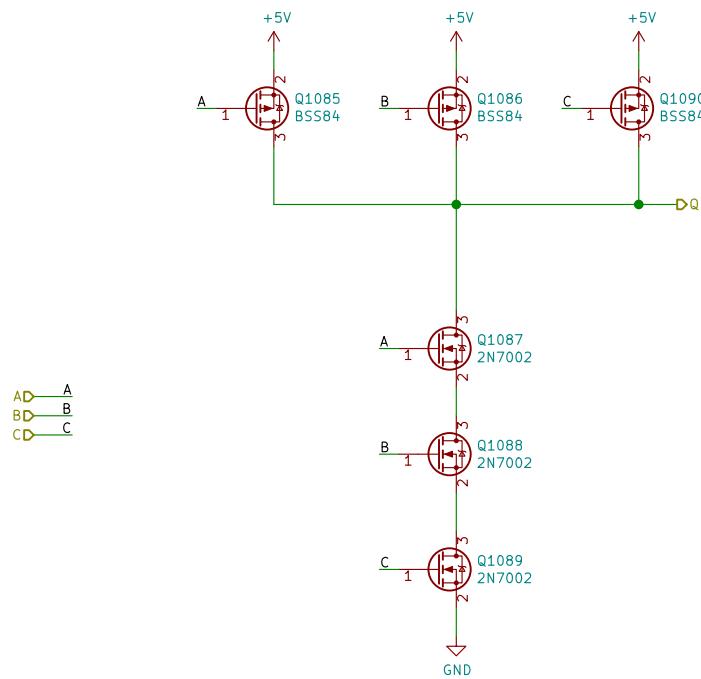
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 306/389

A

A

B

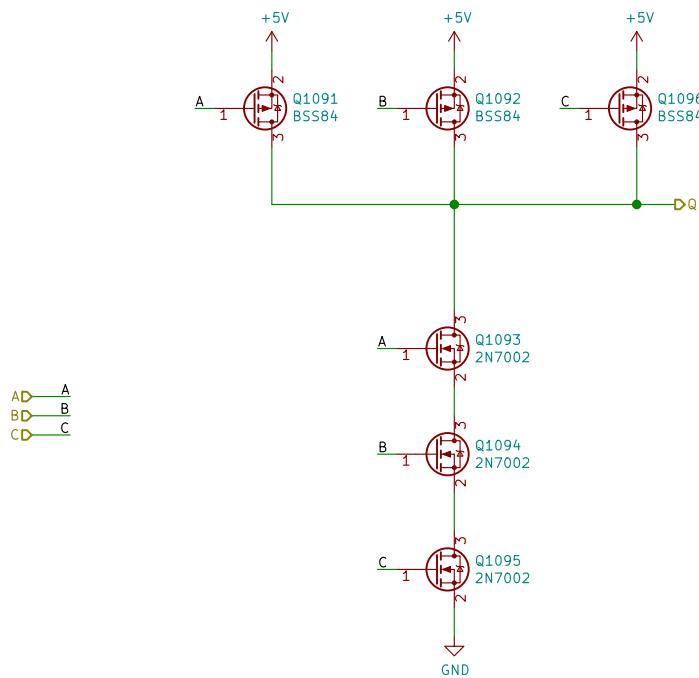
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5E86E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

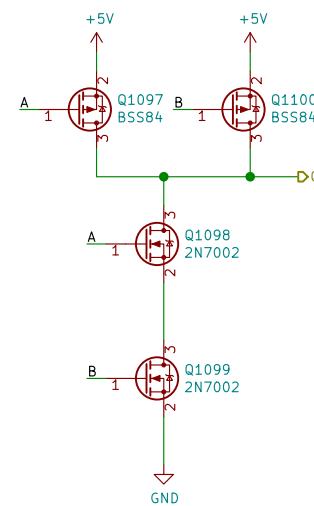
Id: 307/389

A

B

C

D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 308/389

A

B

C

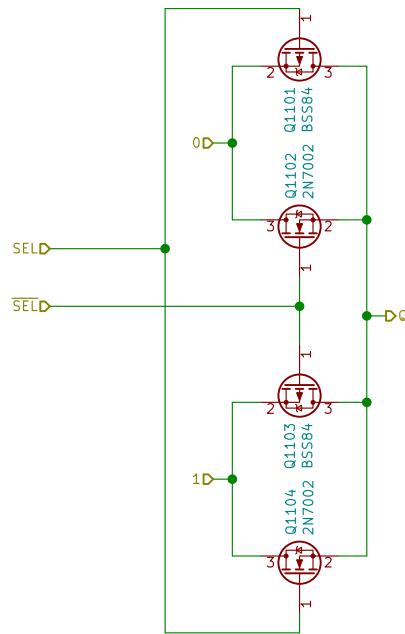
D

A

B

C

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 309/389

A

A

B

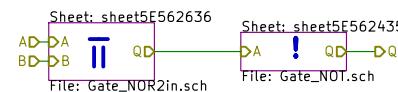
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 310/389

A

A

B

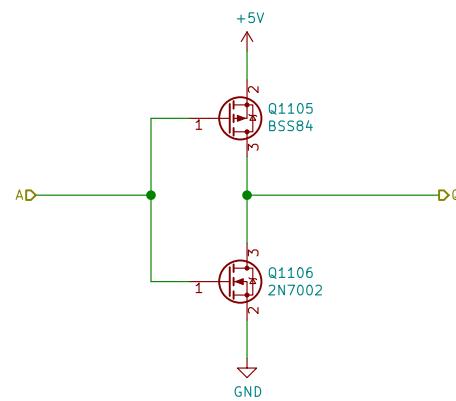
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011C/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 311/389

A

A

B

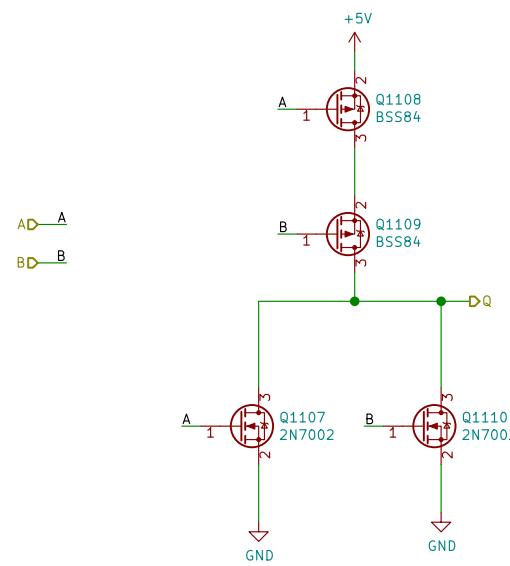
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F18011C/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 312/389

A

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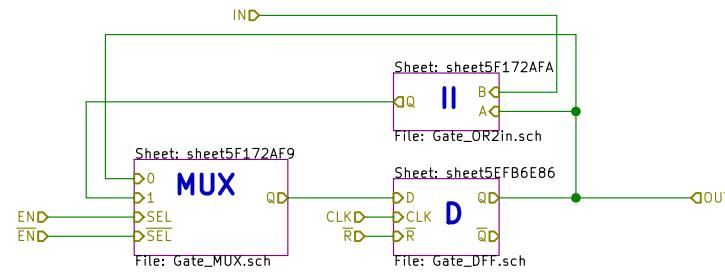
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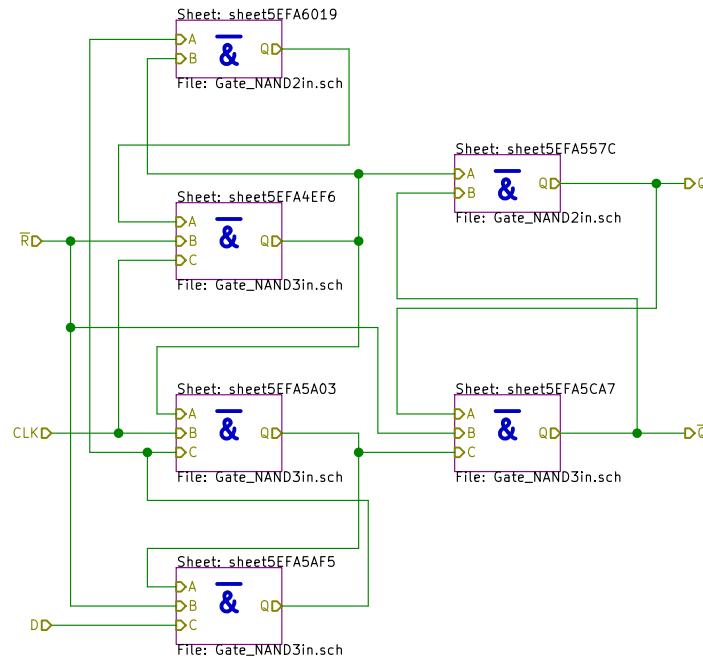
D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F18011D/
File: MemCell.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 313/389

A



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Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5EFB6E86/
 File: Gate_DFF.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
 KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
 Id: 314/389

A

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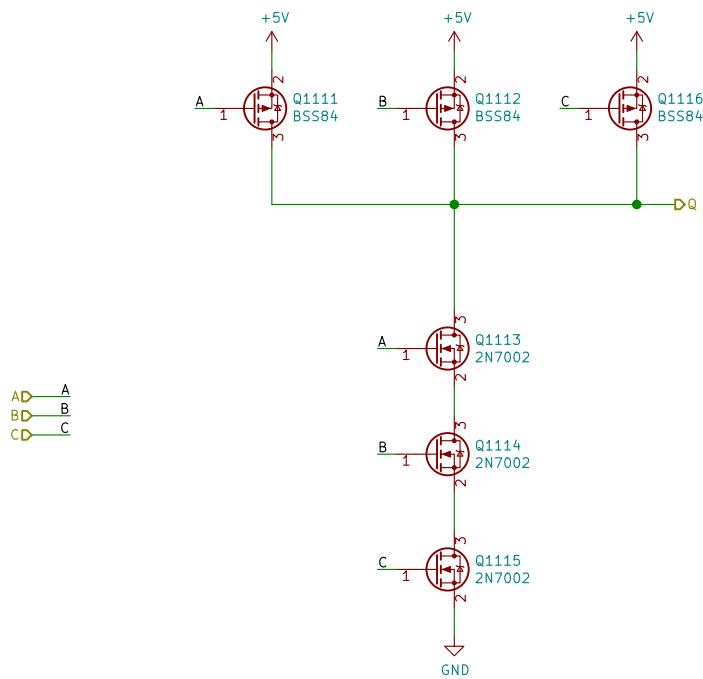
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

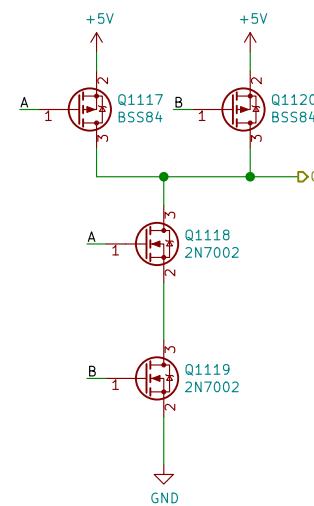
Id: 315/389

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 316/389

A

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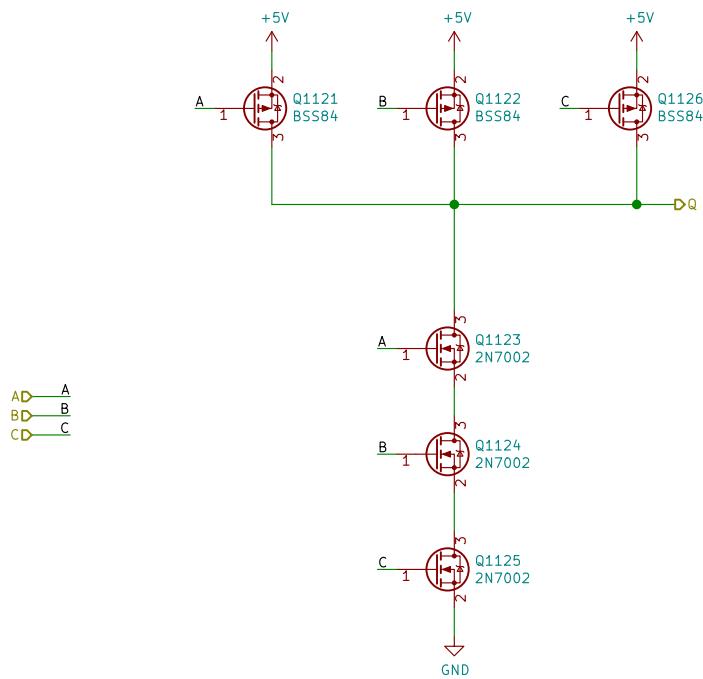
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5E86E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 317/389

