Cogenda

cgd_t025_g5
LIBRARY DATASHEET

2019-03-26

AND2X2 (tt_3p3v_25c/3.300000/25.0)

The AND2 cell provides the logical AND of two inputs (A, B).
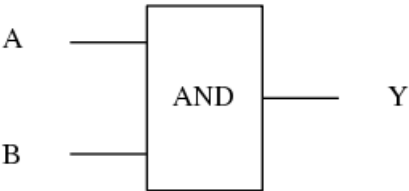
Attributes

Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A&B)

TRUTH TABLE FOR Y

A	B	Y
1	1	1
0	?	0
?	0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0149
B	input	0.0153

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	B	0.4050	0.1647	0.5128	0.4650
A(HL)	Y(HL)	B	0.4050	0.2320	0.6472	0.4647
B(HL)	Y(HL)	A	0.4050	0.2319	0.7077	0.4672
B(LH)	Y(LH)	A	0.4050	0.1648	0.5038	0.4651

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.1647	0.4833
B	A	0.4050	Y(HL)	0.2319	0.7410
A	B	0.4050	Y(HL)	0.2320	0.6024
B	A	0.4050	Y(LH)	0.1648	0.4771
B(HL)	!A	0.4050	n/a	n/a	0.0798
A(LH)	!B	0.4050	n/a	n/a	-0.0058
B(LH)	!A	0.4050	n/a	n/a	-0.0797
A(HL)	!B	0.4050	n/a	n/a	0.0912

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0337
!A&B	0.0337
A&!B	0.0401
A&B	0.0445

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

AND2X2 (tt_5v_25c/5.0000/25.0)

The AND2 cell provides the logical AND of two inputs (A, B).
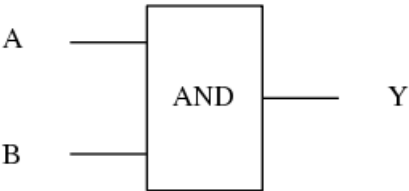
Attributes

Attribute	Value
area	315.52 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A&B)

TRUTH TABLE FOR Y

A	B	Y
1	1	1
0	?	0
?	0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0156
B	input	0.0162

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	B	0.4050	0.2308	0.4162	0.4444
A(HL)	Y(HL)	B	0.4050	0.2871	0.5475	0.4451
B(HL)	Y(HL)	A	0.4050	0.2870	0.5952	0.4468
B(LH)	Y(LH)	A	0.4050	0.2308	0.4032	0.4446

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.2308	1.2377
B	A	0.4050	Y(HL)	0.2870	1.9402
A	B	0.4050	Y(HL)	0.2871	1.5807
B	A	0.4050	Y(LH)	0.2308	1.2074
B(HL)	!A	0.4050	n/a	n/a	0.1902
A(LH)	!B	0.4050	n/a	n/a	-0.0059
B(LH)	!A	0.4050	n/a	n/a	-0.1898
A(HL)	!B	0.4050	n/a	n/a	0.2164

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.1146
!A&B	0.1146
A&!B	0.1193
A&B	0.1394

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

AOI21X1 (tt_3p3v_25c/3.300000/25.0)

The AOI21 cell provides the logical inverted OR of one AND group and an additional input.

Attributes

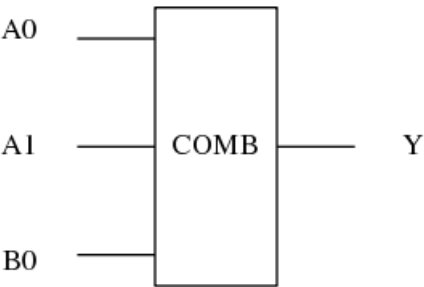| Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A0&A1)|B0))

TRUTH TABLE FOR Y

A0	A1	B0	Y
0	?	0	1
?	0	0	1
1	1	?	0
?	?	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A0	input	0.0215
A1	input	0.0223
B0	input	0.0178

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A0(LH)	Y(HL)	A1&!B0	0.4050	0.1199	0.4541	0.5448
A0(HL)	Y(LH)	A1&!B0	0.4050	0.0766	0.4745	0.5409
A1(LH)	Y(HL)	A0&!B0	0.4050	0.1209	0.4403	0.5495
A1(HL)	Y(LH)	A0&!B0	0.4050	0.0741	0.5207	0.5894
B0(HL)	Y(LH)	!A0&!A1	0.4050	0.1038	0.3990	0.4944
B0(HL)	Y(LH)	A0&!A1	0.4050	0.0734	0.4544	0.5818
B0(HL)	Y(LH)	!A0&A1	0.4050	0.0757	0.4044	0.5323
B0(LH)	Y(HL)	!A0&!A1	0.4050	0.1088	0.4210	0.4826
B0(LH)	Y(HL)	A0&!A1	0.4050	0.1057	0.4198	0.5305
B0(LH)	Y(HL)	!A0&A1	0.4050	0.1100	0.4249	0.4860

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B0	!A0&!A1	0.4050	Y(LH)	0.1038	0.4006
B0	A0&!A1	0.4050	Y(LH)	0.0734	0.5465
B0	!A0&A1	0.4050	Y(LH)	0.0757	0.4005
A0	A1&!B0	0.4050	Y(HL)	0.1199	0.2961
A1	A0&!B0	0.4050	Y(HL)	0.1209	0.2932
B0	!A0&!A1	0.4050	Y(HL)	0.1088	0.0704
B0	A0&!A1	0.4050	Y(HL)	0.1057	0.0767
B0	!A0&A1	0.4050	Y(HL)	0.1100	0.0768
A1	A0&!B0	0.4050	Y(LH)	0.0741	0.6714
A0	A1&!B0	0.4050	Y(LH)	0.0766	0.5329
A1(HL)	!A0&!B0	0.4050	n/a	n/a	0.1573
A1(HL)	!A0&B0	0.4050	n/a	n/a	0.1578
A1(HL)	A0&B0	0.4050	n/a	n/a	0.1574
A0(HL)	!A1&!B0	0.4050	n/a	n/a	0.1689
A0(HL)	!A1&B0	0.4050	n/a	n/a	0.1575
A0(HL)	A1&B0	0.4050	n/a	n/a	0.1577
A0(LH)	!A1&!B0	0.4050	n/a	n/a	-0.0836
A0(LH)	!A1&B0	0.4050	n/a	n/a	-0.1576
A0(LH)	A1&B0	0.4050	n/a	n/a	-0.1526
A1(LH)	!A0&!B0	0.4050	n/a	n/a	-0.1573
A1(LH)	!A0&B0	0.4050	n/a	n/a	-0.1574
A1(LH)	A0&B0	0.4050	n/a	n/a	-0.1526

| B0(LH) | A0&A1 | 0.4050 | n/a | | n/a | -0.0552 |
| B0(HL) | A0&A1 | 0.4050 | n/a | | n/a | 0.2535 |

LEAKAGE POWER

When Condition	Power (nW)
!A0&!A1&!B0	0.0478
!A0&A1&!B0	0.0478
A0&!A1&!B0	0.0542
!A0&!A1&B0	0.0112
!A0&A1&B0	0.0112
A0&!A1&B0	0.0112
A0&A1&!B0	0.0330
A0&A1&B0	0.0112

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

AOI21X1 (tt_5v_25c/5.0000/25.0)

The AOI21 cell provides the logical inverted OR of one AND group and an additional input.

Attributes

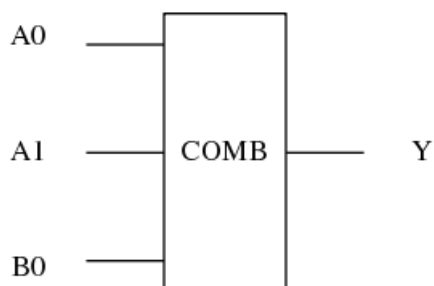| Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A0&A1)|B0))

TRUTH TABLE FOR Y

A0	A1	B0	Y
0	?	0	1
?	0	0	1
1	1	?	0
?	?	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A0	input	0.0225
A1	input	0.0235
B0	input	0.0185

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A0(LH)	Y(HL)	A1&!B0	0.4050	0.1626	0.3998	0.5103
A0(HL)	Y(LH)	A1&!B0	0.4050	0.1132	0.3801	0.4989
A1(LH)	Y(HL)	A0&!B0	0.4050	0.1637	0.3749	0.5149
A1(HL)	Y(LH)	A0&!B0	0.4050	0.1103	0.4093	0.5393
B0(HL)	Y(LH)	!A0&!A1	0.4050	0.1497	0.3521	0.4642
B0(HL)	Y(LH)	A0&!A1	0.4050	0.1084	0.3870	0.5301
B0(HL)	Y(LH)	!A0&A1	0.4050	0.1116	0.3562	0.4922
B0(LH)	Y(HL)	!A0&!A1	0.4050	0.1356	0.3877	0.4610
B0(LH)	Y(HL)	A0&!A1	0.4050	0.1316	0.3928	0.5034
B0(LH)	Y(HL)	!A0&A1	0.4050	0.1352	0.3883	0.4595

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B0	!A0&!A1	0.4050	Y(LH)	0.1497	1.0105
B0	A0&!A1	0.4050	Y(LH)	0.1084	1.3659
B0	!A0&A1	0.4050	Y(LH)	0.1116	1.0126
A0	A1&!B0	0.4050	Y(HL)	0.1626	0.7199
A1	A0&!B0	0.4050	Y(HL)	0.1637	0.7097
B0	!A0&!A1	0.4050	Y(HL)	0.1356	0.2123
B0	A0&!A1	0.4050	Y(HL)	0.1316	0.2220
B0	!A0&A1	0.4050	Y(HL)	0.1352	0.2212
A1	A0&!B0	0.4050	Y(LH)	0.1103	1.6655
A0	A1&!B0	0.4050	Y(LH)	0.1132	1.3294
A1(HL)	!A0&!B0	0.4050	n/a	n/a	0.3764
A1(HL)	!A0&B0	0.4050	n/a	n/a	0.3768
A1(HL)	A0&B0	0.4050	n/a	n/a	0.3760
A0(HL)	!A1&!B0	0.4050	n/a	n/a	0.4021
A0(HL)	!A1&B0	0.4050	n/a	n/a	0.3759
A0(HL)	A1&B0	0.4050	n/a	n/a	0.3757
A0(LH)	!A1&!B0	0.4050	n/a	n/a	-0.1921
A0(LH)	!A1&B0	0.4050	n/a	n/a	-0.3757
A0(LH)	A1&B0	0.4050	n/a	n/a	-0.3674
A1(LH)	!A0&!B0	0.4050	n/a	n/a	-0.3755
A1(LH)	!A0&B0	0.4050	n/a	n/a	-0.3756
A1(LH)	A0&B0	0.4050	n/a	n/a	-0.3669

B0(LH)	A0&A1	0.4050	n/a		n/a	-0.1162
B0(HL)	A0&A1	0.4050	n/a		n/a	0.5873

LEAKAGE POWER

When Condition	Power (nW)
!A0&!A1&!B0	0.1804
!A0&A1&!B0	0.1804
A0&!A1&!B0	0.1852
!A0&!A1&B0	0.0316
!A0&A1&B0	0.0316
A0&!A1&B0	0.0316
A0&A1&!B0	0.0819
A0&A1&B0	0.0316

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

DFFDRX1 (tt_3p3v_25c/3.300000/25.0)

The DFFDR cell is a positive edge-triggered, static DICE-based D-type flip-flop with asynchronous active-high reset (R). The cell has a pair of output (Q, QN).
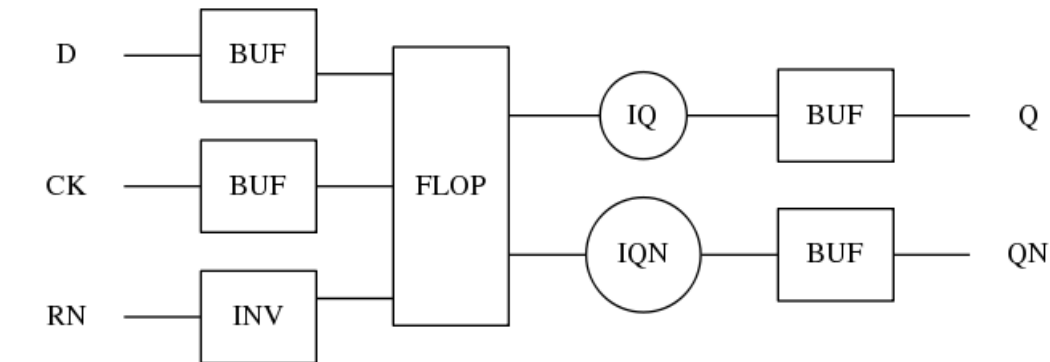
Attributes

Attribute	Value
area	3415.0400000000004 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D
Clear	(!RN)

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4886	0.2720
D(LH)	CK(LH)	0.4055	0.2572

Constraint Pin	Related Pin	recovery(ns)	removal(ns)
RN(LH)	CK(LH)	0.2979	-0.1841

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
RN(HLH)	RN(HL)	0.4463
RN(HLH)	RN(HL)	0.4463
RN(HLH)	RN(HL)	0.4366
RN(HLH)	RN(HL)	0.4366
CK(HLH)	CK(HL)	0.7478
CK(HLH)	CK(HL)	0.5770
CK(LHL)	CK(LH)	0.5635
CK(LHL)	CK(LH)	0.5538

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0229
RN	input	0.0115
CK	input	0.0239

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
RN(HL)	QN(LH)	!CK&!D	0.4050	0.1626	0.8682	0.4788
RN(HL)	QN(LH)	!CK&D	0.4050	0.1626	0.8695	0.4788
RN(HL)	QN(LH)	CK&!D	0.4050	0.1626	0.8692	0.4781
RN(HL)	QN(LH)	CK&D	0.4050	0.1627	0.8694	0.4785
RN(HL)	Q(HL)	!CK&!D	0.4050	0.2326	1.4652	0.5374
RN(HL)	Q(HL)	!CK&D	0.4050	0.2325	1.4658	0.5366
RN(HL)	Q(HL)	CK&!D	0.4050	0.2328	1.4702	0.5384
RN(HL)	Q(HL)	CK&D	0.4050	0.2325	1.4696	0.5389
CK(LH)	QN(LH)	!D&RN	0.4050	0.1625	1.1712	0.4783
CK(LH)	Q(LH)	D&RN	0.4050	0.1616	1.0650	0.5062
CK(LH)	QN(HL)	D&RN	0.4050	0.2333	1.4713	0.5184
CK(LH)	Q(HL)	!D&RN	0.4050	0.2325	1.0529	0.5497

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D&RN	0.4050	QN(LH)	0.1625	1.4425
CK	D&RN	0.4050	Q(LH)	0.1616	1.5435
RN	!CK&!D	0.4050	QN(LH)	0.1626	1.2577
RN	!CK&D	0.4050	QN(LH)	0.1626	1.6568
RN	CK&!D	0.4050	QN(LH)	0.1626	2.0141
RN	CK&D	0.4050	QN(LH)	0.1627	2.0129
RN	!CK&!D	0.4050	Q(HL)	0.2326	1.2385
RN	!CK&D	0.4050	Q(HL)	0.2325	1.6377
RN	CK&!D	0.4050	Q(HL)	0.2328	1.9944
RN	CK&D	0.4050	Q(HL)	0.2325	1.9952
CK	D&RN	0.4050	QN(HL)	0.2333	1.5397
CK	!D&RN	0.4050	Q(HL)	0.2325	1.4200
D(HL)	!CK&!RN	0.4050	n/a	n/a	0.8652
D(HL)	CK&!RN	0.4050	n/a	n/a	0.1593
D(HL)	!CK&RN	0.4050	n/a	n/a	1.4845
D(HL)	CK&RN	0.4050	n/a	n/a	0.1756
CK(HL)	!D&!RN	0.4050	n/a	n/a	1.3955
CK(HL)	D&!RN	0.4050	n/a	n/a	2.0495
CK(HL)	!D&RN	0.4050	n/a	n/a	1.1818
CK(HL)	D&RN	0.4050	n/a	n/a	1.2704
D(LH)	!CK&!RN	0.4050	n/a	n/a	0.7327
D(LH)	CK&!RN	0.4050	n/a	n/a	-0.1570
D(LH)	!CK&RN	0.4050	n/a	n/a	1.2334
D(LH)	CK&RN	0.4050	n/a	n/a	-0.1571
RN(HL)	!CK&!D	0.4050	n/a	n/a	0.3586
RN(HL)	!CK&D	0.4050	n/a	n/a	1.1255
RN(HL)	CK&!D	0.4050	n/a	n/a	0.3588
RN(HL)	CK&D	0.4050	n/a	n/a	0.3588
RN(LH)	!CK&!D	0.4050	n/a	n/a	0.3763
RN(LH)	!CK&D	0.4050	n/a	n/a	1.0159
RN(LH)	CK&!D	0.4050	n/a	n/a	0.3763
RN(LH)	CK&D	0.4050	n/a	n/a	0.3763
CK(LH)	!D&!RN	0.4050	n/a	n/a	1.1076

CK(LH)	D&!RN	0.4050	n/a	n/a	1.5769
CK(LH)	!D&RN	0.4050	n/a	n/a	1.1077
CK(LH)	D&RN	0.4050	n/a	n/a	0.8266

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D&!RN	0.4333
!CK&D&!RN	0.4266
CK&!D&!RN	0.4333
CK&D&!RN	0.4333
!CK&!D&RN	0.4201
!CK&D&RN	0.4925
CK&!D&RN	183.6493
CK&D&RN	263.2466

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

DFFDRX1 (tt_5v_25c/5.0000/25.0)

The DFFDR cell is a positive edge-triggered, static DICE-based D-type flip-flop with asynchronous active-high reset (R). The cell has a pair of output (Q, QN).

Attributes

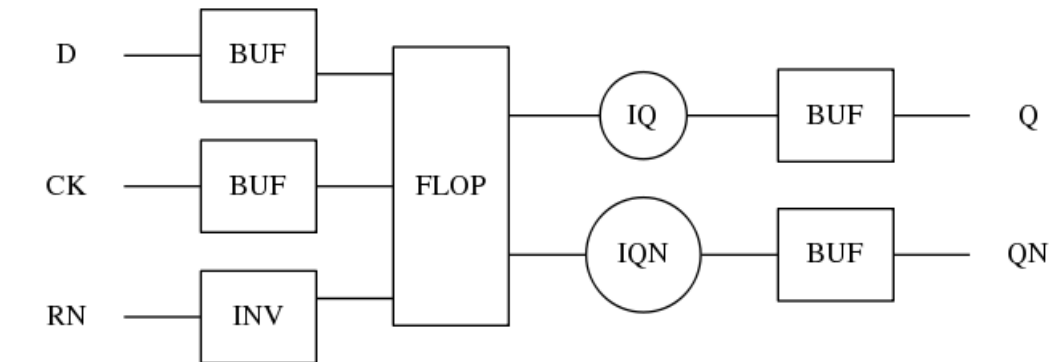| Attribute	Value
area	3415.0400000000004 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D
Clear	(!RN)

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	recovery(ns)	removal(ns)
RN(LH)	CK(LH)	0.2004	-0.1246

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
RN(HLH)	RN(HL)	0.3096
RN(HLH)	RN(HL)	0.3096
RN(HLH)	RN(HL)	0.2999
RN(HLH)	RN(HL)	0.2999
CK(HLH)	CK(HL)	0.4854
CK(HLH)	CK(HL)	0.3878
CK(LHL)	CK(LH)	0.3878
CK(LHL)	CK(LH)	0.3975

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0241
RN	input	0.0122
CK	input	0.0250

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
RN(HL)	QN(LH)	!CK&!D	0.4050	0.2291	0.6963	0.4534
RN(HL)	QN(LH)	!CK&D	0.4050	0.2289	0.6966	0.4530
RN(HL)	QN(LH)	CK&!D	0.4050	0.2266	0.6945	0.4488
RN(HL)	QN(LH)	CK&D	0.4050	0.2290	0.6967	0.4529
RN(HL)	Q(HL)	!CK&!D	0.4050	0.2910	1.0908	0.4912
RN(HL)	Q(HL)	!CK&D	0.4050	0.2911	1.0910	0.4916
RN(HL)	Q(HL)	CK&!D	0.4050	0.2910	1.0936	0.4913
RN(HL)	Q(HL)	CK&D	0.4050	0.2910	1.0934	0.4911
CK(LH)	QN(LH)	!D&RN	0.4050	0.2266	0.8720	0.4488
CK(LH)	Q(LH)	D&RN	0.4050	0.2284	0.8172	0.4704
CK(LH)	QN(HL)	D&RN	0.4050	0.2913	1.1025	0.4785
CK(LH)	Q(HL)	!D&RN	0.4050	0.2910	0.8056	0.4994

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D&RN	0.4050	QN(LH)	0.2266	3.6607
CK	D&RN	0.4050	Q(LH)	0.2284	3.7936
RN	!CK&!D	0.4050	QN(LH)	0.2291	3.0901
RN	!CK&D	0.4050	QN(LH)	0.2289	4.0500
RN	CK&!D	0.4050	QN(LH)	0.2266	4.8764
RN	CK&D	0.4050	QN(LH)	0.2290	4.8742
RN	!CK&!D	0.4050	Q(HL)	0.2910	2.9960
RN	!CK&D	0.4050	Q(HL)	0.2911	3.9544
RN	CK&!D	0.4050	Q(HL)	0.2910	4.7798
RN	CK&D	0.4050	Q(HL)	0.2910	4.7787
CK	D&RN	0.4050	QN(HL)	0.2913	3.7864
CK	!D&RN	0.4050	Q(HL)	0.2910	3.5445
D(HL)	!CK&!RN	0.4050	n/a	n/a	2.1401
D(HL)	CK&!RN	0.4050	n/a	n/a	0.3802
D(HL)	!CK&RN	0.4050	n/a	n/a	3.6947
D(HL)	CK&RN	0.4050	n/a	n/a	0.4178
CK(HL)	!D&!RN	0.4050	n/a	n/a	3.6171
CK(HL)	D&!RN	0.4050	n/a	n/a	5.0942
CK(HL)	!D&RN	0.4050	n/a	n/a	3.3715
CK(HL)	D&RN	0.4050	n/a	n/a	3.2748
D(LH)	!CK&!RN	0.4050	n/a	n/a	1.7165
D(LH)	CK&!RN	0.4050	n/a	n/a	-0.3754
D(LH)	!CK&RN	0.4050	n/a	n/a	2.9629
D(LH)	CK&RN	0.4050	n/a	n/a	-0.3759
RN(HL)	!CK&!D	0.4050	n/a	n/a	0.9733
RN(HL)	!CK&D	0.4050	n/a	n/a	2.8097
RN(HL)	CK&!D	0.4050	n/a	n/a	0.9737
RN(HL)	CK&D	0.4050	n/a	n/a	0.9733
RN(LH)	!CK&!D	0.4050	n/a	n/a	0.9696
RN(LH)	!CK&D	0.4050	n/a	n/a	2.4806
RN(LH)	CK&!D	0.4050	n/a	n/a	0.9696
RN(LH)	CK&D	0.4050	n/a	n/a	0.9696
CK(LH)	!D&!RN	0.4050	n/a	n/a	2.8777

CK(LH)	D&!RN	0.4050	n/a		n/a	3.9879
CK(LH)	!D&RN	0.4050	n/a		n/a	2.8766
CK(LH)	D&RN	0.4050	n/a		n/a	2.1708

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D&!RN	1.4741
!CK&D&!RN	1.3414
CK&!D&!RN	1.4741
CK&D&!RN	1.4741
!CK&!D&RN	1.4029
!CK&D&RN	1.9196
CK&!D&RN	259.3668
CK&D&RN	352.3896

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

DFFDX1 (tt_3p3v_25c/3.300000/25.0)

The DFFD cell is a positive edge-triggered, static DICE-based D-type flip-flop. The cell has a pair of outputs (Q, QN) .

Attributes

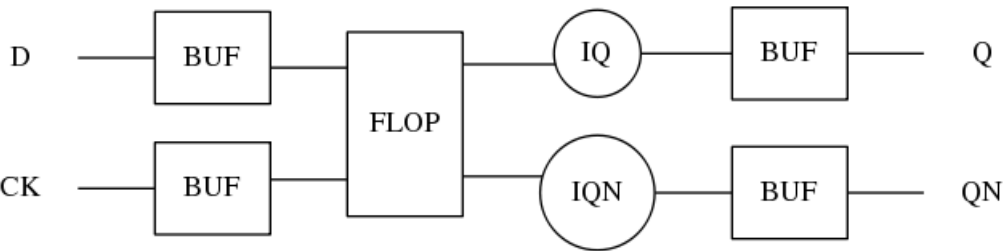| Attribute	Value
area	2895.3599999999997 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4054	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.6136
CK(HLH)	CK(HL)	0.5342

CK(LHL)	CK(LH)	0.4659
CK(LHL)	CK(LH)	0.5635

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0228
CK	input	0.0239

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	QN(LH)	!D	0.4050	0.1622	1.0869	0.5127
CK(LH)	Q(LH)	D	0.4050	0.1627	1.1425	0.4766
CK(LH)	QN(HL)	D	0.4050	0.2325	1.0589	0.5501
CK(LH)	Q(HL)	!D	0.4050	0.2343	1.2638	0.4636

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D	0.4050	QN(LH)	0.1622	1.4495
CK	D	0.4050	Q(LH)	0.1627	1.4559
CK	D	0.4050	QN(HL)	0.2325	1.4306
CK	!D	0.4050	Q(HL)	0.2343	1.4630
D(LH)	!CK	0.4050	n/a	n/a	1.1981
D(LH)	CK	0.4050	n/a	n/a	-0.1571
CK(LH)	!D	0.4050	n/a	n/a	0.8584
CK(LH)	D	0.4050	n/a	n/a	0.8610
CK(HL)	!D	0.4050	n/a	n/a	1.1462
CK(HL)	D	0.4050	n/a	n/a	1.2587
D(HL)	!CK	0.4050	n/a	n/a	1.4524
D(HL)	CK	0.4050	n/a	n/a	0.1753

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	0.4039
!CK&D	92.0364

CK&!D	223.3244
CK&D	223.1866

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

DFFDX1 (tt_5v_25c/5.0000/25.0)

The DFFD cell is a positive edge-triggered, static DICE-based D-type flip-flop. The cell has a pair of outputs (Q, QN) .

Attributes

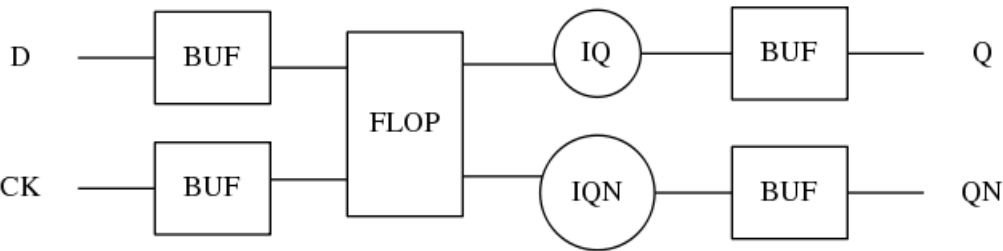| Attribute	Value
area	2895.3599999999997 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.4061
CK(HLH)	CK(HL)	0.3634

CK(LHL)	CK(LH)	0.3389
CK(LHL)	CK(LH)	0.3878

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0240
CK	input	0.0250

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	QN(LH)	!D	0.4050	0.2285	0.8337	0.4717
CK(LH)	Q(LH)	D	0.4050	0.2269	0.8543	0.4487
CK(LH)	QN(HL)	D	0.4050	0.2910	0.8057	0.4993
CK(LH)	Q(HL)	!D	0.4050	0.2890	0.9649	0.4422

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D	0.4050	QN(LH)	0.2285	3.5849
CK	D	0.4050	Q(LH)	0.2269	3.7109
CK	D	0.4050	QN(HL)	0.2910	3.5772
CK	!D	0.4050	Q(HL)	0.2890	3.6662
D(LH)	!CK	0.4050	n/a	n/a	3.0318
D(LH)	CK	0.4050	n/a	n/a	-0.3758
CK(LH)	!D	0.4050	n/a	n/a	2.2573
CK(LH)	D	0.4050	n/a	n/a	2.2647
CK(HL)	!D	0.4050	n/a	n/a	2.9965
CK(HL)	D	0.4050	n/a	n/a	3.2711
D(HL)	!CK	0.4050	n/a	n/a	3.7342
D(HL)	CK	0.4050	n/a	n/a	0.4183

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	1.3116
!CK&D	130.6525

CK&!D	306.4231
CK&D	306.5216

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

DFFNX1 (tt_3p3v_25c/3.300000/25.0)

The DFFN cell is a positive edge-triggered, static D-type flip-flop. The cell has a single inverted output (QN).

Attributes

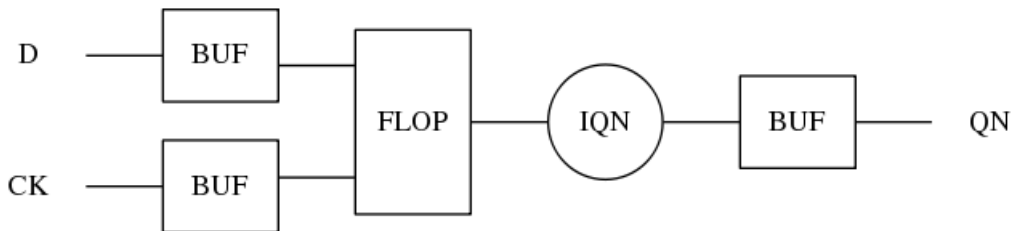| Attribute	Value
area	1354.8799999999999 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4471	0.2720
D(LH)	CK(LH)	0.4055	0.2761

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.7112
CK(HLH)	CK(HL)	0.4732
CK(LHL)	CK(LH)	0.4756
CK(LHL)	CK(LH)	0.4073

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0114
CK	input	0.0119

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	QN(LH)	!D	0.4050	0.0812	1.0633	0.4778
CK(LH)	QN(HL)	D	0.4050	0.1171	1.2024	0.4644

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D	0.4050	QN(LH)	0.0812	1.2253
CK	D	0.4050	QN(HL)	0.1171	1.2789
D(LH)	!CK	0.4050	n/a	n/a	0.5528
D(LH)	CK	0.4050	n/a	n/a	-0.0785
CK(LH)	!D	0.4050	n/a	n/a	0.4495
CK(LH)	D	0.4050	n/a	n/a	0.4151
CK(HL)	!D	0.4050	n/a	n/a	0.6512
CK(HL)	D	0.4050	n/a	n/a	0.5558
D(HL)	!CK	0.4050	n/a	n/a	0.7598
D(HL)	CK	0.4050	n/a	n/a	0.0877

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	44.5689
!CK&D	0.1715
CK&!D	89.0482
CK&D	127.4581

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt

Temperature: 25.0 centigrade

DFFNX1 (tt_5v_25c/5.0000/25.0)

The DFFN cell is a positive edge-triggered, static D-type flip-flop. The cell has a single inverted output (QN).