A

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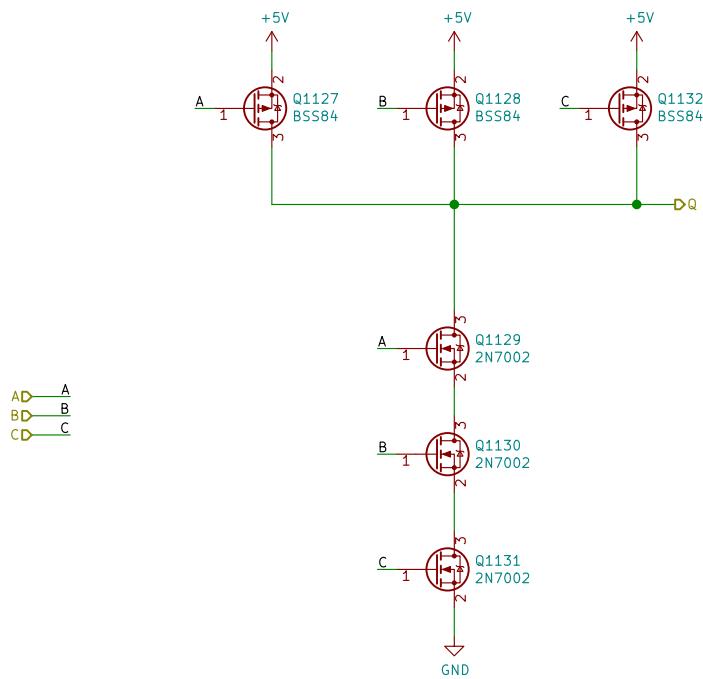
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5EFA5AF5/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 318/389

A

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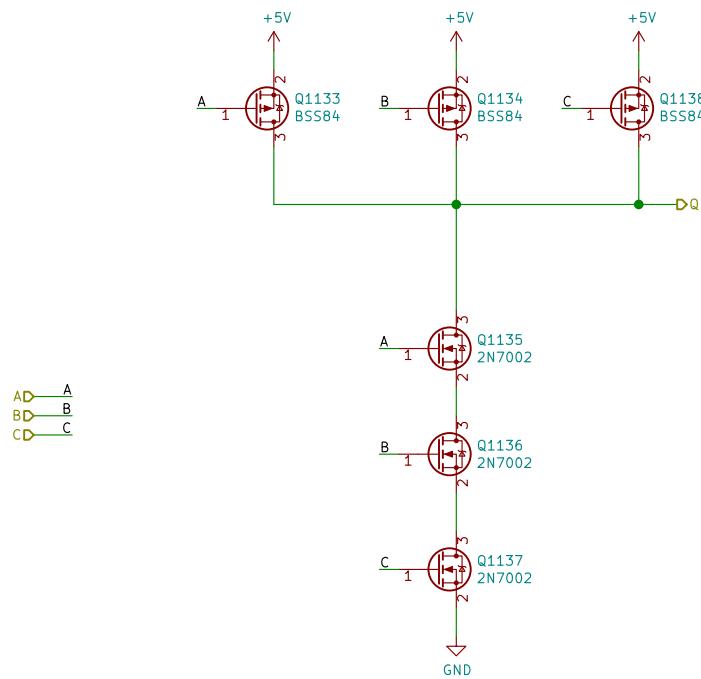
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5E86E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

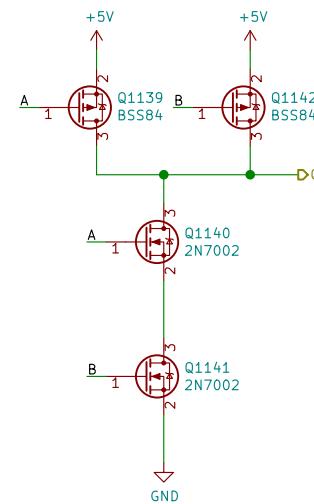
Id: 319/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 320/389

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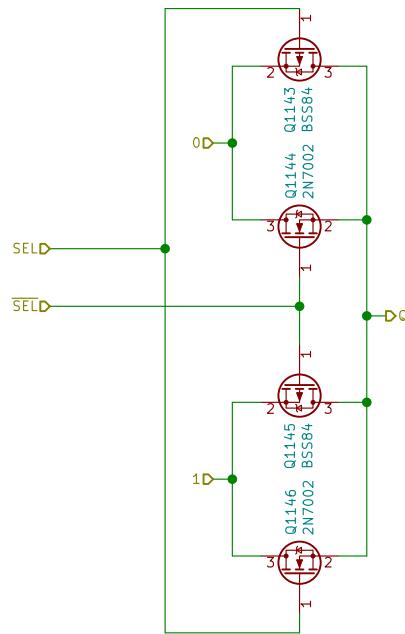
D

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 321/389

A

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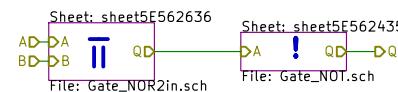
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 322/389

A

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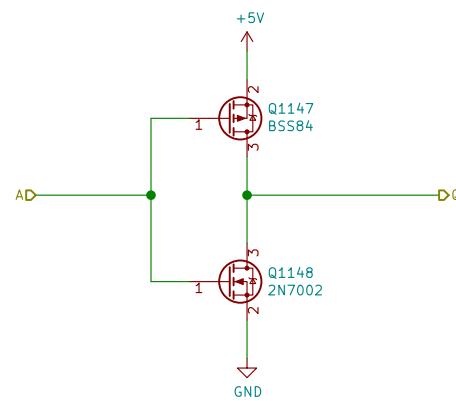
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011D/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 323/389

A

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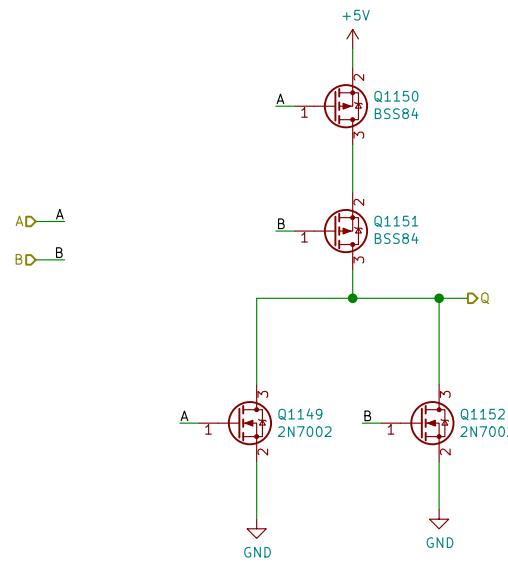
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F18011D/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 324/389

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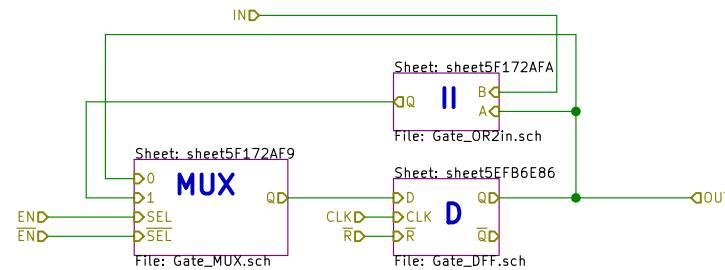
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

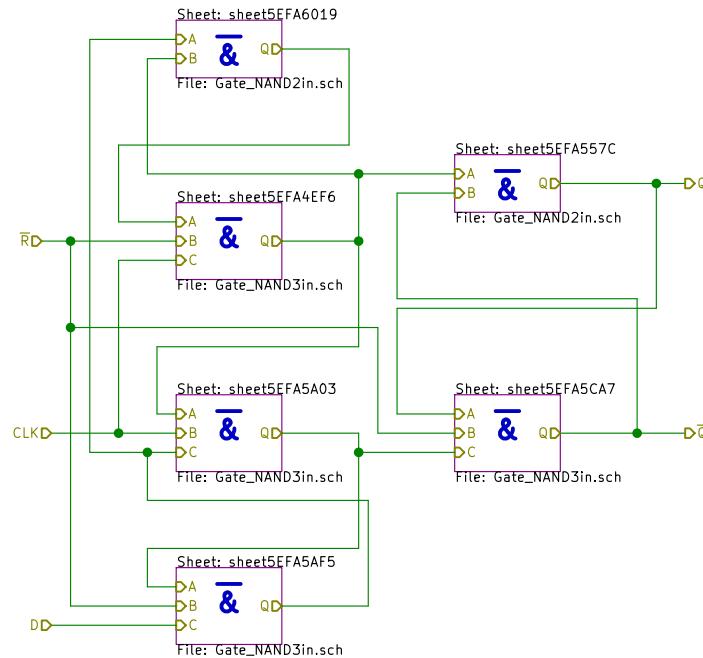
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File: MemCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 325/389

A



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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F18011E/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 326/389

A

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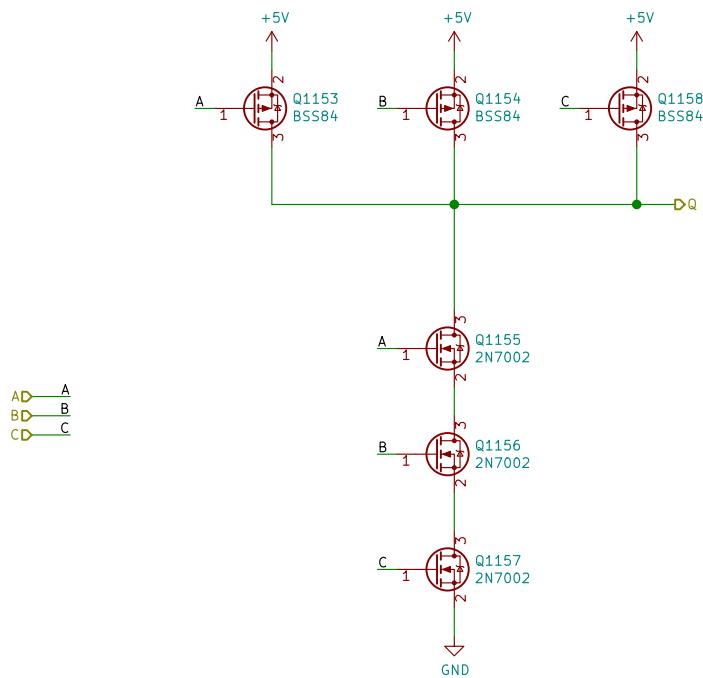
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F18011E/sheet5EFB6E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

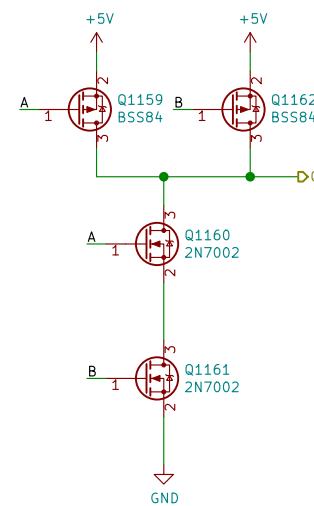
Id: 327/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5EFB6E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 328/389

A

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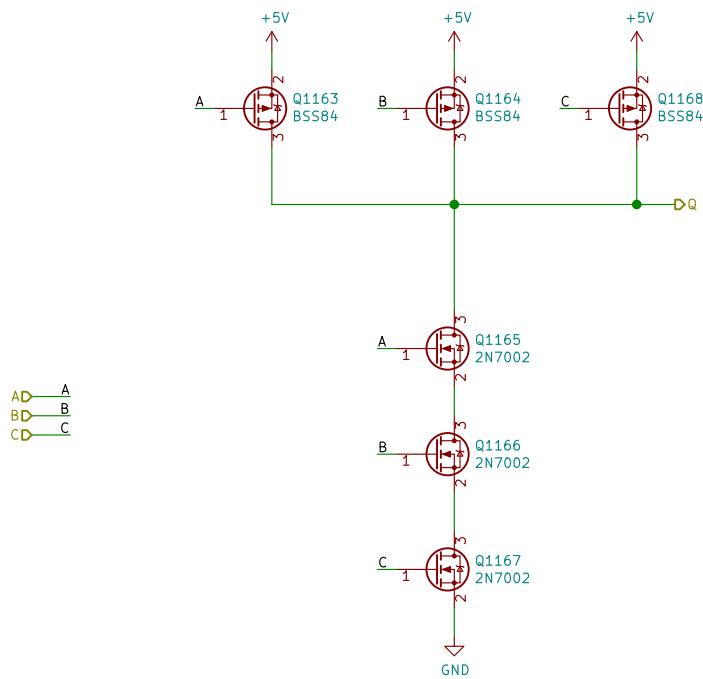
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5EFB6E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 329/389