Attributes

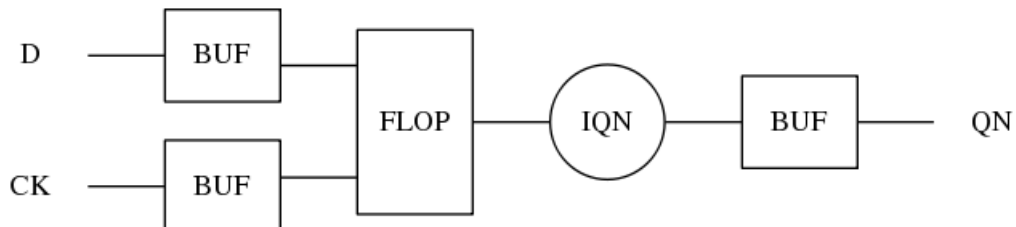| Attribute	Value
area	1354.8799999999999 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
QN	IQN

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.4610
CK(HLH)	CK(HL)	0.3206
CK(LHL)	CK(LH)	0.3389
CK(LHL)	CK(LH)	0.2999

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0121
CK	input	0.0125

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	QN(LH)	!D	0.4050	0.1132	0.8040	0.4491
CK(LH)	QN(HL)	D	0.4050	0.1459	0.9202	0.4465

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!D	0.4050	QN(LH)	0.1132	3.0853
CK	D	0.4050	QN(HL)	0.1459	3.1326
D(LH)	!CK	0.4050	n/a	n/a	1.3765
D(LH)	CK	0.4050	n/a	n/a	-0.1880
CK(LH)	!D	0.4050	n/a	n/a	1.1826
CK(LH)	D	0.4050	n/a	n/a	1.0901
CK(HL)	!D	0.4050	n/a	n/a	1.6912
CK(HL)	D	0.4050	n/a	n/a	1.4550
D(HL)	!CK	0.4050	n/a	n/a	1.9175
D(HL)	CK	0.4050	n/a	n/a	0.2092

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	62.7969
!CK&D	0.5291
CK&!D	125.1417
CK&D	169.6615

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt

Temperature: 25.0 centigrade

DFFX1 (tt_3p3v_25c/3.300000/25.0)

The DFF cell is a positive edge-triggered, static D-type flip-flop. The cell has a single output (Q) .
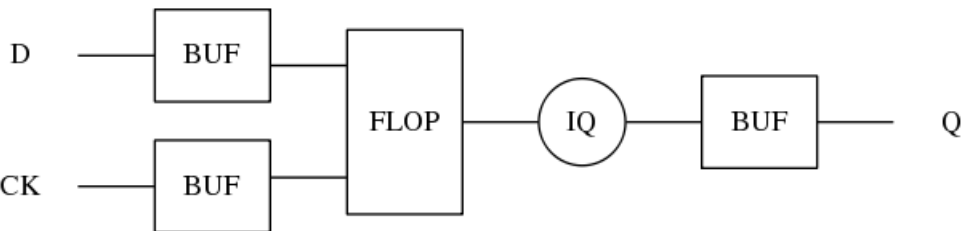
Attributes

Attribute	Value
area	1354.8799999999999 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4627	0.2720
D(LH)	CK(LH)	0.4055	0.2865

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.7234
CK(HLH)	CK(HL)	0.4793
CK(LHL)	CK(LH)	0.5147
CK(LHL)	CK(LH)	0.4268

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0114
CK	input	0.0119

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	Q(LH)	D	0.4050	0.0810	1.0810	0.5142
CK(LH)	Q(HL)	!D	0.4050	0.1162	1.0595	0.5497

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	D	0.4050	Q(LH)	0.0810	1.2858
CK	!D	0.4050	Q(HL)	0.1162	1.2534
D(LH)	!CK	0.4050	n/a	n/a	0.5528
D(LH)	CK	0.4050	n/a	n/a	-0.0785
CK(LH)	!D	0.4050	n/a	n/a	0.4495
CK(LH)	D	0.4050	n/a	n/a	0.4151
CK(HL)	!D	0.4050	n/a	n/a	0.6514
CK(HL)	D	0.4050	n/a	n/a	0.5558
D(HL)	!CK	0.4050	n/a	n/a	0.7598
D(HL)	CK	0.4050	n/a	n/a	0.0878

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	44.6001
!CK&D	0.1858
CK&!D	89.2701
CK&D	127.5151

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt

Temperature: 25.0 centigrade

DFFX1 (tt_5v_25c/5.0000/25.0)

The DFF cell is a positive edge-triggered, static D-type flip-flop. The cell has a single output (Q) .
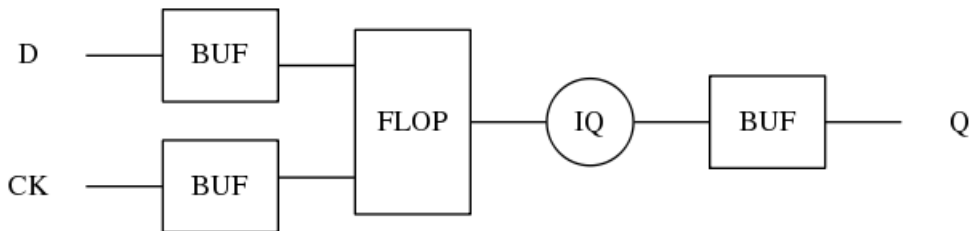
Attributes

Attribute	Value
area	1354.8799999999999 µm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.4732
CK(HLH)	CK(HL)	0.3206
CK(LHL)	CK(LH)	0.3585
CK(LHL)	CK(LH)	0.3096

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0121
CK	input	0.0125

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	Q(LH)	D	0.4050	0.1142	0.8282	0.4726
CK(LH)	Q(HL)	!D	0.4050	0.1454	0.8096	0.4992

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	D	0.4050	Q(LH)	0.1142	3.2259
CK	!D	0.4050	Q(HL)	0.1454	3.2103
D(LH)	!CK	0.4050	n/a	n/a	1.3771
D(LH)	CK	0.4050	n/a	n/a	-0.1881
CK(LH)	!D	0.4050	n/a	n/a	1.1835
CK(LH)	D	0.4050	n/a	n/a	1.0902
CK(HL)	!D	0.4050	n/a	n/a	1.6915
CK(HL)	D	0.4050	n/a	n/a	1.4537
D(HL)	!CK	0.4050	n/a	n/a	1.9173
D(HL)	CK	0.4050	n/a	n/a	0.2092

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	62.7967
!CK&D	0.5984
CK&!D	125.4015
CK&D	169.8305

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt

Temperature: 25.0 centigrade

DFFX2 (tt_3p3v_25c/3.300000/25.0)

The DFF cell is a positive edge-triggered, static D-type flip-flop. The cell has a single output (Q) .

Attributes

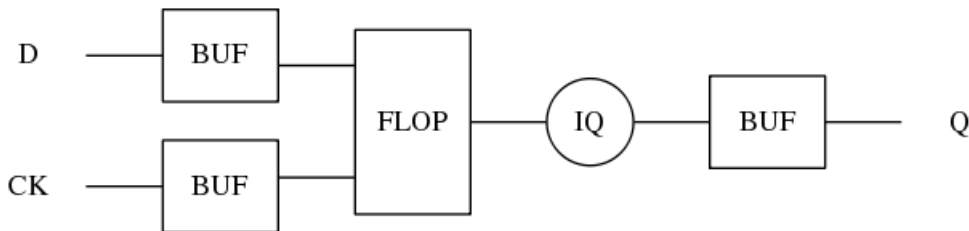| Attribute	Value
area	1354.8799999999999 μm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.5587
CK(HLH)	CK(HL)	0.3511
CK(LHL)	CK(LH)	0.3878
CK(LHL)	CK(LH)	0.3096

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0227
CK	input	0.0237

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	Q(LH)	D	0.4050	0.1650	0.9110	0.4847
CK(LH)	Q(HL)	!D	0.4050	0.2318	0.9120	0.5097

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	D	0.4050	Q(LH)	0.1650	1.9215
CK	!D	0.4050	Q(HL)	0.2318	1.8747
D(LH)	!CK	0.4050	n/a	n/a	0.8210
D(LH)	CK	0.4050	n/a	n/a	-0.1551
CK(LH)	!D	0.4050	n/a	n/a	0.6980
CK(LH)	D	0.4050	n/a	n/a	0.6473
CK(HL)	!D	0.4050	n/a	n/a	1.0408
CK(HL)	D	0.4050	n/a	n/a	0.9256
D(HL)	!CK	0.4050	n/a	n/a	1.2058
D(HL)	CK	0.4050	n/a	n/a	0.1730

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	44.4987
!CK&D	0.1745
CK&!D	111.0512
CK&D	168.7646

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt

Temperature: 25.0 centigrade

DFFX2 (tt_5v_25c/5.0000/25.0)

The DFF cell is a positive edge-triggered, static D-type flip-flop. The cell has a single output (Q) .
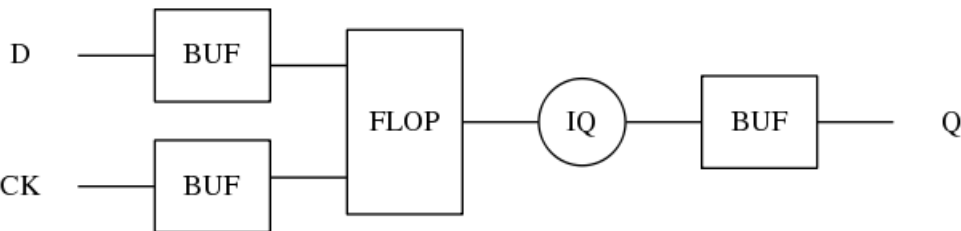
Attributes

Attribute	Value
area	1354.8799999999999 µm^2

FLOP GROUP

Attribute	Expression
Registers	IQ IQN
Clocked On	CK
Next State	D

OUTPUT FUNCTIONS

Output Pin	Function
Q	IQ

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
D(HL)	CK(LH)	0.4055	0.2720
D(LH)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.3695
CK(HLH)	CK(HL)	0.2352
CK(LHL)	CK(LH)	0.2706
CK(LHL)	CK(LH)	0.2218

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
D	input	0.0240
CK	input	0.0248

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(LH)	Q(LH)	D	0.4050	0.2312	0.7106	0.4541
CK(LH)	Q(HL)	!D	0.4050	0.2874	0.7079	0.4719

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	D	0.4050	Q(LH)	0.2312	4.9554
CK	!D	0.4050	Q(HL)	0.2874	4.9149
D(LH)	!CK	0.4050	n/a	n/a	2.1405
D(LH)	CK	0.4050	n/a	n/a	-0.3719
CK(LH)	!D	0.4050	n/a	n/a	1.9290
CK(LH)	D	0.4050	n/a	n/a	1.7939
CK(HL)	!D	0.4050	n/a	n/a	2.7960
CK(HL)	D	0.4050	n/a	n/a	2.5103
D(HL)	!CK	0.4050	n/a	n/a	3.1285
D(HL)	CK	0.4050	n/a	n/a	0.4132

LEAKAGE POWER

When Condition	Power (nW)
!CK&!D	62.6841
!CK&D	0.5482
CK&!D	155.9904
CK&D	224.7807

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt

Temperature: 25.0 centigrade

DLYX0P2 (tt_3p3v_25c/3.300000/25.0)

The DLY cell provides the logical delay of a single input (A).

Attributes

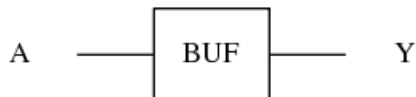| Attribute	Value
area	426.88000000000005 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A)

TRUTH TABLE FOR Y

A	Y
1	1
0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0420

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(HL)	default	0.4050	0.2315	0.7587	0.4860
A(LH)	Y(LH)	default	0.4050	0.1646	0.6241	0.4694

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(HL)	0.2315	0.9207
A	default	0.4050	Y(LH)	0.1646	0.4302

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0337
A	0.0337

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

DLYX0P2 (tt_5v_25c/5.0000/25.0)

The DLY cell provides the logical delay of a single input (A).

Attributes

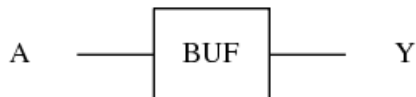| Attribute	Value
area	426.88000000000005 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A)

TRUTH TABLE FOR Y

A	Y
1	1
0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0446

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(HL)	default	0.4050	0.2865	0.6153	0.4584
A(LH)	Y(LH)	default	0.4050	0.2308	0.5119	0.4468

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(HL)	0.2865	2.2979
A	default	0.4050	Y(LH)	0.2308	1.1012

LEAKAGE POWER

When Condition	Power (nW)
!A	0.1146
A	0.1146

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

DLYX1 (tt_3p3v_25c/3.300000/25.0)

The DLY cell provides the logical delay of a single input (A).