A

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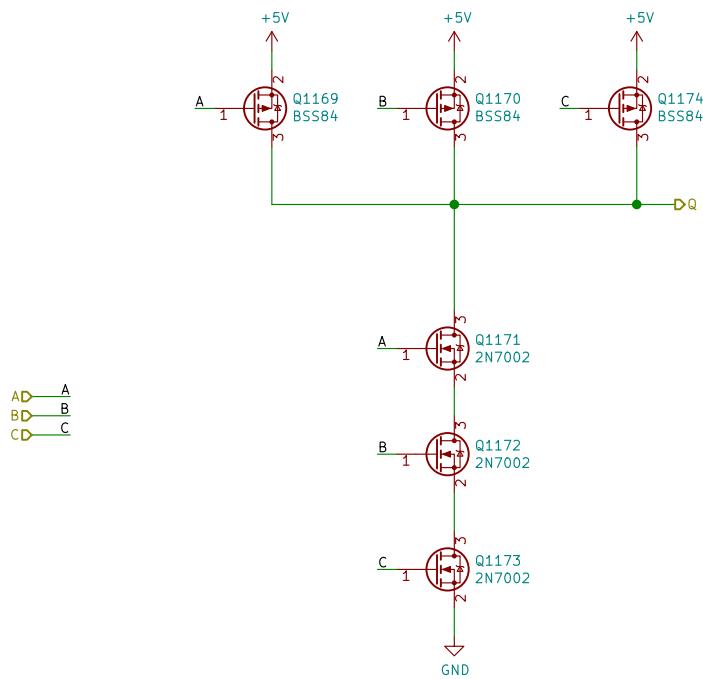
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F18011E/sheet5E8FB6E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 330/389

A

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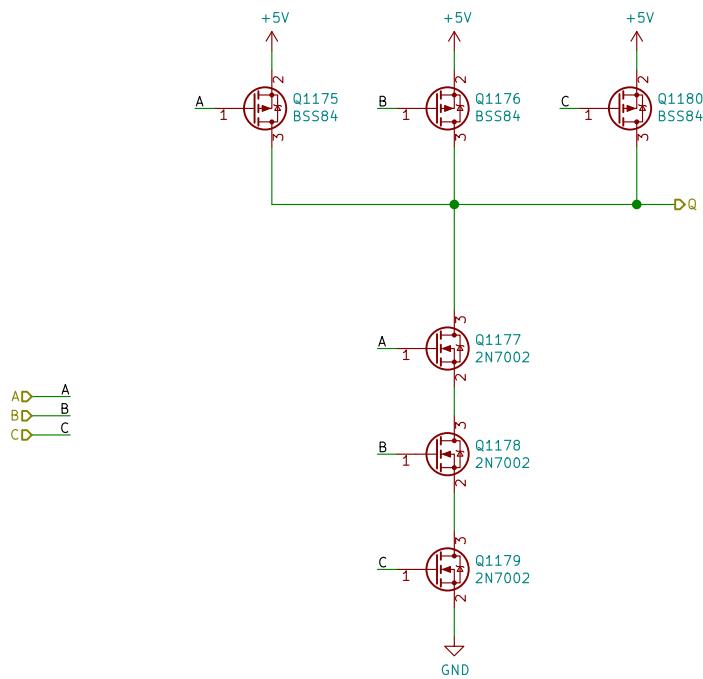
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5E8FB6E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

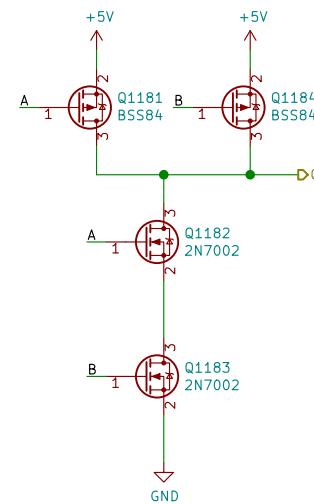
Id: 331/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5EFB6E86/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 332/389

A

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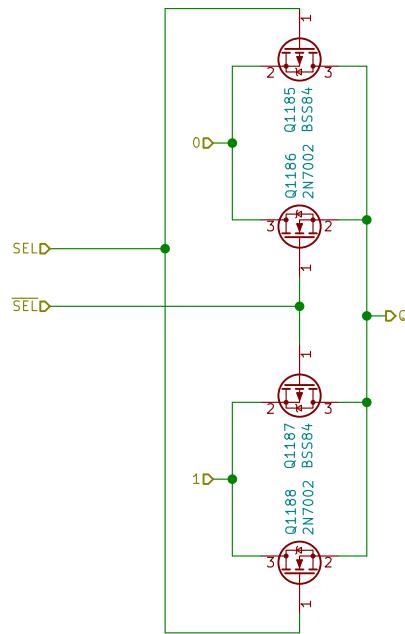
D

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 333/389

A

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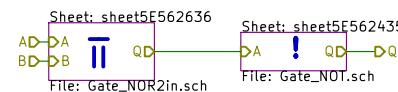
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 334/389

A

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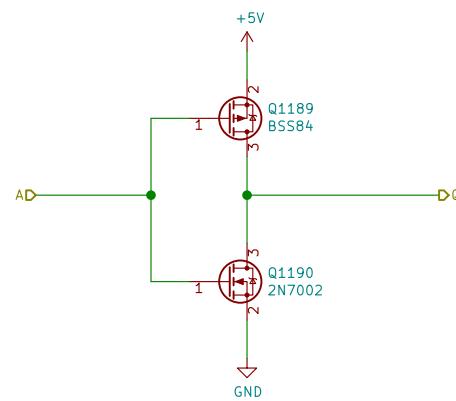
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F18011E/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 335/389

A

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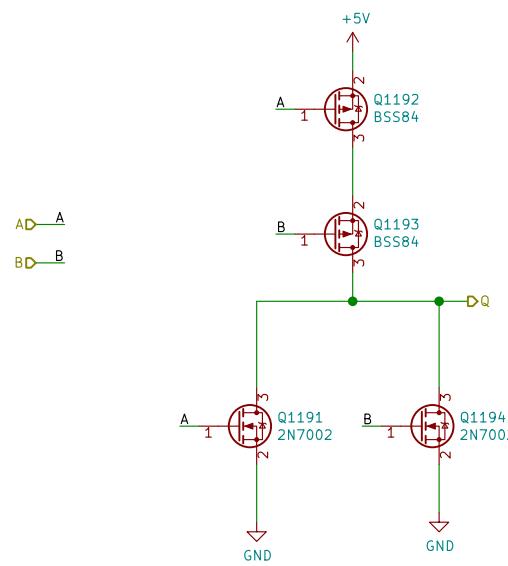
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F18011E/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 336/389

A

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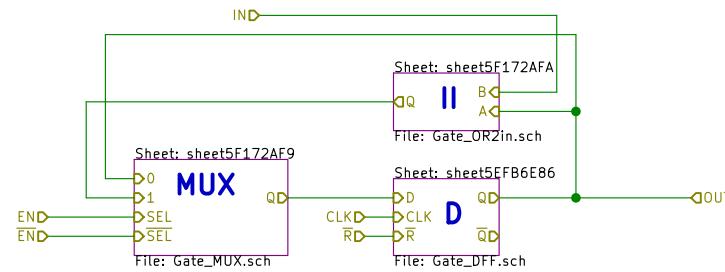
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

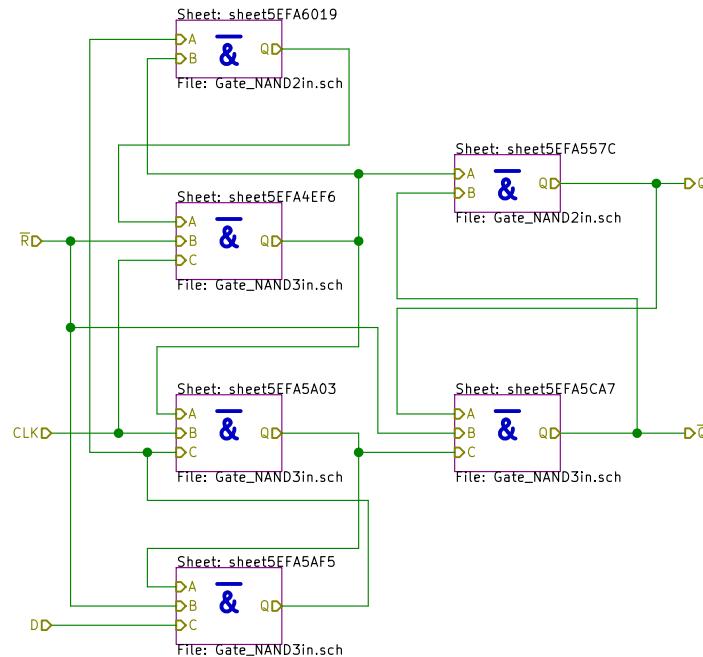
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File: MemCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
Id: 337/389

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F1827A6/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 338/389

A

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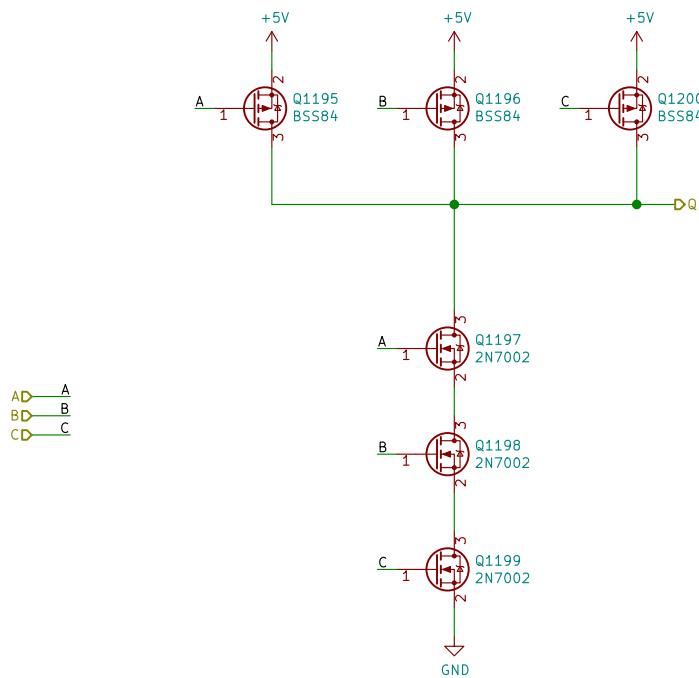
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5EFA4EF6/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

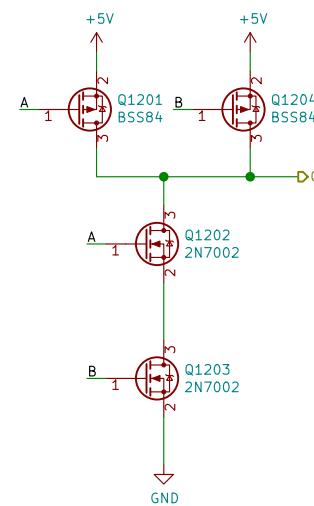
Id: 339/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5E86E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 340/389

A

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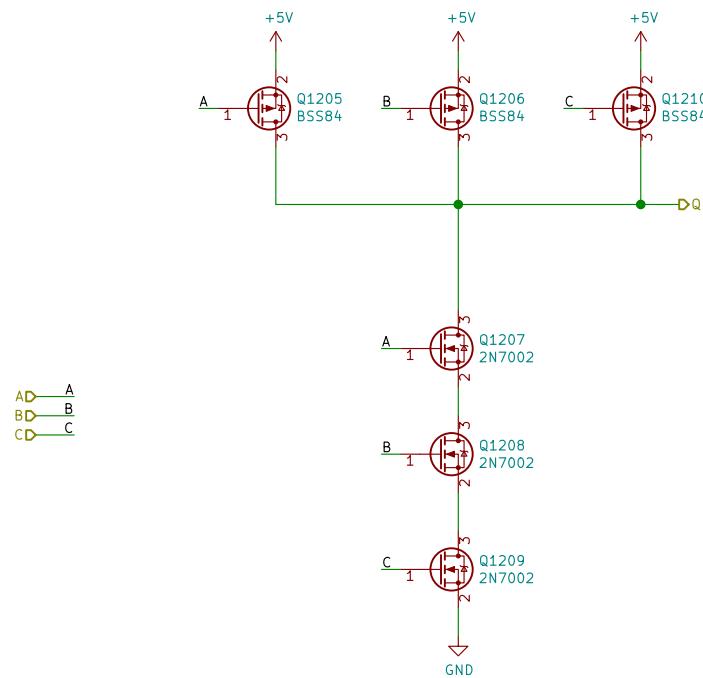
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5E86E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 341/389

A

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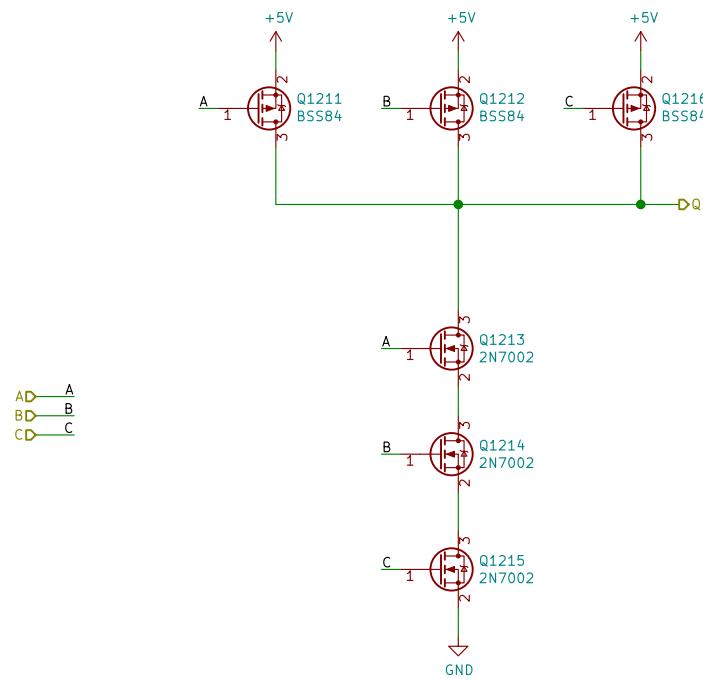
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 342/389

A

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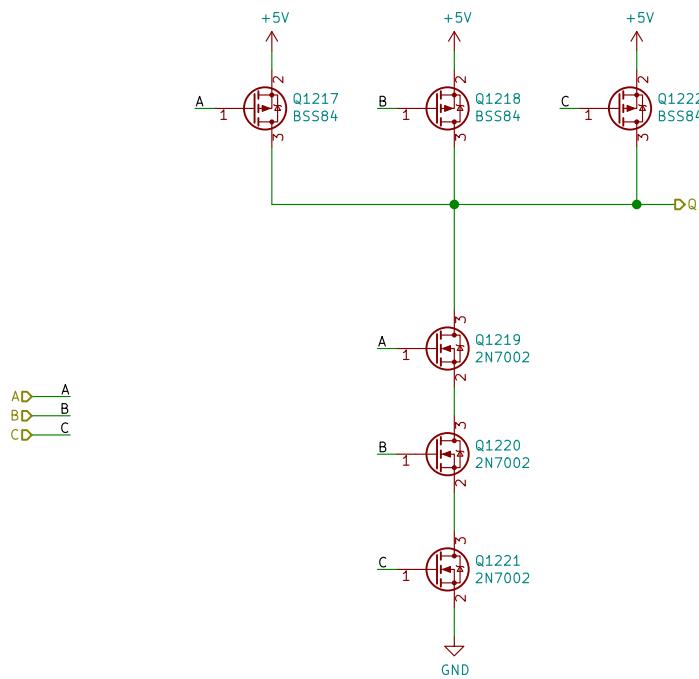
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5E86E86/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

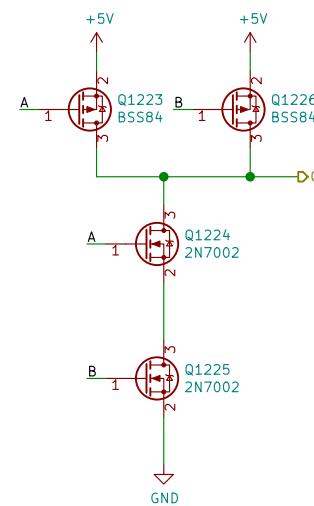
Id: 343/389

A

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AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

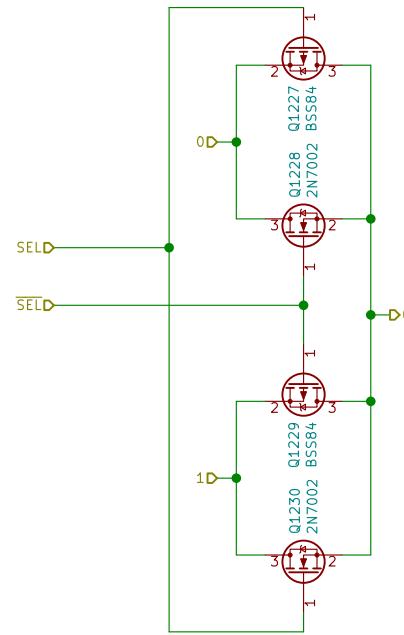
Id: 344/389

A

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 345/389

A

A

B

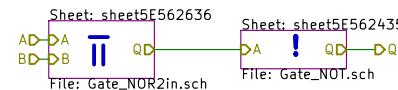
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 346/389

A

A

B

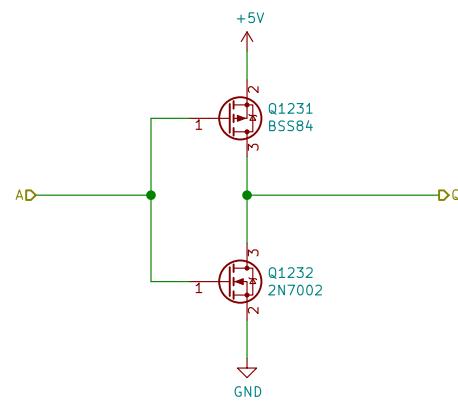
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 347/389

A

A

B

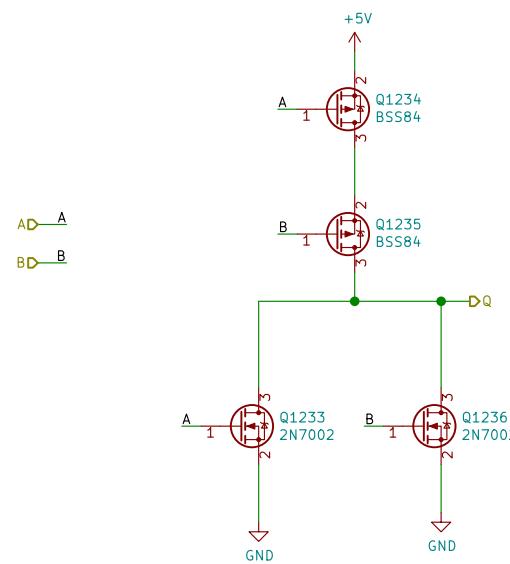
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A6/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 348/389

A

A

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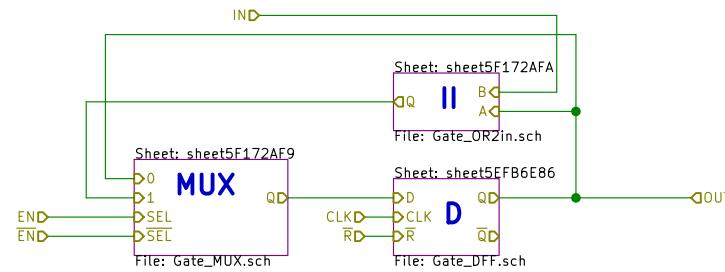
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A7/

File: MemCell.sch

Title: Fets and Crosses

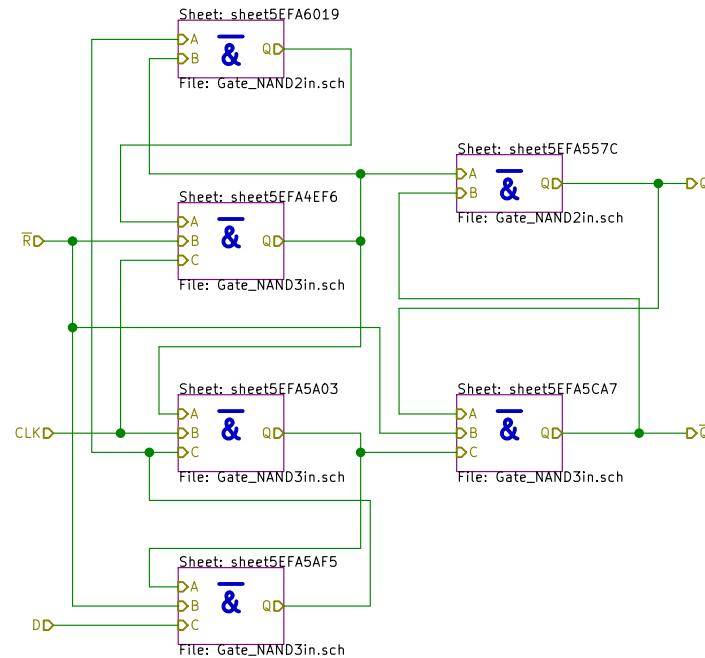
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 349/389

A



B

C

D

A

B

C

D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F1827A7/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 350/389

A

A

B

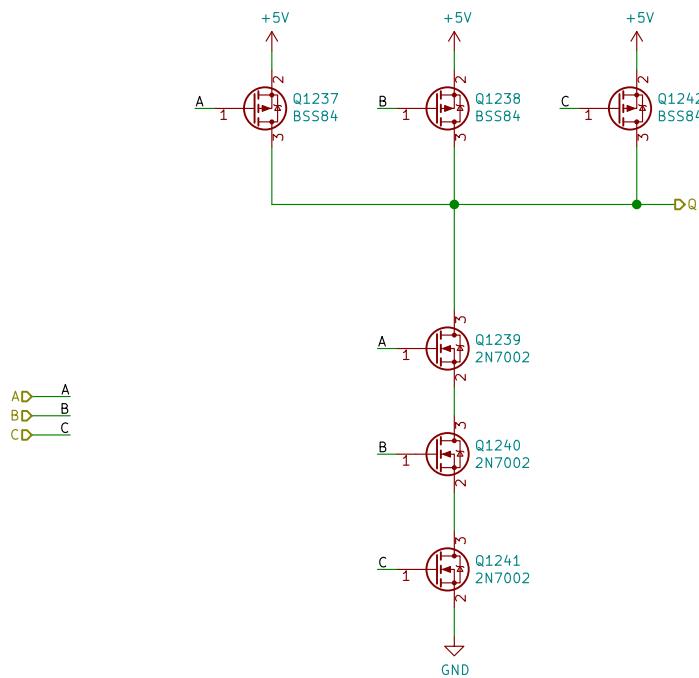
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5E86E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

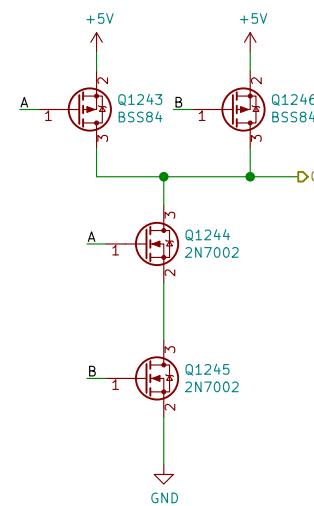
Id: 351/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5EFA557C/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 352/389