Attributes

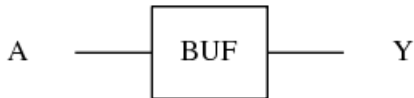| Attribute	Value
area	1336.32 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A)

TRUTH TABLE FOR Y

A	Y
1	1
0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0395

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(HL)	default	0.4050	2.6506	4.1651	0.9060
A(LH)	Y(LH)	default	0.4050	2.2327	3.3319	0.7242

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(HL)	2.6506	16.6463
A	default	0.4050	Y(LH)	2.2327	14.4169

LEAKAGE POWER

When Condition	Power (nW)
!A	0.1051
A	0.2732

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

DLYX1 (tt_5v_25c/5.0000/25.0)

The DLY cell provides the logical delay of a single input (A).
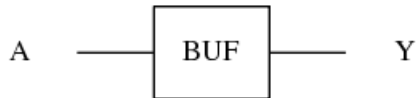
Attributes

Attribute	Value
area	1336.32 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A)

TRUTH TABLE FOR Y

A	Y
1	1
0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0417

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(HL)	default	0.4050	3.7428	2.9599	0.8329
A(LH)	Y(LH)	default	0.4050	3.3662	2.5732	0.6641

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(HL)	3.7428	62.1682
A	default	0.4050	Y(LH)	3.3662	51.7444

LEAKAGE POWER

When Condition	Power (nW)
!A	0.4030
A	1.1738

SETUP AND CONDITIONS
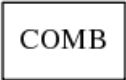
PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP12 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	222.72 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP12 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	222.72 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP24 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	445.44 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP24 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	445.44 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP48 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	890.88 μm^2

FUNCTIONAL SCHEMATIC

COMB
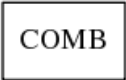
LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP48 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	890.88 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP6 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	111.36 μm^2

FUNCTIONAL SCHEMATIC

COMB
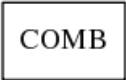
LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP6 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	111.36 μm^2

FUNCTIONAL SCHEMATIC

COMB
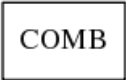
LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP96 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	1781.76 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP96 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	1781.76 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

FDCAP9 (tt_3p3v_25c/3.300000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	167.04 μm^2

FUNCTIONAL SCHEMATIC

COMB

LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

FDCAP9 (tt_5v_25c/5.0000/25.0)

Attributes

Attribute	Value
area	FILLCAP μm^2
area	167.04 μm^2

FUNCTIONAL SCHEMATIC

COMB
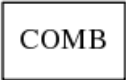
LEAKAGE POWER

When Condition	Power (nW)
default	0.0000

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

INVX16 (tt_3p3v_25c/3.300000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
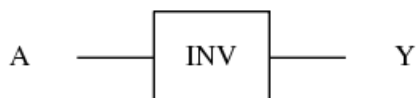
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	1.4285

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	10.0578	0.3746	0.4251
A(LH)	Y(HL)	default	0.4050	15.0425	0.3627	0.4198

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	10.0578	16.3238
A	default	0.4050	Y(HL)	15.0425	-2.3894

LEAKAGE POWER

When Condition	Power (nW)
!A	0.8262
A	0.1087

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

INVX16 (tt_5v_25c/5.0000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
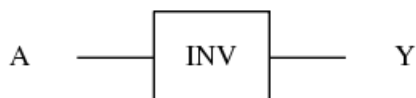
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	1.4938

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	13.9109	0.3459	0.4201
A(LH)	Y(HL)	default	0.4050	18.0859	0.3358	0.4148

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	13.9109	50.9026
A	default	0.4050	Y(HL)	18.0859	1.5549

LEAKAGE POWER

When Condition	Power (nW)
!A	3.9107
A	0.6219

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

INVX1 (tt_3p3v_25c/3.300000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	111.36 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
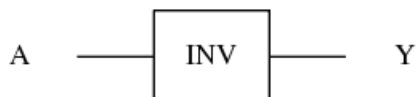
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0113

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.0775	0.3988	0.4689
A(LH)	Y(HL)	default	0.4050	0.1114	0.3825	0.4454

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.0775	0.2003
A	default	0.4050	Y(HL)	0.1114	0.0676

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0254
A	0.0111

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

INVX1 (tt_5v_25c/5.0000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

| Attribute	Value
area	111.36 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
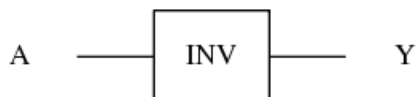
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0119

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.1083	0.3603	0.4463
A(LH)	Y(HL)	default	0.4050	0.1370	0.3521	0.4341

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.1083	0.5480
A	default	0.4050	Y(HL)	0.1370	0.1904

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0974
A	0.0282

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

INVX2 (tt_3p3v_25c/3.300000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	111.36 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
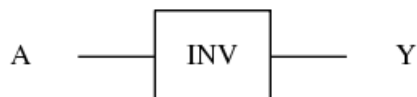
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0224

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.1582	0.3892	0.4529
A(LH)	Y(HL)	default	0.4050	0.2223	0.3756	0.4357

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.1582	0.3465
A	default	0.4050	Y(HL)	0.2223	0.0872

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0224
A	0.0112

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

INVX2 (tt_5v_25c/5.0000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

| Attribute	Value
area	111.36 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
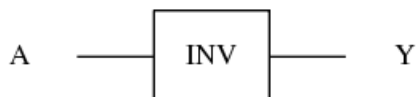
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0234

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.2203	0.3543	0.4372
A(LH)	Y(HL)	default	0.4050	0.2720	0.3479	0.4283

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.2203	0.9810
A	default	0.4050	Y(HL)	0.2720	0.2834

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0830
A	0.0316

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

INVX4 (tt_3p3v_25c/3.300000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	167.04 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
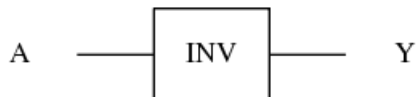
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0895

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.6431	0.3722	0.4241
A(LH)	Y(HL)	default	0.4050	0.9262	0.3624	0.4193

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.6431	1.0200
A	default	0.4050	Y(HL)	0.9262	-0.1499

LEAKAGE POWER

When Condition	Power (nW)
!A	0.0680
A	0.0231

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

INVX4 (tt_5v_25c/5.0000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

| Attribute	Value
area	167.04 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
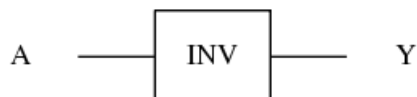
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0936

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	0.8938	0.3453	0.4207
A(LH)	Y(HL)	default	0.4050	1.1143	0.3356	0.4135

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	0.8938	3.1541
A	default	0.4050	Y(HL)	1.1143	0.1072

LEAKAGE POWER

When Condition	Power (nW)
!A	0.2819
A	0.0764

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

INVX8 (tt_3p3v_25c/3.300000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

Attribute	Value
area	278.4 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
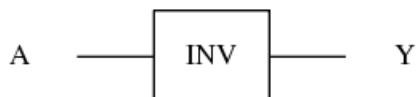
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.3575

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	2.5295	0.3727	0.4231
A(LH)	Y(HL)	default	0.4050	3.6856	0.3593	0.4149

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	2.5295	4.0676
A	default	0.4050	Y(HL)	3.6856	-0.5957

LEAKAGE POWER

When Condition	Power (nW)
!A	0.2283
A	0.0490

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

INVX8 (tt_5v_25c/5.0000/25.0)

The INV cell provides the logical inversion of a single input (A).

Attributes

| Attribute	Value
area	278.4 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!A)

TRUTH TABLE FOR Y

A	Y
0	1
1	0

FUNCTIONAL SCHEMATIC
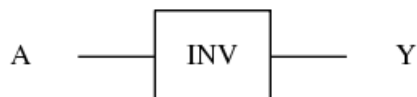
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.3737

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	default	0.4050	3.5135	0.3455	0.4200
A(LH)	Y(HL)	default	0.4050	4.4845	0.3352	0.4133

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	default	0.4050	Y(LH)	3.5135	12.7528
A	default	0.4050	Y(HL)	4.4845	0.4040

LEAKAGE POWER

When Condition	Power (nW)
!A	1.0277
A	0.2055

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

MAJ3X1 (tt_3p3v_25c/3.300000/25.0)

The MAJ3 cell is a 3-input majority gate (2-out-of-3).

Attributes

Attribute	Value
area	928.0 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(((A&B)|(B&C)|(A&C)))

TRUTH TABLE FOR Y

A	B	C	Y
1	1	?	1
1	?	1	1
?	1	1	1
0	0	?	0
0	?	0	0
?	0	0	0

FUNCTIONAL SCHEMATIC
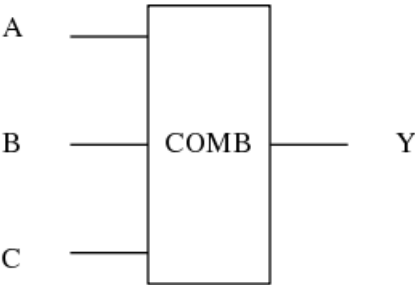
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0117
B	input	0.0117
C	input	0.0117

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	!B&C	0.4050	0.0631	0.7350	0.8594
A(LH)	Y(LH)	B&!C	0.4050	0.0640	0.7457	0.8162
A(HL)	Y(HL)	!B&C	0.4050	0.1152	0.8090	0.6933
A(HL)	Y(HL)	B&!C	0.4050	0.1161	0.7958	0.6762
B(HL)	Y(HL)	!A&C	0.4050	0.1161	0.7958	0.6762
B(HL)	Y(HL)	A&!C	0.4050	0.1152	0.8089	0.6932
B(LH)	Y(LH)	!A&C	0.4050	0.0640	0.7458	0.8165
B(LH)	Y(LH)	A&!C	0.4050	0.0631	0.7352	0.8596
C(LH)	Y(LH)	!A&B	0.4050	0.0631	0.7352	0.8596
C(LH)	Y(LH)	A&!B	0.4050	0.0641	0.7458	0.8165
C(HL)	Y(HL)	!A&B	0.4050	0.1152	0.8090	0.6933
C(HL)	Y(HL)	A&!B	0.4050	0.1161	0.7957	0.6762

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B&C	0.4050	Y(LH)	0.0631	0.9740
A	B&!C	0.4050	Y(LH)	0.0640	1.0166
B	!A&C	0.4050	Y(HL)	0.1161	1.2344
B	A&!C	0.4050	Y(HL)	0.1152	1.1600
C	!A&B	0.4050	Y(LH)	0.0631	0.9742
C	A&!B	0.4050	Y(LH)	0.0641	1.0166
A	!B&C	0.4050	Y(HL)	0.1152	1.1600
A	B&!C	0.4050	Y(HL)	0.1161	1.2343
B	!A&C	0.4050	Y(LH)	0.0640	1.0167
B	A&!C	0.4050	Y(LH)	0.0631	0.9742
C	!A&B	0.4050	Y(HL)	0.1152	1.1600
C	A&!B	0.4050	Y(HL)	0.1161	1.2343
B(HL)	!A&!C	0.4050	n/a	n/a	0.3830
B(HL)	A&C	0.4050	n/a	n/a	0.3852
A(LH)	!B&!C	0.4050	n/a	n/a	0.3839
A(LH)	B&C	0.4050	n/a	n/a	0.3814
C(HL)	!A&!B	0.4050	n/a	n/a	0.3830
C(HL)	A&B	0.4050	n/a	n/a	0.3852

B(LH)	!A&!C	0.4050	n/a		n/a	0.3839
B(LH)	A&C	0.4050	n/a		n/a	0.3814
A(HL)	!B&!C	0.4050	n/a		n/a	0.3830
A(HL)	B&C	0.4050	n/a		n/a	0.3852
C(LH)	!A&!B	0.4050	n/a		n/a	0.3839
C(LH)	A&B	0.4050	n/a		n/a	0.3814

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.1098
!A&!B&C	0.1099
!A&B&!C	0.1099
A&!B&!C	0.1099
!A&B&C	0.1212
A&!B&C	0.1212
A&B&!C	0.1212
A&B&C	0.1005

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

MAJ3X1 (tt_5v_25c/5.0000/25.0)

The MAJ3 cell is a 3-input majority gate (2-out-of-3).

Attributes

Attribute	Value
area	928.0 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(((A&B)|(B&C)|(A&C)))

TRUTH TABLE FOR Y

A	B	C	Y
1	1	?	1
1	?	1	1
?	1	1	1
0	0	?	0
0	?	0	0
?	0	0	0

FUNCTIONAL SCHEMATIC
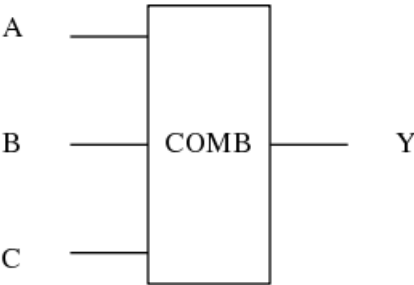
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0123
B	input	0.0123
C	input	0.0123

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	!B&C	0.4050	0.1000	0.5868	0.7265
A(LH)	Y(LH)	B&!C	0.4050	0.1017	0.5796	0.7069
A(HL)	Y(HL)	!B&C	0.4050	0.1619	0.6630	0.6190
A(HL)	Y(HL)	B&!C	0.4050	0.1618	0.6452	0.6086
B(HL)	Y(HL)	!A&C	0.4050	0.1618	0.6452	0.6086
B(HL)	Y(HL)	A&!C	0.4050	0.1619	0.6630	0.6186
B(LH)	Y(LH)	!A&C	0.4050	0.1017	0.5796	0.7069
B(LH)	Y(LH)	A&!C	0.4050	0.1001	0.5869	0.7265
C(LH)	Y(LH)	!A&B	0.4050	0.1001	0.5868	0.7264
C(LH)	Y(LH)	A&!B	0.4050	0.1017	0.5796	0.7069
C(HL)	Y(HL)	!A&B	0.4050	0.1619	0.6630	0.6190
C(HL)	Y(HL)	A&!B	0.4050	0.1618	0.6452	0.6086

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B&C	0.4050	Y(LH)	0.1000	2.3824
A	B&!C	0.4050	Y(LH)	0.1017	2.4791
B	!A&C	0.4050	Y(HL)	0.1618	2.9815
B	A&!C	0.4050	Y(HL)	0.1619	2.7888
C	!A&B	0.4050	Y(LH)	0.1001	2.3836
C	A&!B	0.4050	Y(LH)	0.1017	2.4791
A	!B&C	0.4050	Y(HL)	0.1619	2.7888
A	B&!C	0.4050	Y(HL)	0.1618	2.9815
B	!A&C	0.4050	Y(LH)	0.1017	2.4791
B	A&!C	0.4050	Y(LH)	0.1001	2.3835
C	!A&B	0.4050	Y(HL)	0.1619	2.7891
C	A&!B	0.4050	Y(HL)	0.1618	2.9815
B(HL)	!A&!C	0.4050	n/a	n/a	1.0357
B(HL)	A&C	0.4050	n/a	n/a	1.0335
A(LH)	!B&!C	0.4050	n/a	n/a	0.9788
A(LH)	B&C	0.4050	n/a	n/a	0.9893
C(HL)	!A&!B	0.4050	n/a	n/a	1.0357
C(HL)	A&B	0.4050	n/a	n/a	1.0335

B(LH)	!A&!C	0.4050	n/a		n/a	0.9788
B(LH)	A&C	0.4050	n/a		n/a	0.9893
A(HL)	!B&!C	0.4050	n/a		n/a	1.0357
A(HL)	B&C	0.4050	n/a		n/a	1.0335
C(LH)	!A&!B	0.4050	n/a		n/a	0.9788
C(LH)	A&B	0.4050	n/a		n/a	0.9893

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.3871
!A&!B&C	0.3493
!A&B&!C	0.3493
A&!B&!C	0.3493
!A&B&C	0.4075
A&!B&C	0.4075
A&B&!C	0.4075
A&B&C	0.3335

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

MUXN2X1 (tt_3p3v_25c/3.300000/25.0)

The MUXN2 cell is a 2-to-1 multiplexer with inverted output. The state of the select input (S0) determines which data input (A, B) is presented to the output (Y).

Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((S0&B)|((!S0)&A)))

TRUTH TABLE FOR Y

A	B	S0	Y
0	?	0	1
?	0	1	1
1	?	0	0
?	1	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0231
B	input	0.0231
S0	input	0.0233

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B&!S0	0.4050	0.0577	0.3793	0.5644
A(HL)	Y(LH)	B&!S0	0.4050	0.0577	0.3792	0.5651
A(LH)	Y(HL)	!B&!S0	0.4050	0.1332	0.4176	0.4484
A(LH)	Y(HL)	B&!S0	0.4050	0.1332	0.4179	0.4483
B(HL)	Y(LH)	!A&S0	0.4050	0.0573	0.3876	0.5726
B(HL)	Y(LH)	A&S0	0.4050	0.0573	0.3877	0.5727
B(LH)	Y(HL)	!A&S0	0.4050	0.1336	0.4133	0.4447
B(LH)	Y(HL)	A&S0	0.4050	0.1335	0.4134	0.4443
S0(LH)	Y(HL)	!A&B	0.4050	0.1273	0.3227	0.4304
S0(HL)	Y(LH)	!A&B	0.4050	0.0569	0.3608	0.4794
S0(LH)	Y(LH)	A&!B	0.4050	0.0560	0.3360	0.4855
S0(HL)	Y(HL)	A&!B	0.4050	0.1372	0.4547	0.4628

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
S0	!A&B	0.4050	Y(HL)	0.1273	0.0900
S0	A&!B	0.4050	Y(HL)	0.1372	0.4571
S0	!A&B	0.4050	Y(LH)	0.0569	0.4253
S0	A&!B	0.4050	Y(LH)	0.0560	0.3896
A	!B&!S0	0.4050	Y(LH)	0.0577	0.5867
A	B&!S0	0.4050	Y(LH)	0.0577	0.5866
B	!A&S0	0.4050	Y(LH)	0.0573	0.6584
B	A&S0	0.4050	Y(LH)	0.0573	0.6582
A	!B&!S0	0.4050	Y(HL)	0.1332	0.2927
A	B&!S0	0.4050	Y(HL)	0.1332	0.2925
B	!A&S0	0.4050	Y(HL)	0.1336	0.2210
B	A&S0	0.4050	Y(HL)	0.1335	0.2203
B(HL)	!A&!S0	0.4050	n/a	n/a	0.4695
B(HL)	A&!S0	0.4050	n/a	n/a	0.4688
S0(HL)	!A&!B	0.4050	n/a	n/a	0.3242
S0(HL)	A&B	0.4050	n/a	n/a	0.3250
A(LH)	!B&S0	0.4050	n/a	n/a	0.1695
A(LH)	B&S0	0.4050	n/a	n/a	0.1694
A(HL)	!B&S0	0.4050	n/a	n/a	0.4826

A(HL)	B&S0	0.4050	n/a		n/a	0.4821
B(LH)	!A&!S0	0.4050	n/a		n/a	0.1833
B(LH)	A&!S0	0.4050	n/a		n/a	0.1829
S0(LH)	!A&!B	0.4050	n/a		n/a	0.0572
S0(LH)	A&B	0.4050	n/a		n/a	0.0571

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!S0	0.1369
!A&!B&S0	0.1225
!A&B&!S0	0.1143
A&!B&S0	0.1000
!A&B&S0	0.1000
A&!B&!S0	0.1143
A&B&!S0	0.0917
A&B&S0	0.0774

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

MUXN2X1 (tt_5v_25c/5.0000/25.0)

The MUXN2 cell is a 2-to-1 multiplexer with inverted output. The state of the select input (S0) determines which data input (A, B) is presented to the output (Y).

Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((S0&B)| ((!S0)&A)))

TRUTH TABLE FOR Y

A	B	S0	Y
0	?	0	1
?	0	1	1
1	?	0	0
?	1	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0242
B	input	0.0242
S0	input	0.0240

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B&!S0	0.4050	0.0956	0.3200	0.5062
A(HL)	Y(LH)	B&!S0	0.4050	0.0956	0.3199	0.5058
A(LH)	Y(HL)	!B&!S0	0.4050	0.1832	0.3713	0.4399
A(LH)	Y(HL)	B&!S0	0.4050	0.1832	0.3714	0.4403
B(HL)	Y(LH)	!A&S0	0.4050	0.0951	0.3241	0.5137
B(HL)	Y(LH)	A&S0	0.4050	0.0951	0.3241	0.5135
B(LH)	Y(HL)	!A&S0	0.4050	0.1836	0.3689	0.4367
B(LH)	Y(HL)	A&S0	0.4050	0.1836	0.3688	0.4368
S0(LH)	Y(HL)	!A&B	0.4050	0.1701	0.2864	0.4217
S0(HL)	Y(LH)	!A&B	0.4050	0.0935	0.3048	0.4652
S0(LH)	Y(LH)	A&!B	0.4050	0.0830	0.2798	0.4365
S0(HL)	Y(HL)	A&!B	0.4050	0.1851	0.3824	0.4384

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
S0	!A&B	0.4050	Y(HL)	0.1701	0.3651
S0	A&!B	0.4050	Y(HL)	0.1851	1.2555
S0	!A&B	0.4050	Y(LH)	0.0935	1.2528
S0	A&!B	0.4050	Y(LH)	0.0830	1.1526
A	!B&!S0	0.4050	Y(LH)	0.0956	1.5984
A	B&!S0	0.4050	Y(LH)	0.0956	1.5975
B	!A&S0	0.4050	Y(LH)	0.0951	1.7752
B	A&S0	0.4050	Y(LH)	0.0951	1.7734
A	!B&!S0	0.4050	Y(HL)	0.1832	0.8384
A	B&!S0	0.4050	Y(HL)	0.1832	0.8376
B	!A&S0	0.4050	Y(HL)	0.1836	0.6603
B	A&S0	0.4050	Y(HL)	0.1836	0.6609
B(HL)	!A&!S0	0.4050	n/a	n/a	1.4068
B(HL)	A&!S0	0.4050	n/a	n/a	1.4060
S0(HL)	!A&!B	0.4050	n/a	n/a	0.9073
S0(HL)	A&B	0.4050	n/a	n/a	0.9147
A(LH)	!B&S0	0.4050	n/a	n/a	0.5960
A(LH)	B&S0	0.4050	n/a	n/a	0.5967
A(HL)	!B&S0	0.4050	n/a	n/a	1.4376

A(HL)	B&S0	0.4050	n/a		n/a	1.4368
B(LH)	!A&!S0	0.4050	n/a		n/a	0.6277
B(LH)	A&!S0	0.4050	n/a		n/a	0.6278
S0(LH)	!A&!B	0.4050	n/a		n/a	0.2380
S0(LH)	A&B	0.4050	n/a		n/a	0.2331

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!S0	0.4801
!A&!B&S0	0.4109
!A&B&!S0	0.3741
A&!B&S0	0.3048
!A&B&S0	0.3048
A&!B&!S0	0.3740
A&B&!S0	0.2678
A&B&S0	0.1986

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NAND2X1 (tt_3p3v_25c/3.300000/25.0)

The NAND2 cell provides the logical NAND of two inputs (A, B).

Attributes

Attribute	Value
area	222.72 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B))

TRUTH TABLE FOR Y

A	B	Y
0	?	1
?	0	1
1	1	0

FUNCTIONAL SCHEMATIC
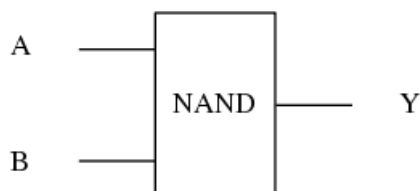
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0142
B	input	0.0150

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	B	0.4050	0.0749	0.4362	0.5201
A(LH)	Y(HL)	B	0.4050	0.1255	0.3804	0.4730
B(HL)	Y(LH)	A	0.4050	0.0725	0.4846	0.5730
B(LH)	Y(HL)	A	0.4050	0.1270	0.3692	0.4774

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.0749	0.2679
B	A	0.4050	Y(LH)	0.0725	0.4103
A	B	0.4050	Y(HL)	0.1255	0.1785
B	A	0.4050	Y(HL)	0.1270	0.1750
B(HL)	!A	0.4050	n/a	n/a	0.0796
A(LH)	!B	0.4050	n/a	n/a	0.0006
B(LH)	!A	0.4050	n/a	n/a	-0.0797
A(HL)	!B	0.4050	n/a	n/a	0.0911

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0224
!A&B	0.0224
A&!B	0.0288
A&B	0.0221

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NAND2X1 (tt_5v_25c/5.0000/25.0)

The NAND2 cell provides the logical NAND of two inputs (A, B).

Attributes

| Attribute	Value
area	222.72 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B))

TRUTH TABLE FOR Y

A	B	Y
0	?	1
?	0	1
1	1	0

FUNCTIONAL SCHEMATIC
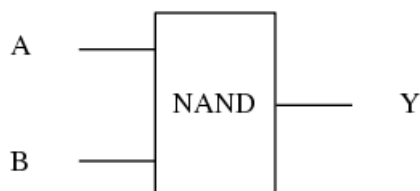
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0149
B	input	0.0157

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	B	0.4050	0.1065	0.3899	0.4785
A(LH)	Y(HL)	B	0.4050	0.1675	0.3411	0.4496
B(HL)	Y(LH)	A	0.4050	0.1036	0.4231	0.5239
B(LH)	Y(HL)	A	0.4050	0.1712	0.3199	0.4544

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.1065	0.7257
B	A	0.4050	Y(LH)	0.1036	1.0800
A	B	0.4050	Y(HL)	0.1675	0.4275
B	A	0.4050	Y(HL)	0.1712	0.4137
B(HL)	!A	0.4050	n/a	n/a	0.1901
A(LH)	!B	0.4050	n/a	n/a	0.0094
B(LH)	!A	0.4050	n/a	n/a	-0.1898
A(HL)	!B	0.4050	n/a	n/a	0.2163

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0830
!A&B	0.0830
A&!B	0.0877
A&B	0.0564

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NAND2X2 (tt_3p3v_25c/3.300000/25.0)

The NAND2 cell provides the logical NAND of two inputs (A, B).

Attributes

Attribute	Value
area	222.72 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B))

TRUTH TABLE FOR Y

A	B	Y
0	?	1
?	0	1
1	1	0

FUNCTIONAL SCHEMATIC
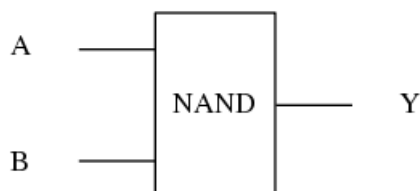
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0282
B	input	0.0297

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	B	0.4050	0.1539	0.4225	0.4951
A(LH)	Y(HL)	B	0.4050	0.2521	0.3717	0.4600
B(HL)	Y(LH)	A	0.4050	0.1495	0.4658	0.5421
B(LH)	Y(HL)	A	0.4050	0.2548	0.3568	0.4640

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.1539	0.4827
B	A	0.4050	Y(LH)	0.1495	0.7383
A	B	0.4050	Y(HL)	0.2521	0.2593
B	A	0.4050	Y(HL)	0.2548	0.2531
B(HL)	!A	0.4050	n/a	n/a	0.1574
A(LH)	!B	0.4050	n/a	n/a	-0.0268
B(LH)	!A	0.4050	n/a	n/a	-0.1578
A(HL)	!B	0.4050	n/a	n/a	0.1805

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0181
!A&B	0.0181
A&!B	0.0281
A&B	0.0225

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NAND2X2 (tt_5v_25c/5.0000/25.0)

The NAND2 cell provides the logical NAND of two inputs (A, B).

Attributes

| Attribute	Value
area	222.72 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B))

TRUTH TABLE FOR Y

A	B	Y
0	?	1
?	0	1
1	1	0

FUNCTIONAL SCHEMATIC
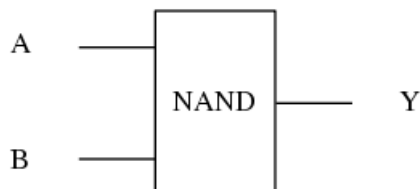
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0294
B	input	0.0312

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	B	0.4050	0.2172	0.3816	0.4645
A(LH)	Y(HL)	B	0.4050	0.3351	0.3353	0.4425
B(HL)	Y(LH)	A	0.4050	0.2118	0.4112	0.5042
B(LH)	Y(HL)	A	0.4050	0.3424	0.3118	0.4466

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.2172	1.3408
B	A	0.4050	Y(LH)	0.2118	1.9741
A	B	0.4050	Y(HL)	0.3351	0.6545
B	A	0.4050	Y(HL)	0.3424	0.6332
B(HL)	!A	0.4050	n/a	n/a	0.3760
A(LH)	!B	0.4050	n/a	n/a	-0.0501
B(LH)	!A	0.4050	n/a	n/a	-0.3758
A(HL)	!B	0.4050	n/a	n/a	0.4282

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0616
!A&B	0.0616
A&!B	0.0793
A&B	0.0632

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NAND3X1 (tt_3p3v_25c/3.300000/25.0)

The NAND3 cell provides the logical NAND of three inputs (A, B, C).

Attributes

Attribute	Value
area	315.52 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B&C))

TRUTH TABLE FOR Y

A	B	C	Y
0	?	?	1
?	0	?	1
?	?	0	1
1	1	1	0

FUNCTIONAL SCHEMATIC
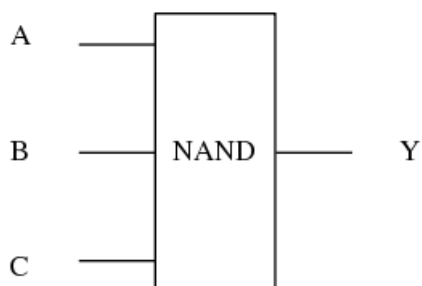
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0172
B	input	0.0179
C	input	0.0184

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A(HL)	Y(LH)	B&C	0.4050	0.0730	0.4647	0.5597
A(LH)	Y(HL)	B&C	0.4050	0.1282	0.3764	0.4970
B(HL)	Y(LH)	A&C	0.4050	0.0697	0.5328	0.6311
B(LH)	Y(HL)	A&C	0.4050	0.1298	0.3878	0.5053
C(LH)	Y(HL)	A&B	0.4050	0.1308	0.3933	0.5056
C(HL)	Y(LH)	A&B	0.4050	0.0664	0.5893	0.7009

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	A&B	0.4050	Y(HL)	0.1308	0.2495
C	A&B	0.4050	Y(LH)	0.0664	0.7044
A	B&C	0.4050	Y(LH)	0.0730	0.3234
B	A&C	0.4050	Y(LH)	0.0697	0.5186
A	B&C	0.4050	Y(HL)	0.1282	0.2568
B	A&C	0.4050	Y(HL)	0.1298	0.2518
C(HL)	!A&!B	0.4050	n/a	n/a	0.0797
C(HL)	!A&B	0.4050	n/a	n/a	0.0798
C(HL)	A&!B	0.4050	n/a	n/a	0.0796
B(HL)	!A&!C	0.4050	n/a	n/a	0.0980
B(HL)	!A&C	0.4050	n/a	n/a	0.0796
B(HL)	A&!C	0.4050	n/a	n/a	0.0808
A(LH)	!B&!C	0.4050	n/a	n/a	0.0182
A(LH)	!B&C	0.4050	n/a	n/a	0.0180
A(LH)	B&!C	0.4050	n/a	n/a	0.2153
B(LH)	!A&!C	0.4050	n/a	n/a	-0.0796
B(LH)	!A&C	0.4050	n/a	n/a	-0.0797
B(LH)	A&!C	0.4050	n/a	n/a	-0.0072
A(HL)	!B&!C	0.4050	n/a	n/a	0.0967
A(HL)	!B&C	0.4050	n/a	n/a	0.0963
A(HL)	B&!C	0.4050	n/a	n/a	0.0965
C(LH)	!A&!B	0.4050	n/a	n/a	-0.0796
C(LH)	!A&B	0.4050	n/a	n/a	-0.0797
C(LH)	A&!B	0.4050	n/a	n/a	-0.0795

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.0196
!A&!B&C	0.0196
!A&B&!C	0.0196
!A&B&C	0.0196
A&!B&!C	0.0283
A&!B&C	0.0283
A&B&!C	0.0430
A&B&C	0.0332

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NAND3X1 (tt_5v_25c/5.0000/25.0)

The NAND3 cell provides the logical NAND of three inputs (A, B, C).

Attributes

Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B&C))

TRUTH TABLE FOR Y

A	B	C	Y
0	?	?	1
?	0	?	1
?	?	0	1
1	1	1	0

FUNCTIONAL SCHEMATIC
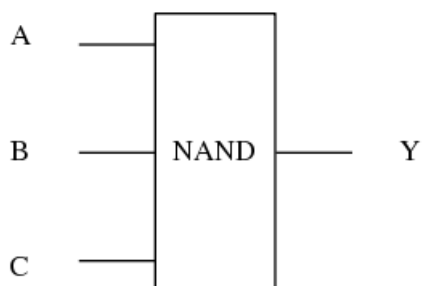
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0180
B	input	0.0188
C	input	0.0194

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A(HL)	Y(LH)	B&C	0.4050	0.1052	0.4116	0.5041
A(LH)	Y(HL)	B&C	0.4050	0.1781	0.3315	0.4664
B(HL)	Y(LH)	A&C	0.4050	0.1009	0.4565	0.5661
B(LH)	Y(HL)	A&C	0.4050	0.1817	0.3285	0.4740
C(LH)	Y(HL)	A&B	0.4050	0.1831	0.3219	0.4725
C(HL)	Y(LH)	A&B	0.4050	0.0968	0.4961	0.6264

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	A&B	0.4050	Y(HL)	0.1831	0.5582
C	A&B	0.4050	Y(LH)	0.0968	1.8031
A	B&C	0.4050	Y(LH)	0.1052	0.8627
B	A&C	0.4050	Y(LH)	0.1009	1.3412
A	B&C	0.4050	Y(HL)	0.1781	0.5949
B	A&C	0.4050	Y(HL)	0.1817	0.5723
C(HL)	!A&!B	0.4050	n/a	n/a	0.1900
C(HL)	!A&B	0.4050	n/a	n/a	0.1899
C(HL)	A&!B	0.4050	n/a	n/a	0.1900
B(HL)	!A&!C	0.4050	n/a	n/a	0.2847
B(HL)	!A&C	0.4050	n/a	n/a	0.1901
B(HL)	A&!C	0.4050	n/a	n/a	0.2062
A(LH)	!B&!C	0.4050	n/a	n/a	0.0541
A(LH)	!B&C	0.4050	n/a	n/a	0.0543
A(LH)	B&!C	0.4050	n/a	n/a	0.5503
B(LH)	!A&!C	0.4050	n/a	n/a	-0.1899
B(LH)	!A&C	0.4050	n/a	n/a	-0.1898
B(LH)	A&!C	0.4050	n/a	n/a	0.0170
A(HL)	!B&!C	0.4050	n/a	n/a	0.2289
A(HL)	!B&C	0.4050	n/a	n/a	0.2287
A(HL)	B&!C	0.4050	n/a	n/a	0.2287
C(LH)	!A&!B	0.4050	n/a	n/a	-0.1897
C(LH)	!A&B	0.4050	n/a	n/a	-0.1900
C(LH)	A&!B	0.4050	n/a	n/a	-0.1901

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.0691
!A&!B&C	0.0691
!A&B&!C	0.0691
!A&B&C	0.0692
A&!B&!C	0.0822
A&!B&C	0.0823
A&B&!C	0.1182
A&B&C	0.0846

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NAND4X1 (tt_3p3v_25c/3.300000/25.0)

The NAND4 cell provides a logical NAND of four inputs (A, B, C, D).

Attributes

Attribute	Value
area	426.88000000000005 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B&C&D))

TRUTH TABLE FOR Y

A	B	C	D	Y
0	?	?	?	1
?	0	?	?	1
?	?	0	?	1
?	?	?	0	1
1	1	1	1	0

FUNCTIONAL SCHEMATIC
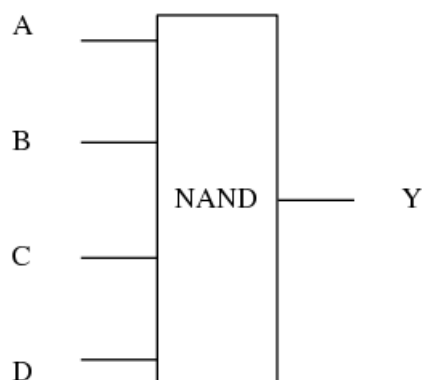
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0203
B	input	0.0211
C	input	0.0214

D	input	0.0221

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(HL)	B&C&D	0.4050	0.1301	0.3725	0.5291
A(HL)	Y(LH)	B&C&D	0.4050	0.0702	0.5017	0.6140
B(LH)	Y(HL)	A&C&D	0.4050	0.1313	0.4038	0.5429
B(HL)	Y(LH)	A&C&D	0.4050	0.0658	0.5929	0.7085
C(HL)	Y(LH)	A&B&D	0.4050	0.0616	0.6714	0.7985
C(LH)	Y(HL)	A&B&D	0.4050	0.1325	0.4303	0.5438
D(LH)	Y(HL)	A&B&C	0.4050	0.1336	0.4422	0.5443
D(HL)	Y(LH)	A&B&C	0.4050	0.0573	0.7381	0.8848

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B	A&C&D	0.4050	Y(HL)	0.1313	0.3614
D	A&B&C	0.4050	Y(HL)	0.1336	0.3580
C	A&B&D	0.4050	Y(LH)	0.0616	0.8990
A	B&C&D	0.4050	Y(HL)	0.1301	0.3668
C	A&B&D	0.4050	Y(HL)	0.1325	0.3583
A	B&C&D	0.4050	Y(LH)	0.0702	0.3916
B	A&C&D	0.4050	Y(LH)	0.0658	0.6513
D	A&B&C	0.4050	Y(LH)	0.0573	1.1379
D(HL)	!A&!B&!C	0.4050	n/a	n/a	0.0796
D(HL)	!A&!B&C	0.4050	n/a	n/a	0.0796
D(HL)	!A&B&!C	0.4050	n/a	n/a	0.0796
D(HL)	!A&B&C	0.4050	n/a	n/a	0.0797
D(HL)	A&!B&!C	0.4050	n/a	n/a	0.0796
D(HL)	A&!B&C	0.4050	n/a	n/a	0.0796
D(HL)	A&B&!C	0.4050	n/a	n/a	0.0795
A(LH)	!B&!C&!D	0.4050	n/a	n/a	0.0438
A(LH)	!B&!C&D	0.4050	n/a	n/a	0.0436
A(LH)	!B&C&!D	0.4050	n/a	n/a	0.0439
A(LH)	!B&C&D	0.4050	n/a	n/a	0.0436
A(LH)	B&!C&!D	0.4050	n/a	n/a	0.3023

A(LH)	B&!C&D	0.4050	n/a	n/a	0.3025
A(LH)	B&C&!D	0.4050	n/a	n/a	0.5542
A(HL)	!B&!C&!D	0.4050	n/a	n/a	0.1028
A(HL)	!B&!C&D	0.4050	n/a	n/a	0.1024
A(HL)	!B&C&!D	0.4050	n/a	n/a	0.1025
A(HL)	!B&C&D	0.4050	n/a	n/a	0.1028
A(HL)	B&!C&!D	0.4050	n/a	n/a	0.1024
A(HL)	B&!C&D	0.4050	n/a	n/a	0.1024
A(HL)	B&C&!D	0.4050	n/a	n/a	0.1023
B(HL)	!A&!C&!D	0.4050	n/a	n/a	0.1066
B(HL)	!A&!C&D	0.4050	n/a	n/a	0.1066
B(HL)	!A&C&!D	0.4050	n/a	n/a	0.0809
B(HL)	!A&C&D	0.4050	n/a	n/a	0.0796
B(HL)	A&!C&!D	0.4050	n/a	n/a	0.0817
B(HL)	A&!C&D	0.4050	n/a	n/a	0.0815
B(HL)	A&C&!D	0.4050	n/a	n/a	0.0820
C(HL)	!A&!B&!D	0.4050	n/a	n/a	0.0796
C(HL)	!A&!B&D	0.4050	n/a	n/a	0.0795
C(HL)	!A&B&!D	0.4050	n/a	n/a	0.0796
C(HL)	!A&B&D	0.4050	n/a	n/a	0.0797
C(HL)	A&!B&!D	0.4050	n/a	n/a	0.0801
C(HL)	A&!B&D	0.4050	n/a	n/a	0.0797
C(HL)	A&B&!D	0.4050	n/a	n/a	0.0796
C(LH)	!A&!B&!D	0.4050	n/a	n/a	-0.0796
C(LH)	!A&!B&D	0.4050	n/a	n/a	-0.0796
C(LH)	!A&B&!D	0.4050	n/a	n/a	-0.0797
C(LH)	!A&B&D	0.4050	n/a	n/a	-0.0797
C(LH)	A&!B&!D	0.4050	n/a	n/a	-0.0796
C(LH)	A&!B&D	0.4050	n/a	n/a	-0.0797
C(LH)	A&B&!D	0.4050	n/a	n/a	-0.0223
D(LH)	!A&!B&!C	0.4050	n/a	n/a	-0.0797
D(LH)	!A&!B&C	0.4050	n/a	n/a	-0.0797
D(LH)	!A&B&!C	0.4050	n/a	n/a	-0.0796
D(LH)	!A&B&C	0.4050	n/a	n/a	-0.0796
D(LH)	A&!B&!C	0.4050	n/a	n/a	-0.0796
D(LH)	A&!B&C	0.4050	n/a	n/a	-0.0796

D(LH)	A&B&!C	0.4050	n/a		n/a	-0.0799
B(LH)	!A&!C&!D	0.4050	n/a		n/a	-0.0797
B(LH)	!A&!C&D	0.4050	n/a		n/a	-0.0795
B(LH)	!A&C&!D	0.4050	n/a		n/a	-0.0797
B(LH)	!A&C&D	0.4050	n/a		n/a	-0.0796
B(LH)	A&!C&!D	0.4050	n/a		n/a	0.0115
B(LH)	A&!C&D	0.4050	n/a		n/a	0.0112
B(LH)	A&C&!D	0.4050	n/a		n/a	0.2636

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C&!D	0.0181
!A&!B&!C&D	0.0181
!A&!B&C&!D	0.0181
!A&!B&C&D	0.0181
!A&B&!C&!D	0.0181
!A&B&!C&D	0.0181
!A&B&C&!D	0.0181
!A&B&C&D	0.0181
A&!B&!C&!D	0.0280
A&!B&!C&D	0.0280
A&!B&C&!D	0.0280
A&!B&C&D	0.0281
A&B&!C&!D	0.0428
A&B&!C&D	0.0429
A&B&C&!D	0.0575
A&B&C&D	0.0442

SETUP AND CONDITIONS

PVT: tt_3p3v_25c	
Voltage: 3.3000 volt	
Temperature: 25.0 centigrade	

NAND4X1 (tt_5v_25c/5.0000/25.0)

The NAND4 cell provides a logical NAND of four inputs (A, B, C, D).

Attributes

Attribute	Value
area	426.88000000000005 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A&B&C&D))

TRUTH TABLE FOR Y

A	B	C	D	Y
0	?	?	?	1
?	0	?	?	1
?	?	0	?	1
?	?	?	0	1
1	1	1	1	0

FUNCTIONAL SCHEMATIC
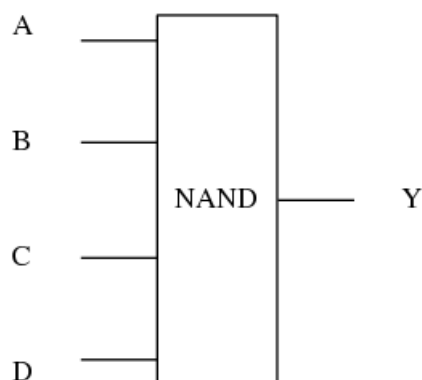
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0213
B	input	0.0222
C	input	0.0225

D	input			0.0233	

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(HL)	B&C&D	0.4050	0.1859	0.3243	0.4890
A(HL)	Y(LH)	B&C&D	0.4050	0.1028	0.4382	0.5387
B(LH)	Y(HL)	A&C&D	0.4050	0.1888	0.3352	0.5009
B(HL)	Y(LH)	A&C&D	0.4050	0.0972	0.4975	0.6219
C(HL)	Y(LH)	A&B&D	0.4050	0.0918	0.5512	0.7013
C(LH)	Y(HL)	A&B&D	0.4050	0.1904	0.3440	0.5010
D(LH)	Y(HL)	A&B&C	0.4050	0.1918	0.3469	0.4996
D(HL)	Y(LH)	A&B&C	0.4050	0.0866	0.5985	0.7771

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B	A&C&D	0.4050	Y(HL)	0.1888	0.7990
D	A&B&C	0.4050	Y(HL)	0.1918	0.7654
C	A&B&D	0.4050	Y(LH)	0.0918	2.2681
A	B&C&D	0.4050	Y(HL)	0.1859	0.8289
C	A&B&D	0.4050	Y(HL)	0.1904	0.7765
A	B&C&D	0.4050	Y(LH)	0.1028	1.0290
B	A&C&D	0.4050	Y(LH)	0.0972	1.6559
D	A&B&C	0.4050	Y(LH)	0.0866	2.8682
D(HL)	!A&!B&!C	0.4050	n/a	n/a	0.1902
D(HL)	!A&!B&C	0.4050	n/a	n/a	0.1900
D(HL)	!A&B&!C	0.4050	n/a	n/a	0.1905
D(HL)	!A&B&C	0.4050	n/a	n/a	0.1901
D(HL)	A&!B&!C	0.4050	n/a	n/a	0.1902
D(HL)	A&!B&C	0.4050	n/a	n/a	0.1901
D(HL)	A&B&!C	0.4050	n/a	n/a	0.1901
A(LH)	!B&!C&!D	0.4050	n/a	n/a	0.1180
A(LH)	!B&!C&D	0.4050	n/a	n/a	0.1180
A(LH)	!B&C&!D	0.4050	n/a	n/a	0.1181
A(LH)	!B&C&D	0.4050	n/a	n/a	0.1181
A(LH)	B&!C&!D	0.4050	n/a	n/a	0.7692