A

A

B

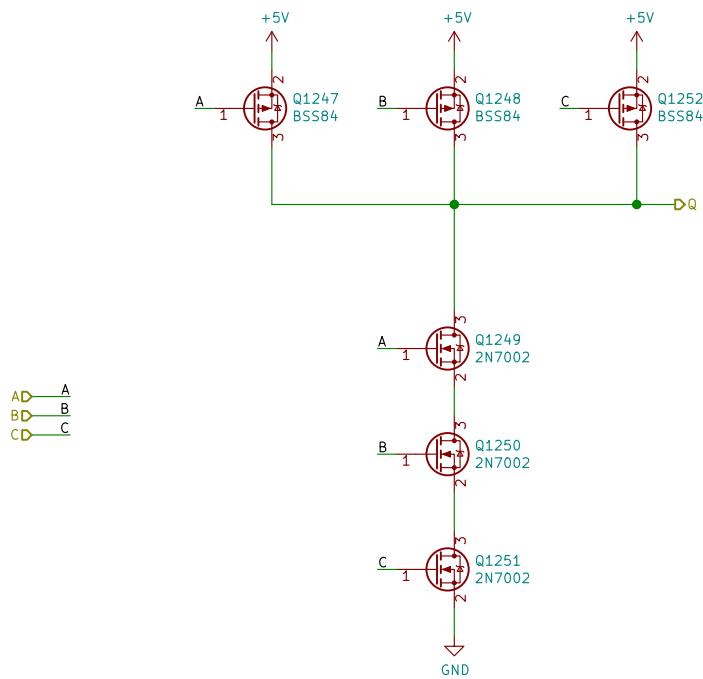
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5EFA5A03/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 353/389

A

A

B

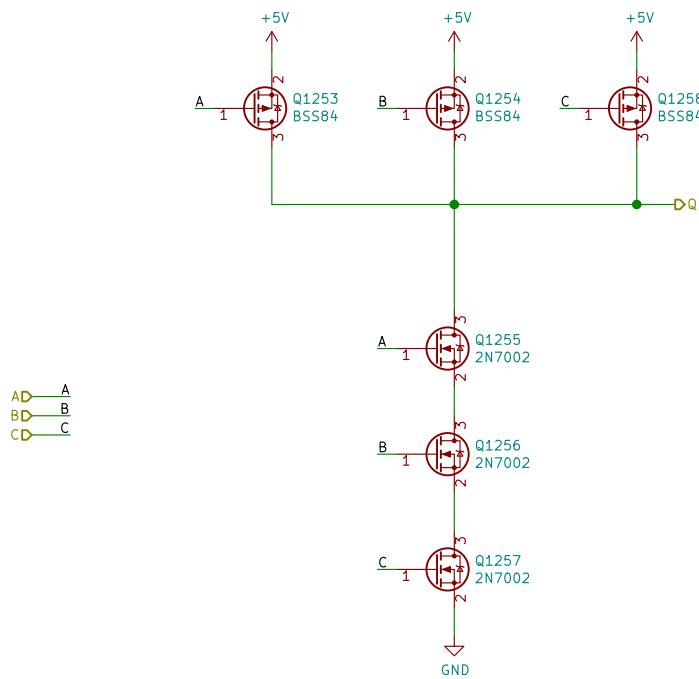
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 354/389

A

A

B

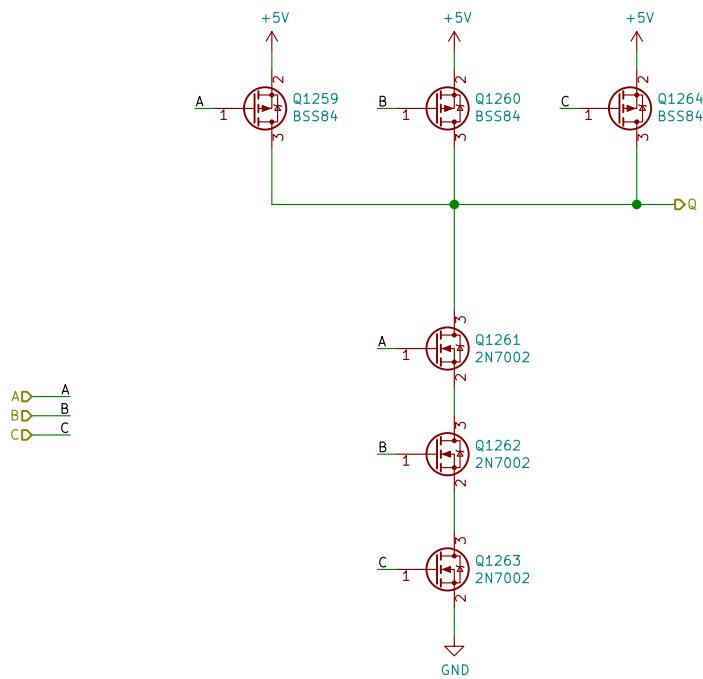
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5EFA5CA7/sheet5EFA5CA7/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 355/389

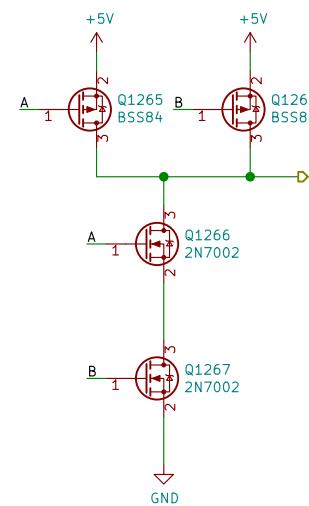
A

B

C

D

AD—A
BD—B



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5EFA6019/sheet5EFA6019/
File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

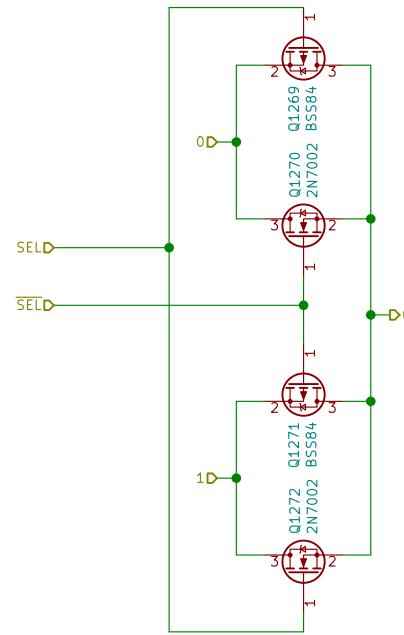
Id: 356/389

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5F172AF9/

File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 357/389

A

A

B

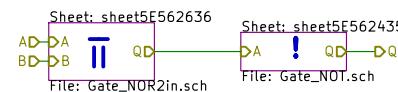
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 358/389

A

A

B

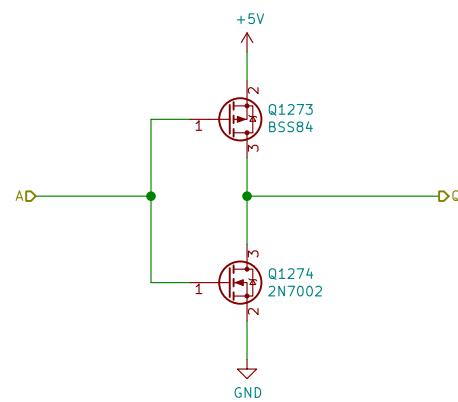
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 359/389

A

A

B

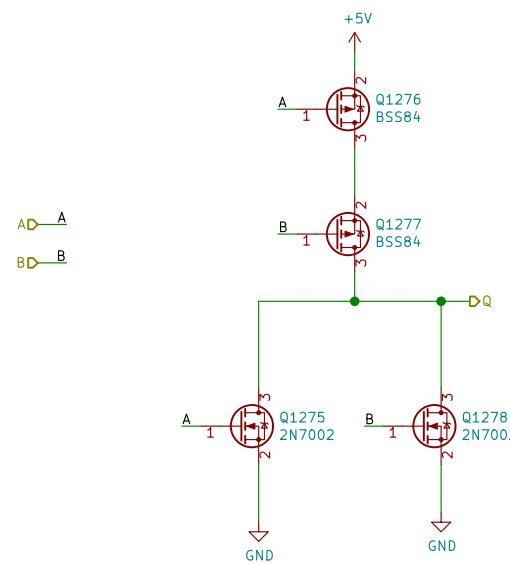
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A7/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 360/389

A

A

B

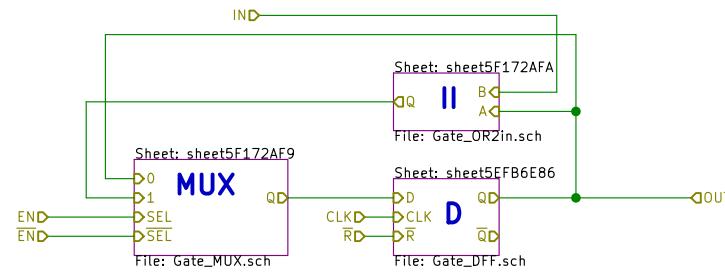
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/

File: MemCell.sch

Title: Fets and Crosses

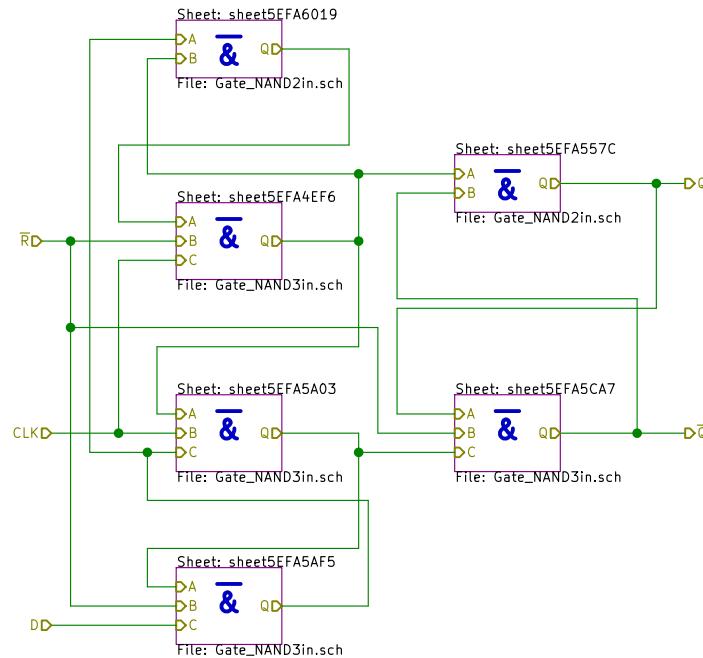
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 361/389

A



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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp SchilkSheet: /PlayerMem_2/sheet5F1827A8/sheet5EFB6E86/
File: Gate_DFF.sch**Title: Fets and Crosses**Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3Rev: v0.0
Id: 362/389

A

A

B

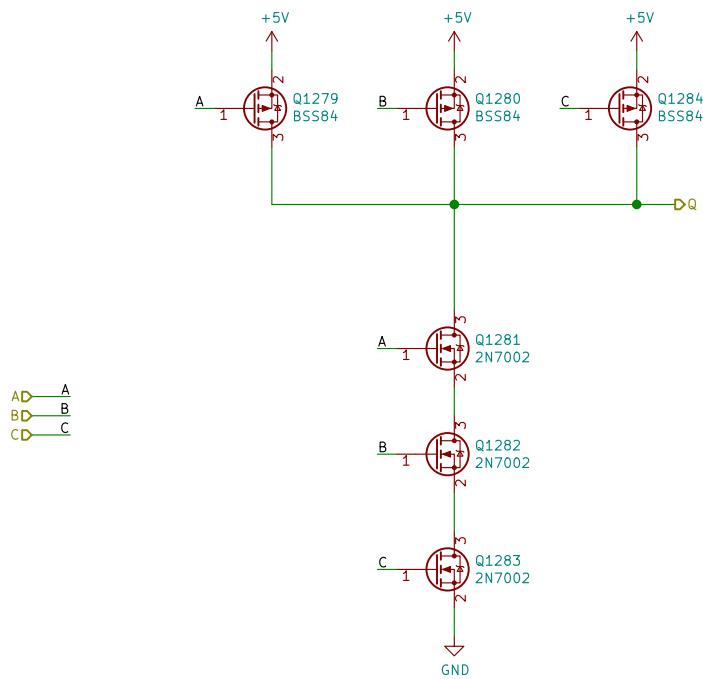
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5E86E86/sheet5EFA4EF6/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

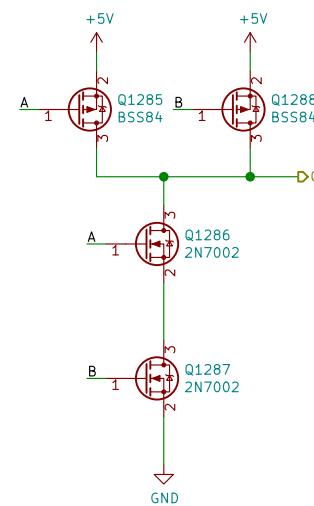
Id: 363/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5E86E86/sheet5EFA557C/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 364/389