A(LH)	B&!C&D	0.4050	n/a	n/a	0.7691
A(LH)	B&C&!D	0.4050	n/a	n/a	1.4107
A(HL)	!B&!C&!D	0.4050	n/a	n/a	0.2424
A(HL)	!B&!C&D	0.4050	n/a	n/a	0.2422
A(HL)	!B&C&!D	0.4050	n/a	n/a	0.2423
A(HL)	!B&C&D	0.4050	n/a	n/a	0.2422
A(HL)	B&!C&!D	0.4050	n/a	n/a	0.2420
A(HL)	B&!C&D	0.4050	n/a	n/a	0.2416
A(HL)	B&C&!D	0.4050	n/a	n/a	0.2422
B(HL)	!A&!C&!D	0.4050	n/a	n/a	0.3273
B(HL)	!A&!C&D	0.4050	n/a	n/a	0.3215
B(HL)	!A&C&!D	0.4050	n/a	n/a	0.2448
B(HL)	!A&C&D	0.4050	n/a	n/a	0.1901
B(HL)	A&!C&!D	0.4050	n/a	n/a	0.2124
B(HL)	A&!C&D	0.4050	n/a	n/a	0.2120
B(HL)	A&C&!D	0.4050	n/a	n/a	0.2131
C(HL)	!A&!B&!D	0.4050	n/a	n/a	0.2152
C(HL)	!A&!B&D	0.4050	n/a	n/a	0.1903
C(HL)	!A&B&!D	0.4050	n/a	n/a	0.2571
C(HL)	!A&B&D	0.4050	n/a	n/a	0.1900
C(HL)	A&!B&!D	0.4050	n/a	n/a	0.2683
C(HL)	A&!B&D	0.4050	n/a	n/a	0.1901
C(HL)	A&B&!D	0.4050	n/a	n/a	0.1886
C(LH)	!A&!B&!D	0.4050	n/a	n/a	-0.1899
C(LH)	!A&!B&D	0.4050	n/a	n/a	-0.1900
C(LH)	!A&B&!D	0.4050	n/a	n/a	-0.1900
C(LH)	!A&B&D	0.4050	n/a	n/a	-0.1899
C(LH)	A&!B&!D	0.4050	n/a	n/a	-0.1897
C(LH)	A&!B&D	0.4050	n/a	n/a	-0.1900
C(LH)	A&B&!D	0.4050	n/a	n/a	0.0238
D(LH)	!A&!B&!C	0.4050	n/a	n/a	-0.1900
D(LH)	!A&!B&C	0.4050	n/a	n/a	-0.1902
D(LH)	!A&B&!C	0.4050	n/a	n/a	-0.1898
D(LH)	!A&B&C	0.4050	n/a	n/a	-0.1902
D(LH)	A&!B&!C	0.4050	n/a	n/a	-0.1904
D(LH)	A&!B&C	0.4050	n/a	n/a	-0.1899

D(LH)	A&B&!C	0.4050	n/a		n/a	-0.1898
B(LH)	!A&!C&!D	0.4050	n/a		n/a	-0.1898
B(LH)	!A&!C&D	0.4050	n/a		n/a	-0.1897
B(LH)	!A&C&!D	0.4050	n/a		n/a	-0.1900
B(LH)	!A&C&D	0.4050	n/a		n/a	-0.1901
B(LH)	A&!C&!D	0.4050	n/a		n/a	0.0714
B(LH)	A&!C&D	0.4050	n/a		n/a	0.0714
B(LH)	A&C&!D	0.4050	n/a		n/a	0.7115

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C&!D	0.0616
!A&!B&!C&D	0.0616
!A&!B&C&!D	0.0616
!A&!B&C&D	0.0616
!A&B&!C&!D	0.0616
!A&B&!C&D	0.0616
!A&B&C&!D	0.0616
!A&B&C&D	0.0616
A&!B&!C&!D	0.0793
A&!B&!C&D	0.0793
A&!B&C&!D	0.0793
A&!B&C&D	0.0793
A&B&!C&!D	0.1154
A&B&!C&D	0.1155
A&B&C&!D	0.1516
A&B&C&D	0.1128

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NMAJ3X1 (tt_3p3v_25c/3.300000/25.0)

The NMAJ3 cell is a 3-input majority gate (2-out-of-3).

Attributes

Attribute	Value
area	631.04 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A&B)|(B&C)|(A&C)))

TRUTH TABLE FOR Y

A	B	C	Y
0	0	?	1
0	?	0	1
?	0	0	1
1	1	?	0
1	?	1	0
?	1	1	0

FUNCTIONAL SCHEMATIC
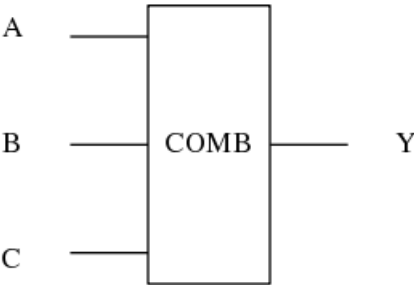
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0417
B	input	0.0417
C	input	0.0417

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B&C	0.4050	0.0617	0.5558	0.8055
A(HL)	Y(LH)	B&!C	0.4050	0.0578	0.5495	0.8406
A(LH)	Y(HL)	!B&C	0.4050	0.1121	0.5025	0.6573
A(LH)	Y(HL)	B&!C	0.4050	0.1098	0.5127	0.6683
B(HL)	Y(LH)	!A&C	0.4050	0.0577	0.5497	0.8404
B(HL)	Y(LH)	A&!C	0.4050	0.0618	0.5565	0.8054
B(LH)	Y(HL)	!A&C	0.4050	0.1098	0.5127	0.6682
B(LH)	Y(HL)	A&!C	0.4050	0.1121	0.5025	0.6578
C(LH)	Y(HL)	!A&B	0.4050	0.1121	0.5027	0.6578
C(LH)	Y(HL)	A&!B	0.4050	0.1098	0.5123	0.6679
C(HL)	Y(LH)	!A&B	0.4050	0.0617	0.5562	0.8056
C(HL)	Y(LH)	A&!B	0.4050	0.0578	0.5496	0.8401

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	!A&B	0.4050	Y(HL)	0.1121	0.4488
C	A&!B	0.4050	Y(HL)	0.1098	0.3783
C	!A&B	0.4050	Y(LH)	0.0617	1.0554
C	A&!B	0.4050	Y(LH)	0.0578	1.0355
A	!B&C	0.4050	Y(LH)	0.0617	1.0551
A	B&!C	0.4050	Y(LH)	0.0578	1.0354
B	!A&C	0.4050	Y(LH)	0.0577	1.0361
B	A&!C	0.4050	Y(LH)	0.0618	1.0544
A	!B&C	0.4050	Y(HL)	0.1121	0.4479
A	B&!C	0.4050	Y(HL)	0.1098	0.3796
B	!A&C	0.4050	Y(HL)	0.1098	0.3796
B	A&!C	0.4050	Y(HL)	0.1121	0.4488
C(HL)	!A&!B	0.4050	n/a	n/a	0.3267
C(HL)	A&B	0.4050	n/a	n/a	0.3169
B(HL)	!A&!C	0.4050	n/a	n/a	0.3268
B(HL)	A&C	0.4050	n/a	n/a	0.3157
A(LH)	!B&!C	0.4050	n/a	n/a	-0.2413
A(LH)	B&C	0.4050	n/a	n/a	-0.2069

B(LH)	!A&!C	0.4050	n/a		n/a	-0.2409
B(LH)	A&C	0.4050	n/a		n/a	-0.2072
A(HL)	!B&!C	0.4050	n/a		n/a	0.3267
A(HL)	B&C	0.4050	n/a		n/a	0.3169
C(LH)	!A&!B	0.4050	n/a		n/a	-0.2410
C(LH)	A&B	0.4050	n/a		n/a	-0.2073

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.0673
!A&!B&C	0.0737
!A&B&!C	0.0737
A&!B&!C	0.0737
!A&B&C	0.0481
A&!B&C	0.0481
A&B&!C	0.0481
A&B&C	0.0337

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NMAJ3X1 (tt_5v_25c/5.0000/25.0)

The NMAJ3 cell is a 3-input majority gate (2-out-of-3).

Attributes

Attribute	Value
area	631.04 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A&B)|(B&C)|(A&C)))

TRUTH TABLE FOR Y

A	B	C	Y
0	0	?	1
0	?	0	1
?	0	0	1
1	1	?	0
1	?	1	0
?	1	1	0

FUNCTIONAL SCHEMATIC
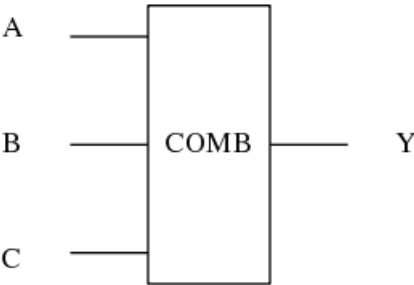
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0438
B	input	0.0438
C	input	0.0438

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B&C	0.4050	0.0974	0.4367	0.6918
A(HL)	Y(LH)	B&!C	0.4050	0.0936	0.4580	0.7095
A(LH)	Y(HL)	!B&C	0.4050	0.1558	0.4251	0.5917
A(LH)	Y(HL)	B&!C	0.4050	0.1519	0.4460	0.5929
B(HL)	Y(LH)	!A&C	0.4050	0.0937	0.4583	0.7096
B(HL)	Y(LH)	A&!C	0.4050	0.0975	0.4371	0.6915
B(LH)	Y(HL)	!A&C	0.4050	0.1519	0.4458	0.5929
B(LH)	Y(HL)	A&!C	0.4050	0.1558	0.4251	0.5922
C(LH)	Y(HL)	!A&B	0.4050	0.1558	0.4252	0.5923
C(LH)	Y(HL)	A&!B	0.4050	0.1519	0.4456	0.5927
C(HL)	Y(LH)	!A&B	0.4050	0.0975	0.4369	0.6919
C(HL)	Y(LH)	A&!B	0.4050	0.0938	0.4580	0.7091

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	!A&B	0.4050	Y(HL)	0.1558	1.0239
C	A&!B	0.4050	Y(HL)	0.1519	0.8338
C	!A&B	0.4050	Y(LH)	0.0975	2.5966
C	A&!B	0.4050	Y(LH)	0.0938	2.5319
A	!B&C	0.4050	Y(LH)	0.0974	2.5957
A	B&!C	0.4050	Y(LH)	0.0936	2.5327
B	!A&C	0.4050	Y(LH)	0.0937	2.5337
B	A&!C	0.4050	Y(LH)	0.0975	2.5967
A	!B&C	0.4050	Y(HL)	0.1558	1.0223
A	B&!C	0.4050	Y(HL)	0.1519	0.8359
B	!A&C	0.4050	Y(HL)	0.1519	0.8354
B	A&!C	0.4050	Y(HL)	0.1558	1.0242
C(HL)	!A&!B	0.4050	n/a	n/a	0.7781
C(HL)	A&B	0.4050	n/a	n/a	0.7402
B(HL)	!A&!C	0.4050	n/a	n/a	0.7781
B(HL)	A&C	0.4050	n/a	n/a	0.7372
A(LH)	!B&C	0.4050	n/a	n/a	-0.5677
A(LH)	B&C	0.4050	n/a	n/a	-0.4823

B(LH)	!A&!C	0.4050	n/a		n/a	-0.5659
B(LH)	A&C	0.4050	n/a		n/a	-0.4821
A(HL)	!B&!C	0.4050	n/a		n/a	0.7783
A(HL)	B&C	0.4050	n/a		n/a	0.7401
C(LH)	!A&!B	0.4050	n/a		n/a	-0.5663
C(LH)	A&B	0.4050	n/a		n/a	-0.4824

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.2489
!A&!B&C	0.2537
!A&B&!C	0.2537
A&!B&!C	0.2537
!A&B&C	0.1263
A&!B&C	0.1263
A&B&!C	0.1263
A&B&C	0.0948

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NOR2X1 (tt_3p3v_25c/3.300000/25.0)

The NOR2 cell provides a logical NOR of two inputs (A, B).
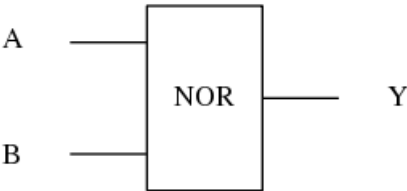
Attributes

Attribute	Value
area	222.72 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B))

TRUTH TABLE FOR Y

A	B	Y
0	0	1
1	?	0
?	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0186
B	input	0.0171

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B	0.4050	0.0764	0.4396	0.5351
A(LH)	Y(HL)	!B	0.4050	0.1046	0.4759	0.5412
B(HL)	Y(LH)	!A	0.4050	0.0759	0.4099	0.5303
B(LH)	Y(HL)	!A	0.4050	0.1089	0.4233	0.4806

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.0764	0.4820
B	!A	0.4050	Y(LH)	0.0759	0.3799
A	!B	0.4050	Y(HL)	0.1046	0.2263
B	!A	0.4050	Y(HL)	0.1089	0.0935
B(HL)	A	0.4050	n/a	n/a	0.1703
A(LH)	B	0.4050	n/a	n/a	-0.1533
B(LH)	A	0.4050	n/a	n/a	-0.0547
A(HL)	B	0.4050	n/a	n/a	0.1576

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0507
!A&B	0.0112
A&!B	0.0257
A&B	0.0112

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NOR2X1 (tt_5v_25c/5.0000/25.0)

The NOR2 cell provides a logical NOR of two inputs (A, B).
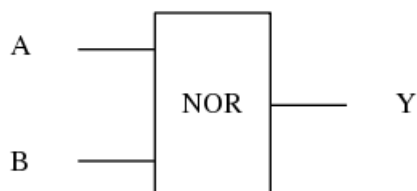
Attributes

Attribute	Value
area	222.72 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B))

TRUTH TABLE FOR Y

A	B	Y
0	0	1
1	?	0
?	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0195
B	input	0.0178

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B	0.4050	0.1129	0.3540	0.4948
A(LH)	Y(HL)	!B	0.4050	0.1313	0.4315	0.5166
B(HL)	Y(LH)	!A	0.4050	0.1119	0.3593	0.4895
B(LH)	Y(HL)	!A	0.4050	0.1353	0.3883	0.4587

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.1129	1.2001
B	!A	0.4050	Y(LH)	0.1119	0.9636
A	!B	0.4050	Y(HL)	0.1313	0.5436
B	!A	0.4050	Y(HL)	0.1353	0.2537
B(HL)	A	0.4050	n/a	n/a	0.3892
A(LH)	B	0.4050	n/a	n/a	-0.3689
B(LH)	A	0.4050	n/a	n/a	-0.1154
A(HL)	B	0.4050	n/a	n/a	0.3756

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.1949
!A&B	0.0316
A&!B	0.0631
A&B	0.0316

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NOR2X2 (tt_3p3v_25c/3.300000/25.0)

The NOR2 cell provides a logical NOR of two inputs (A, B).

Attributes

Attribute	Value
area	334.08 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B))

TRUTH TABLE FOR Y

A	B	Y
0	0	1
1	?	0
?	1	0

FUNCTIONAL SCHEMATIC
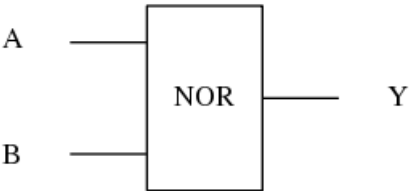
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0665
B	input	0.0608

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B	0.4050	0.3169	0.3804	0.4590
A(LH)	Y(HL)	!B	0.4050	0.2072	0.5215	0.5574
B(HL)	Y(LH)	!A	0.4050	0.3155	0.3644	0.4565
B(LH)	Y(HL)	!A	0.4050	0.2216	0.4274	0.4576

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.3169	1.4139
B	!A	0.4050	Y(LH)	0.3155	0.9887
A	!B	0.4050	Y(HL)	0.2072	0.1966
B	!A	0.4050	Y(HL)	0.2216	-0.1858
B(HL)	A	0.4050	n/a	n/a	0.4898
A(LH)	B	0.4050	n/a	n/a	-0.6060
B(LH)	A	0.4050	n/a	n/a	-0.2064
A(HL)	B	0.4050	n/a	n/a	0.6273

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0449
!A&B	0.0231
A&!B	0.0516
A&B	0.0231

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NOR2X2 (tt_5v_25c/5.0000/25.0)

The NOR2 cell provides a logical NOR of two inputs (A, B).