A

A

B

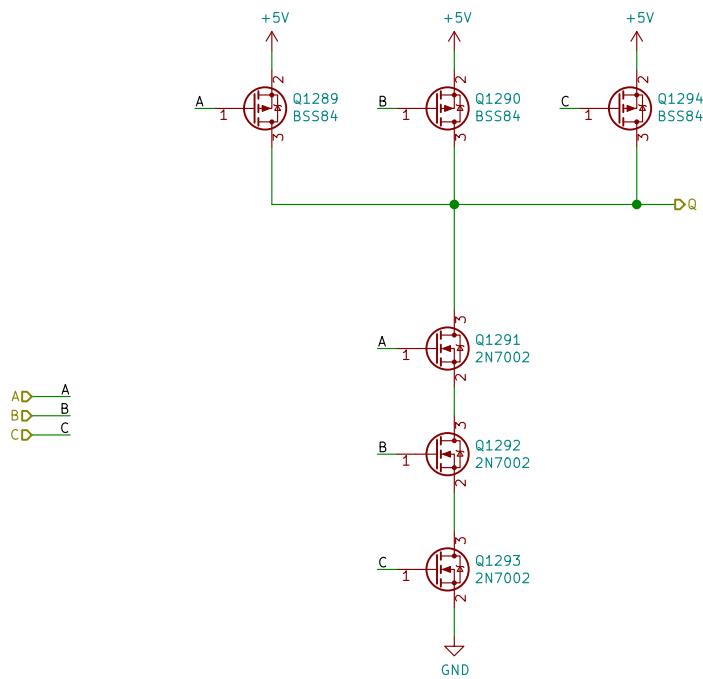
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5E86E86/sheet5EFA5A03/

File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 365/389

A

A

B

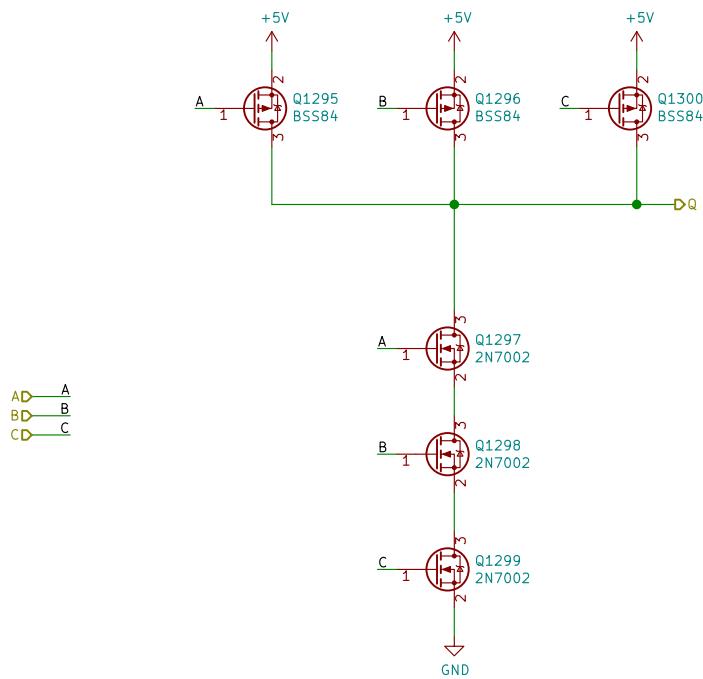
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5E86E86/sheet5EFA5AF5/

File: Gate_NAND3in.sch

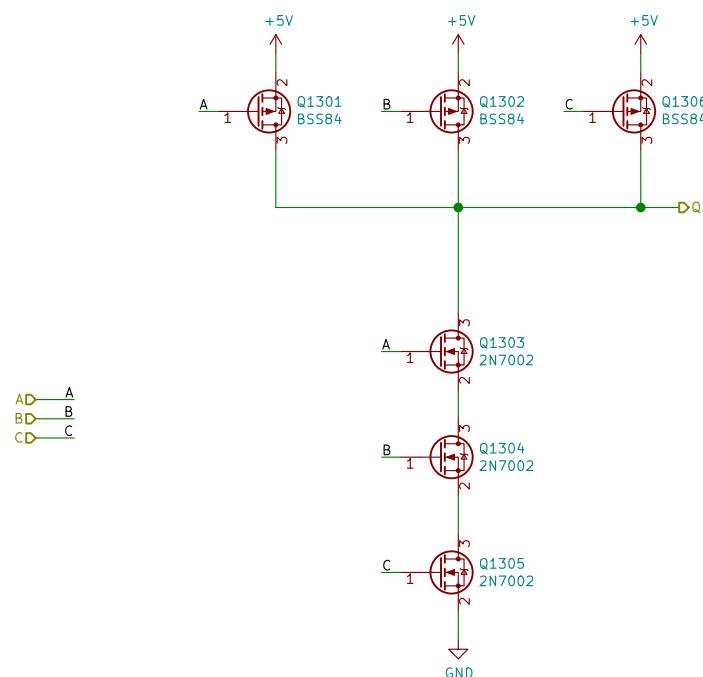
Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 366/389



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philip Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5EFB6E86/sheet5EFA5CA7/
File: Gate_NAND3in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

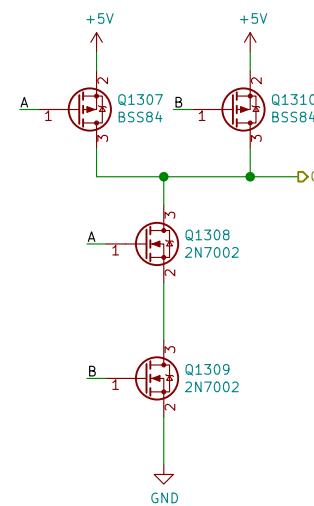
Rev: v0.0
Id: 367/389

A

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D

AD—A
BD—B

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5EFA6019/sheet5EFA6019/

File: Gate_NAND2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 368/389

A

B

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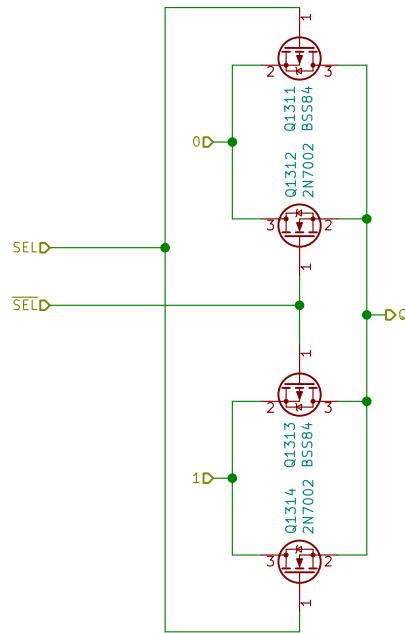
D

A

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5F172AF9/
File: Gate_MUX.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 369/389

A

A

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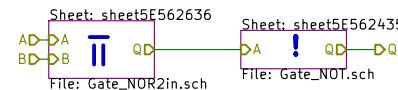
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5F172AFA/

File: Gate_OR2in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 370/389

A

A

B

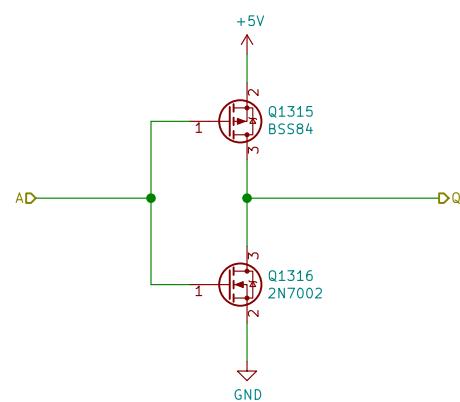
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5F172AFA/sheet5E562435/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 371/389

A

A

B

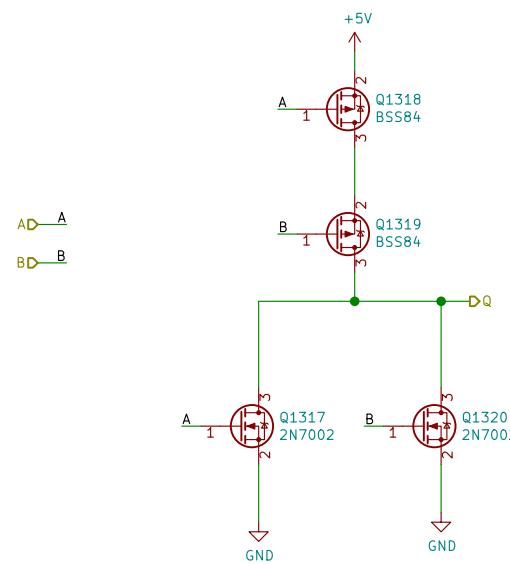
B

C

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

[Philipp Schilk](#)

Sheet: /PlayerMem_2/sheet5F1827A8/sheet5F172AFA/sheet5E562636/

File: Gate_NOR2in.sch

Title: Fets and Crosses

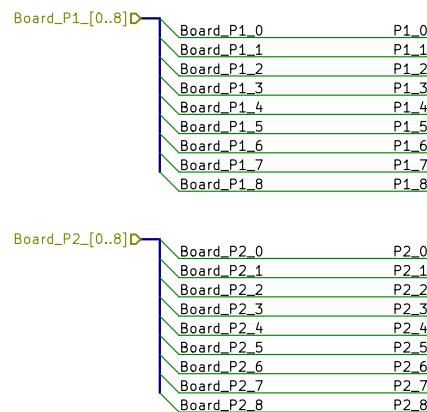
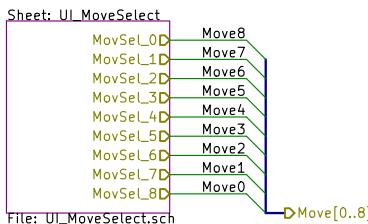
Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

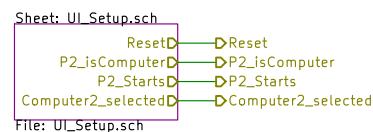
Rev: v0.0

Id: 372/389

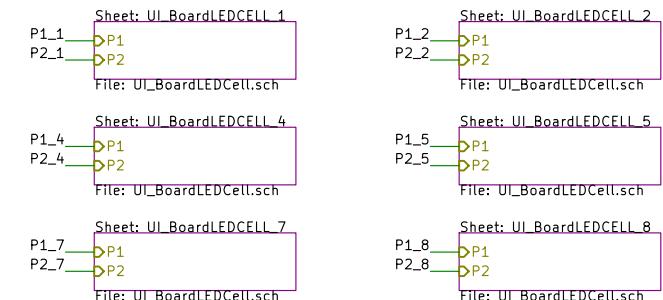
Player Move Selection



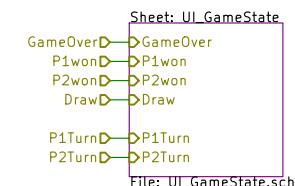
Setup



Board Display



GameState Display



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: `/UI.sch/`

File: `UI.sch`

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 373/389

A

A

B

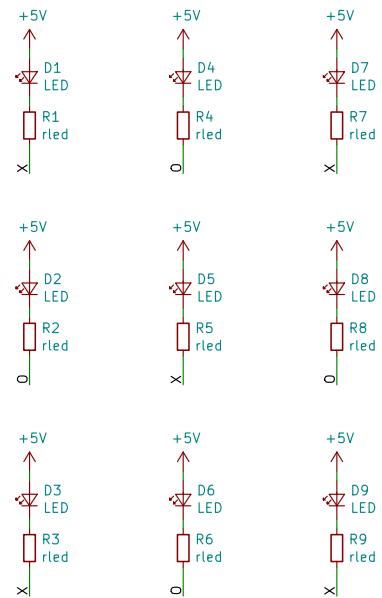
B

C

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_0/

File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 374/389

A

A

B

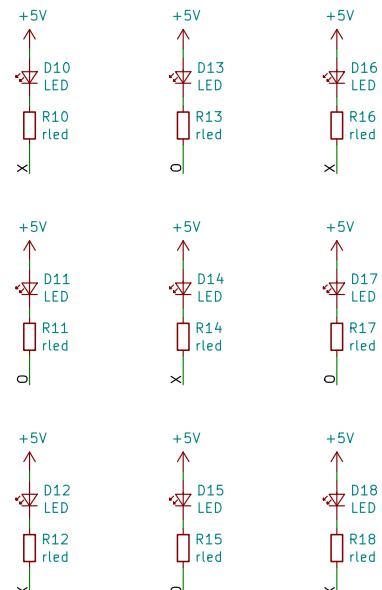
B

C

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_1/

File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 375/389

A

A

B

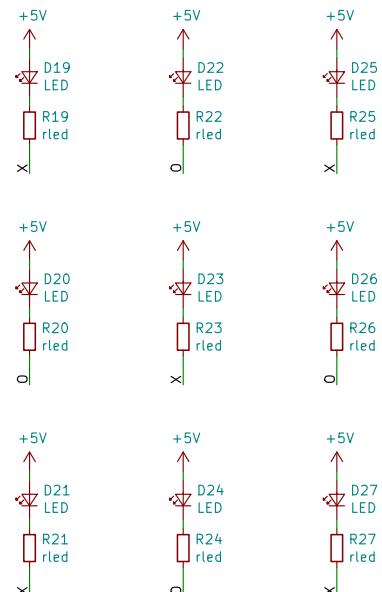
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_2/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A.	kicad (5.1.5)-3

Rev: v0.0
Id: 376/389

A

A

B

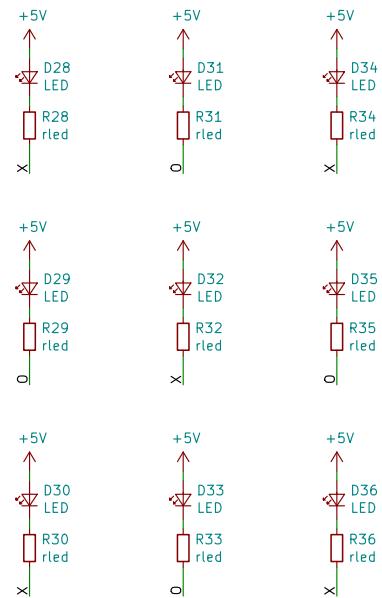
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_3/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 377/389

A

A

B

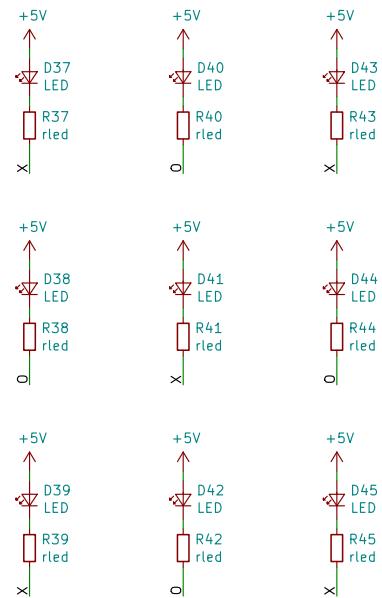
B

C

C

D

D



Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_4/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 378/389

A

A

B

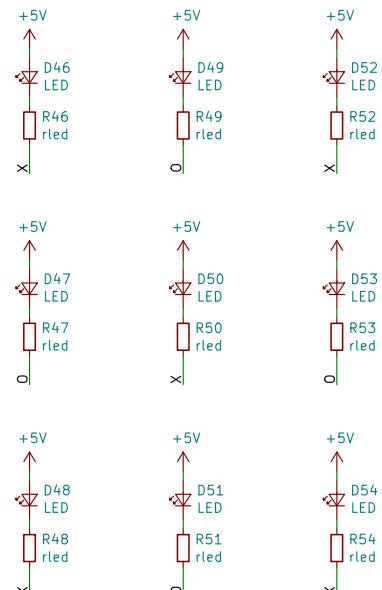
B

C

C

D

D



Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_5/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3	

Rev: v0.0
Id: 379/389

A

A

B

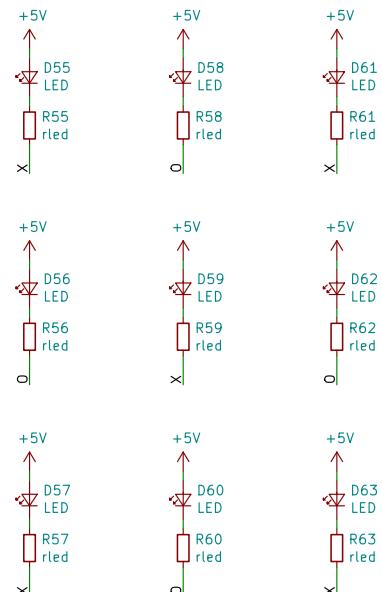
B

C

C

D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_6/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

Id: 380/389

A

A

B

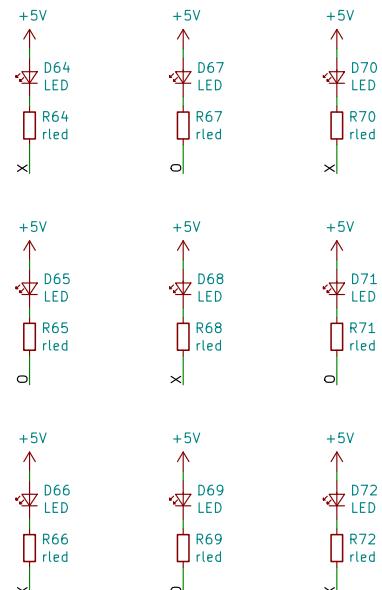
B

C

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D

D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_BoardLEDCELL_7/
File: UI_BoardLEDCell.sch

Title: Fets and Crosses

Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 381/389

A

A

B

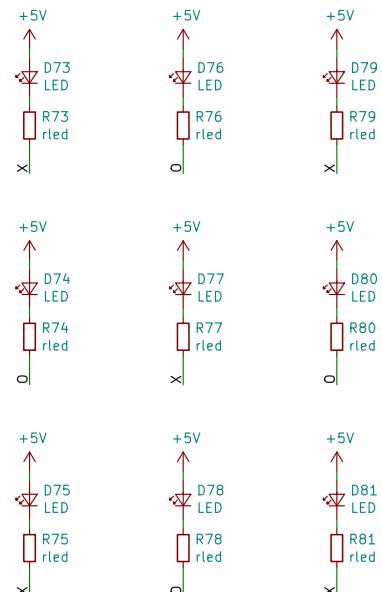
B

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D



Tic-Tac-Toe implementation from discrete-transistor CMOS logic

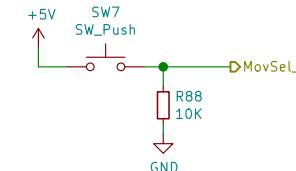
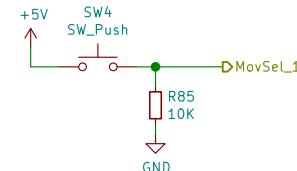
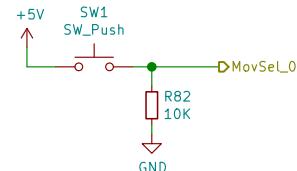
Philipp Schilk

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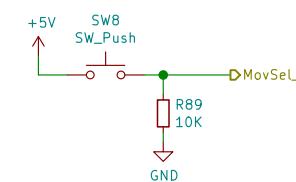
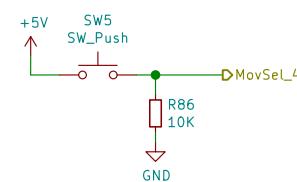
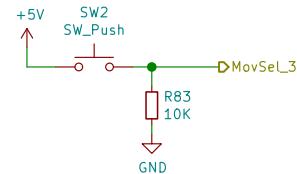
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Size: A4	Date: 2020-07-05	Rev: v0.0
KiCad E.D.A. kicad (5.1.5)-3		Id: 382/389

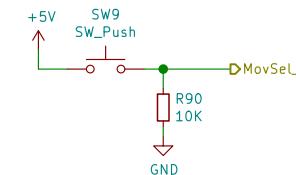
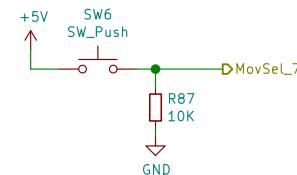
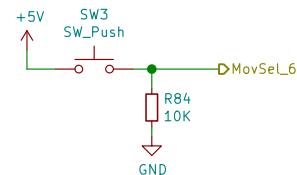
A



B



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D

Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /UI.sch/UI_MoveSelect/

File: UI_MoveSelect.sch

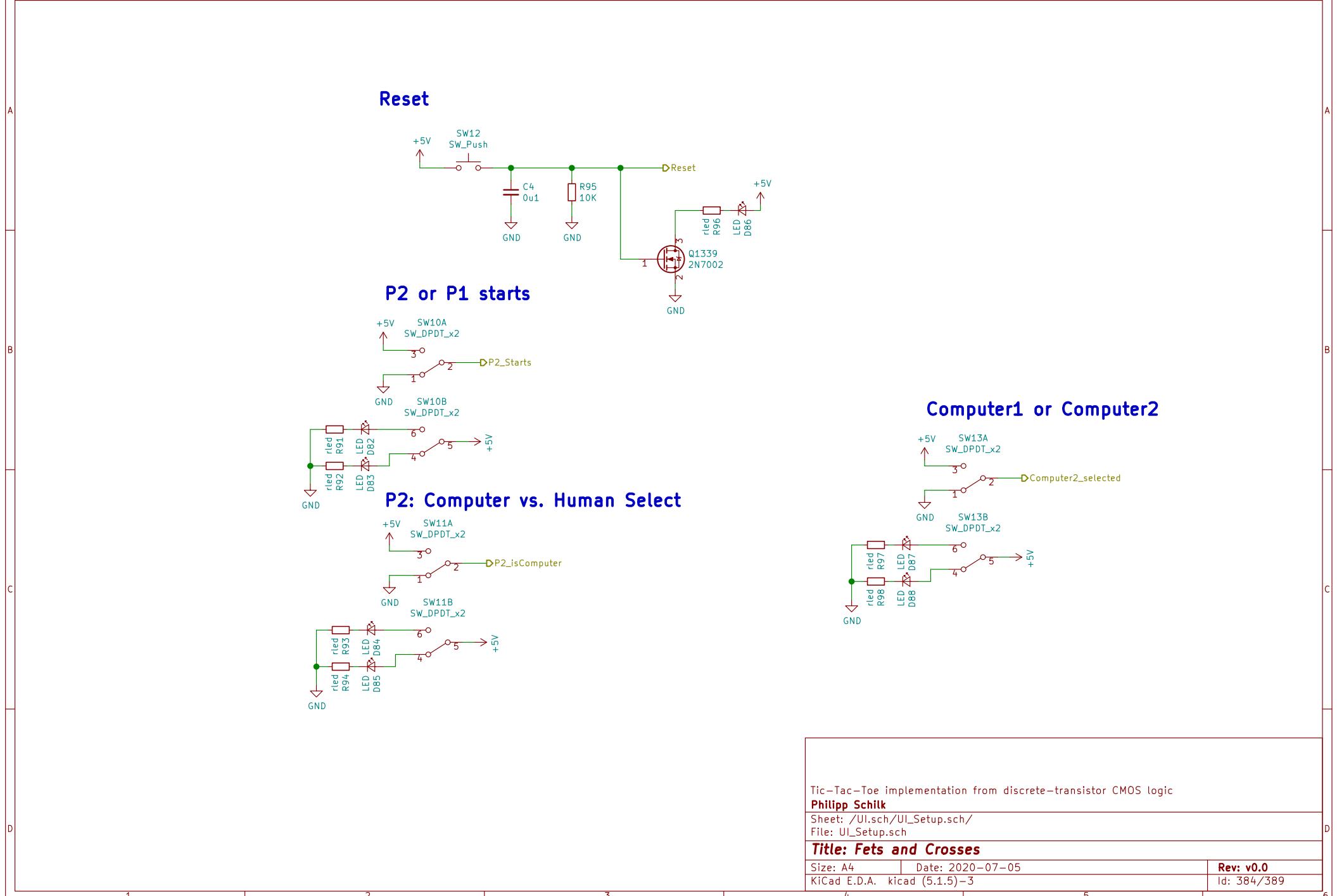
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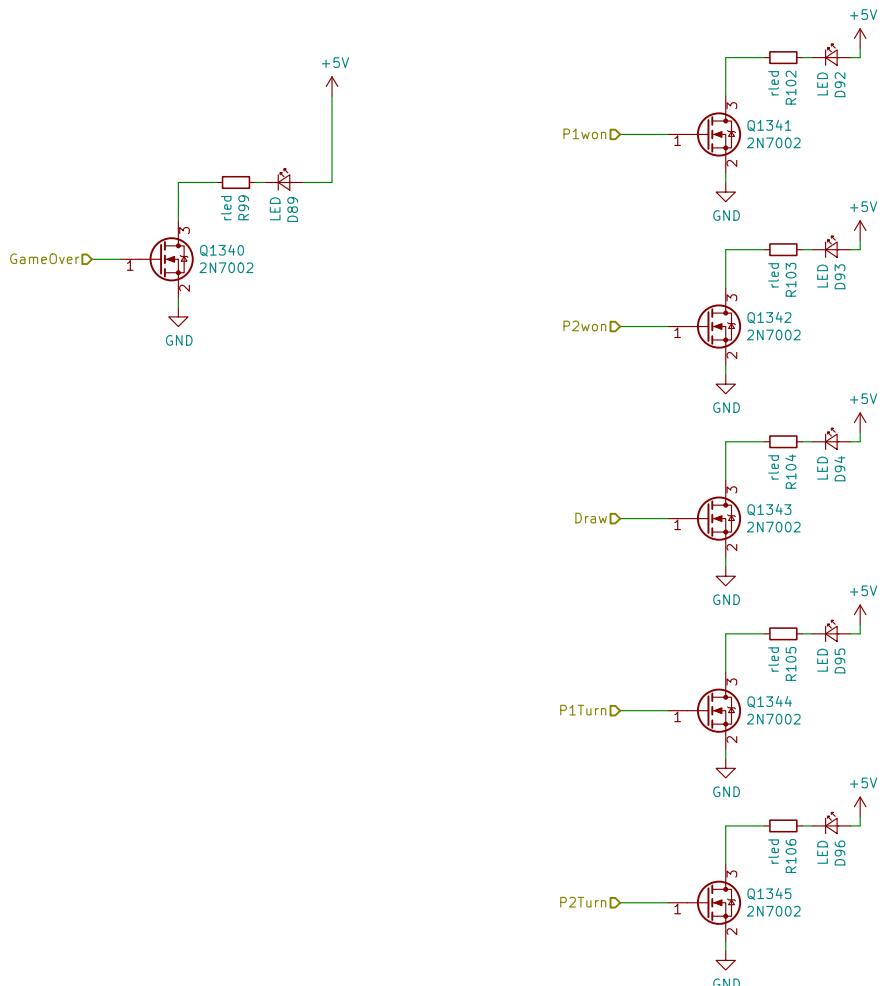
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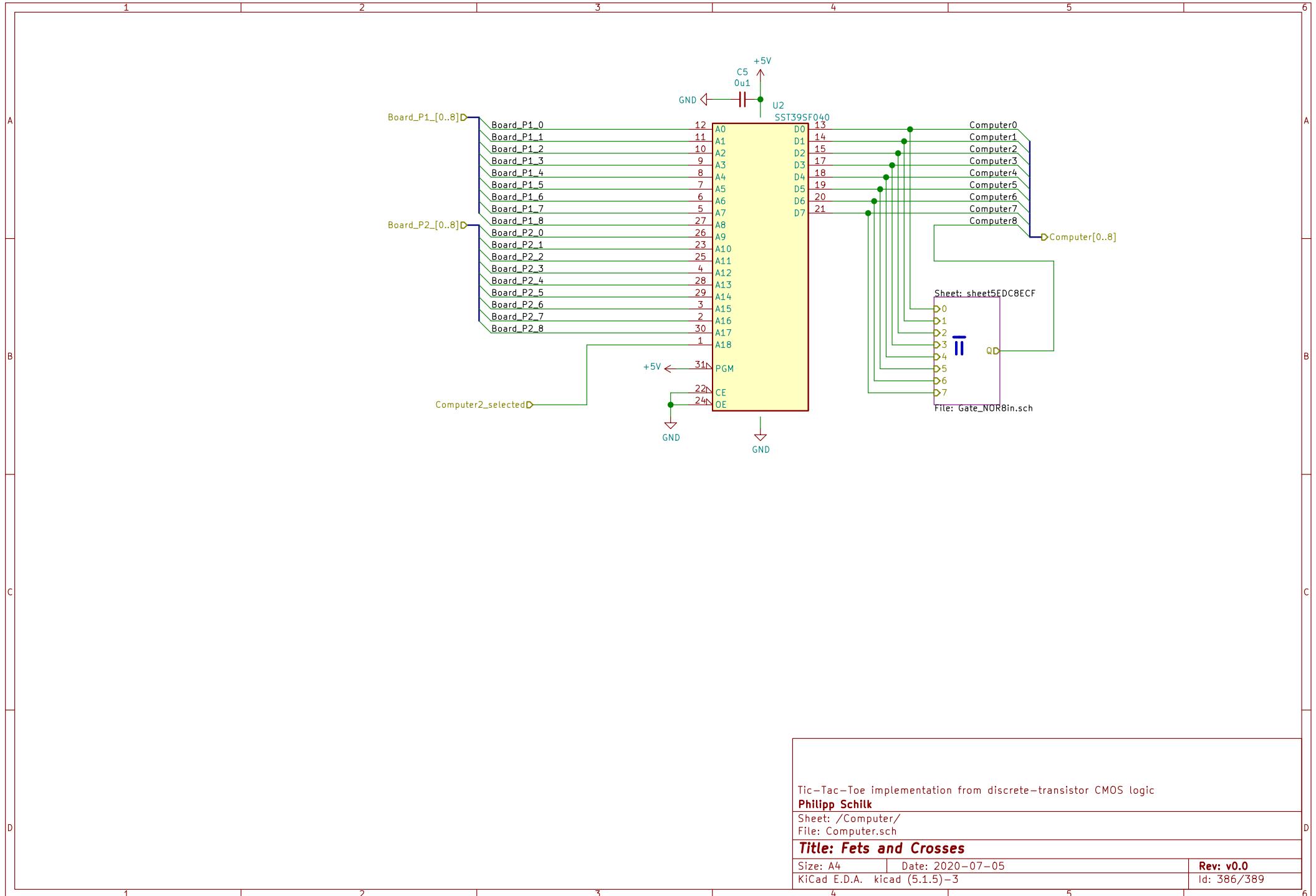
Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

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File: UI_GameState.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0
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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /Computer/

File: Computer.sch

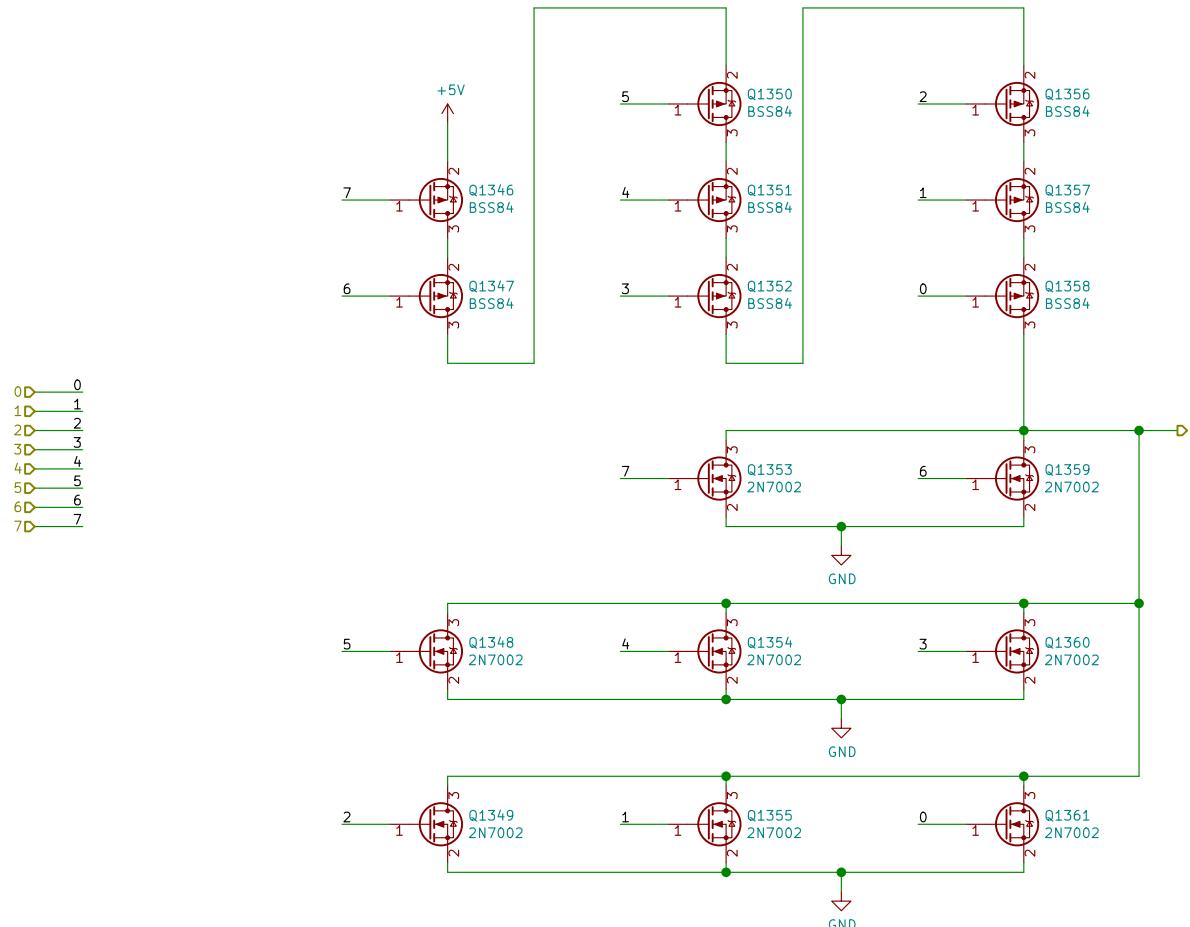
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Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic
Philipp Schilk

Sheet: /Computer/sheet5EDC8ECF/
File: Gate_NOR8in.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05
KiCad E.D.A. kicad (5.1.5)-3

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A

A

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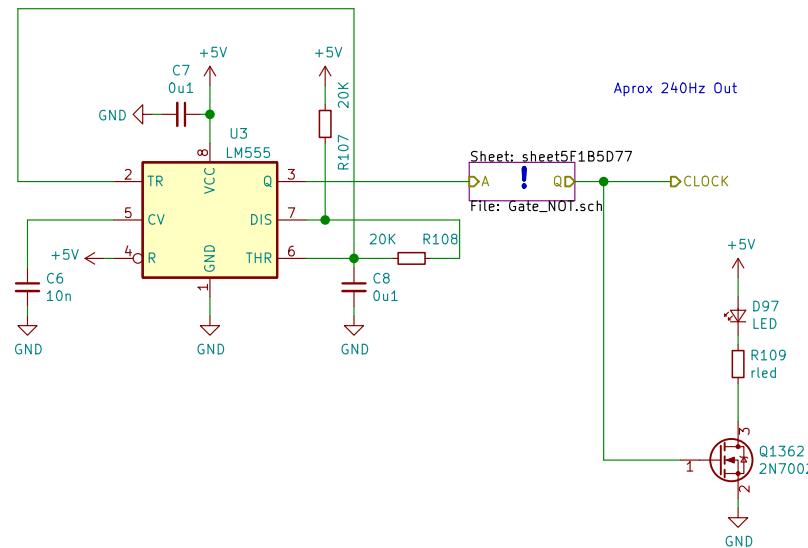
B

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /sheet5F18A490/

File: Clock.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

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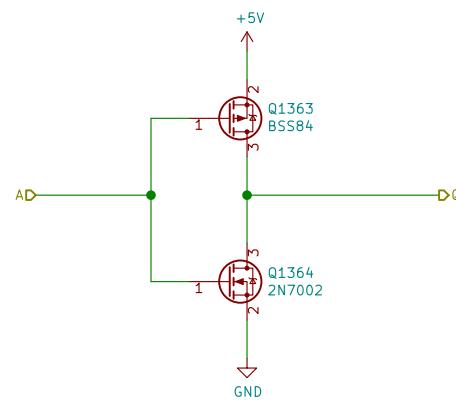
D

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Tic-Tac-Toe implementation from discrete-transistor CMOS logic

Philipp Schilk

Sheet: /sheet5F18A490/sheet5F1B5D77/

File: Gate_NOT.sch

Title: Fets and Crosses

Size: A4 Date: 2020-07-05

KiCad E.D.A. kicad (5.1.5)-3

Rev: v0.0

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