Attributes

Attribute	Value
area	334.08 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B))

TRUTH TABLE FOR Y

A	B	Y
0	0	1
1	?	0
?	1	0

FUNCTIONAL SCHEMATIC
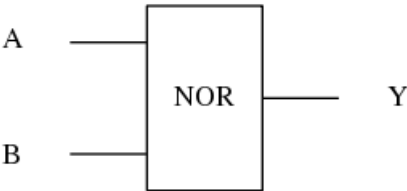
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0697
B	input	0.0630

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(HL)	Y(LH)	!B	0.4050	0.4580	0.3108	0.4481
A(LH)	Y(HL)	!B	0.4050	0.2566	0.4755	0.5399
B(HL)	Y(LH)	!A	0.4050	0.4543	0.3241	0.4471
B(LH)	Y(HL)	!A	0.4050	0.2749	0.4027	0.4441

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.4580	3.5555
B	!A	0.4050	Y(LH)	0.4543	2.5385
A	!B	0.4050	Y(HL)	0.2566	0.5938
B	!A	0.4050	Y(HL)	0.2749	-0.2278
B(HL)	A	0.4050	n/a	n/a	1.1036
A(LH)	B	0.4050	n/a	n/a	-1.4608
B(LH)	A	0.4050	n/a	n/a	-0.4319
A(HL)	B	0.4050	n/a	n/a	1.4967

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.1660
!A&B	0.0764
A&!B	0.1302
A&B	0.0764

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

NOR3X1 (tt_3p3v_25c/3.300000/25.0)

The NOR3 cell provides a logical NOR of three inputs (A, B, C).

Attributes

Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B|C))

TRUTH TABLE FOR Y

A	B	C	Y
0	0	0	1
1	?	?	0
?	1	?	0
?	?	1	0

FUNCTIONAL SCHEMATIC
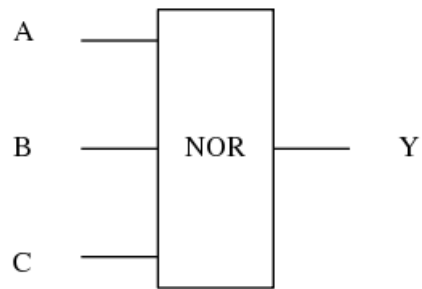
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0259
B	input	0.0247
C	input	0.0234

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A(HL)	Y(LH)	!B&!C	0.4050	0.0740	0.5281	0.6003
A(LH)	Y(HL)	!B&!C	0.4050	0.0959	0.5842	0.6708
B(HL)	Y(LH)	!A&!C	0.4050	0.0729	0.4858	0.5977
B(LH)	Y(HL)	!A&!C	0.4050	0.1014	0.5357	0.5918
C(LH)	Y(HL)	!A&!B	0.4050	0.1074	0.4555	0.5083
C(HL)	Y(LH)	!A&!B	0.4050	0.0730	0.4017	0.5815

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	!A&!B	0.4050	Y(HL)	0.1074	0.0861
C	!A&!B	0.4050	Y(LH)	0.0730	0.5411
A	!B&!C	0.4050	Y(LH)	0.0740	0.8508
B	!A&!C	0.4050	Y(LH)	0.0729	0.6966
A	!B&!C	0.4050	Y(HL)	0.0959	0.4348
B	!A&!C	0.4050	Y(HL)	0.1014	0.2708
C(HL)	!A&B	0.4050	n/a	n/a	0.2206
C(HL)	A&!B	0.4050	n/a	n/a	0.4148
C(HL)	A&B	0.4050	n/a	n/a	0.2207
B(HL)	!A&C	0.4050	n/a	n/a	0.2355
B(HL)	A&!C	0.4050	n/a	n/a	0.1879
B(HL)	A&C	0.4050	n/a	n/a	0.1661
A(LH)	!B&C	0.4050	n/a	n/a	-0.2203
A(LH)	B&!C	0.4050	n/a	n/a	-0.2281
A(LH)	B&C	0.4050	n/a	n/a	-0.2283
B(LH)	!A&C	0.4050	n/a	n/a	-0.2269
B(LH)	A&!C	0.4050	n/a	n/a	-0.1019
B(LH)	A&C	0.4050	n/a	n/a	-0.1716
A(HL)	!B&C	0.4050	n/a	n/a	0.2353
A(HL)	B&!C	0.4050	n/a	n/a	0.2357
A(HL)	B&C	0.4050	n/a	n/a	0.2356
C(LH)	!A&B	0.4050	n/a	n/a	-0.0800
C(LH)	A&!B	0.4050	n/a	n/a	-0.0785
C(LH)	A&B	0.4050	n/a	n/a	-0.0802

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.0761
!A&!B&C	0.0114
!A&B&!C	0.0258
!A&B&C	0.0114
A&!B&!C	0.0402
A&!B&C	0.0114
A&B&!C	0.0258
A&B&C	0.0114

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

NOR3X1 (tt_5v_25c/5.0000/25.0)

The NOR3 cell provides a logical NOR of three inputs (A, B, C).

Attributes

Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!(A|B|C))

TRUTH TABLE FOR Y

A	B	C	Y
0	0	0	1
1	?	?	0
?	1	?	0
?	?	1	0

FUNCTIONAL SCHEMATIC
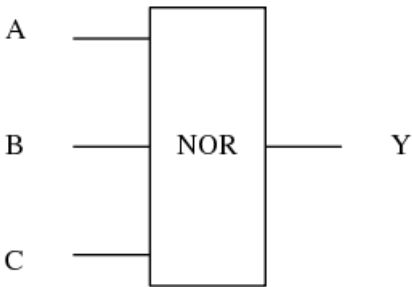
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0272
B	input	0.0259
C	input	0.0242

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A(HL)	Y(LH)	!B&!C	0.4050	0.1116	0.3956	0.5404
A(LH)	Y(HL)	!B&!C	0.4050	0.1211	0.5226	0.6312
B(HL)	Y(LH)	!A&!C	0.4050	0.1106	0.3810	0.5445
B(LH)	Y(HL)	!A&!C	0.4050	0.1265	0.4775	0.5550
C(LH)	Y(HL)	!A&!B	0.4050	0.1342	0.4172	0.4775
C(HL)	Y(LH)	!A&!B	0.4050	0.1105	0.3498	0.5302

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
C	!A&!B	0.4050	Y(HL)	0.1342	0.2460
C	!A&!B	0.4050	Y(LH)	0.1105	1.3457
A	!B&!C	0.4050	Y(LH)	0.1116	2.0591
B	!A&!C	0.4050	Y(LH)	0.1106	1.6892
A	!B&!C	0.4050	Y(HL)	0.1211	1.0087
B	!A&!C	0.4050	Y(HL)	0.1265	0.6436
C(HL)	!A&B	0.4050	n/a	n/a	0.5024
C(HL)	A&!B	0.4050	n/a	n/a	0.9648
C(HL)	A&B	0.4050	n/a	n/a	0.5029
B(HL)	!A&C	0.4050	n/a	n/a	0.5626
B(HL)	A&!C	0.4050	n/a	n/a	0.4579
B(HL)	A&C	0.4050	n/a	n/a	0.3856
A(LH)	!B&C	0.4050	n/a	n/a	-0.5348
A(LH)	B&!C	0.4050	n/a	n/a	-0.5497
A(LH)	B&C	0.4050	n/a	n/a	-0.5496
B(LH)	!A&C	0.4050	n/a	n/a	-0.5474
B(LH)	A&!C	0.4050	n/a	n/a	-0.1960
B(LH)	A&C	0.4050	n/a	n/a	-0.3590
A(HL)	!B&C	0.4050	n/a	n/a	0.5625
A(HL)	B&!C	0.4050	n/a	n/a	0.5616
A(HL)	B&C	0.4050	n/a	n/a	0.5624
C(LH)	!A&B	0.4050	n/a	n/a	-0.1686
C(LH)	A&!B	0.4050	n/a	n/a	-0.1637
C(LH)	A&B	0.4050	n/a	n/a	-0.1682

LEAKAGE POWER

When Condition	Power (nW)
!A&!B&!C	0.2923
!A&!B&C	0.0349
!A&B&!C	0.0641
!A&B&C	0.0349
A&!B&!C	0.0999
A&!B&C	0.0349
A&B&!C	0.0641
A&B&C	0.0349

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

OAI21X1 (tt_3p3v_25c/3.300000/25.0)

The OAI21 cell provides the logical inverted AND of one OR group and an additional input.

Attributes

Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A0|A1)&B0))

TRUTH TABLE FOR Y

A0	A1	B0	Y
0	0	?	1
?	?	0	1
1	?	1	0
?	1	1	0

FUNCTIONAL SCHEMATIC
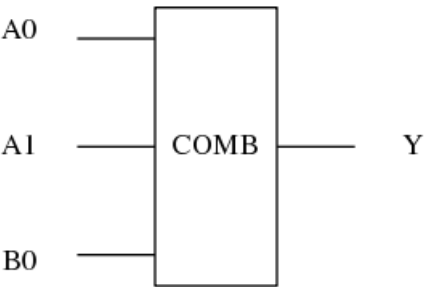
PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A0	input	0.0215
A1	input	0.0223
B0	input	0.0145

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A0(LH)	Y(HL)	!A1&B0	0.4050	0.1267	0.4025	0.4842
A0(HL)	Y(LH)	!A1&B0	0.4050	0.0723	0.4903	0.6166
A1(LH)	Y(HL)	!A0&B0	0.4050	0.1223	0.4443	0.5329
A1(HL)	Y(LH)	!A0&B0	0.4050	0.0724	0.5141	0.6181
B0(HL)	Y(LH)	A0&!A1	0.4050	0.0750	0.4436	0.5356
B0(HL)	Y(LH)	!A0&A1	0.4050	0.0681	0.4306	0.6240
B0(HL)	Y(LH)	A0&A1	0.4050	0.0743	0.4409	0.5323
B0(LH)	Y(HL)	A0&!A1	0.4050	0.1247	0.3836	0.4797
B0(LH)	Y(HL)	!A0&A1	0.4050	0.1210	0.4345	0.5272
B0(LH)	Y(HL)	A0&A1	0.4050	0.1637	0.3807	0.4599

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B0	A0&!A1	0.4050	Y(LH)	0.0750	0.2720
B0	!A0&A1	0.4050	Y(LH)	0.0681	0.3797
B0	A0&A1	0.4050	Y(LH)	0.0743	0.2703
A0	!A1&B0	0.4050	Y(HL)	0.1267	0.1704
A1	!A0&B0	0.4050	Y(HL)	0.1223	0.2918
B0	A0&!A1	0.4050	Y(HL)	0.1247	0.2108
B0	!A0&A1	0.4050	Y(HL)	0.1210	0.3578
B0	A0&A1	0.4050	Y(HL)	0.1637	0.2113
A1	!A0&B0	0.4050	Y(LH)	0.0724	0.6579
A0	!A1&B0	0.4050	Y(LH)	0.0723	0.5581
A1(HL)	!A0&!B0	0.4050	n/a	n/a	0.1573
A1(HL)	A0&!B0	0.4050	n/a	n/a	0.1576
A1(HL)	A0&B0	0.4050	n/a	n/a	0.1576
A0(HL)	!A1&!B0	0.4050	n/a	n/a	0.1574
A0(HL)	A1&!B0	0.4050	n/a	n/a	0.1572
A0(HL)	A1&B0	0.4050	n/a	n/a	0.1580
A0(LH)	!A1&!B0	0.4050	n/a	n/a	-0.1579
A0(LH)	A1&!B0	0.4050	n/a	n/a	-0.1511
A0(LH)	A1&B0	0.4050	n/a	n/a	-0.0544
A1(LH)	!A0&!B0	0.4050	n/a	n/a	-0.1575
A1(LH)	A0&!B0	0.4050	n/a	n/a	-0.1531
A1(LH)	A0&B0	0.4050	n/a	n/a	-0.1530

B0(LH)	!A0&!A1	0.4050	n/a		n/a	0.0670
B0(HL)	!A0&!A1	0.4050	n/a		n/a	0.0910

LEAKAGE POWER

When Condition	Power (nW)
!A0&!A1&!B0	0.0224
!A0&!A1&B0	0.0389
!A0&A1&!B0	0.0224
A0&!A1&!B0	0.0224
A0&A1&!B0	0.0224
!A0&A1&B0	0.0367
A0&!A1&B0	0.0223
A0&A1&B0	0.0223

SETUP AND CONDITIONS

PVT: tt_3p3v_25c	
Voltage: 3.3000 volt	
Temperature: 25.0 centigrade	

OAI21X1 (tt_5v_25c/5.0000/25.0)

The OAI21 cell provides the logical inverted AND of one OR group and an additional input.

Attributes

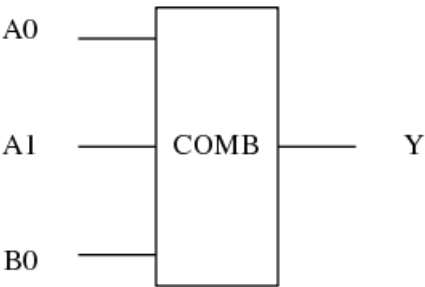| Attribute	Value
area	315.52 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(!((A0|A1)&B0))

TRUTH TABLE FOR Y

A0	A1	B0	Y
0	0	?	1
?	?	0	1
1	?	1	0
?	1	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A0	input	0.0225
A1	input	0.0235
B0	input	0.0152

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)

A0(LH)	Y(HL)	!A1&B0	0.4050	0.1712	0.3477	0.4590
A0(HL)	Y(LH)	!A1&B0	0.4050	0.1081	0.4172	0.5553
A1(LH)	Y(HL)	!A0&B0	0.4050	0.1655	0.3764	0.5009
A1(HL)	Y(LH)	!A0&B0	0.4050	0.1086	0.4069	0.5603
B0(HL)	Y(LH)	A0&!A1	0.4050	0.1058	0.3934	0.4863
B0(HL)	Y(LH)	!A0&A1	0.4050	0.0994	0.3930	0.5731
B0(HL)	Y(LH)	A0&A1	0.4050	0.1063	0.3951	0.4880
B0(LH)	Y(HL)	A0&!A1	0.4050	0.1668	0.3427	0.4543
B0(LH)	Y(HL)	!A0&A1	0.4050	0.1618	0.3806	0.4922
B0(LH)	Y(HL)	A0&A1	0.4050	0.2118	0.3440	0.4416

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
B0	A0&!A1	0.4050	Y(LH)	0.1058	0.7372
B0	!A0&A1	0.4050	Y(LH)	0.0994	1.0142
B0	A0&A1	0.4050	Y(LH)	0.1063	0.7434
A0	!A1&B0	0.4050	Y(HL)	0.1712	0.4164
A1	!A0&B0	0.4050	Y(HL)	0.1655	0.6750
B0	A0&!A1	0.4050	Y(HL)	0.1668	0.4940
B0	!A0&A1	0.4050	Y(HL)	0.1618	0.8318
B0	A0&A1	0.4050	Y(HL)	0.2118	0.4946
A1	!A0&B0	0.4050	Y(LH)	0.1086	1.6773
A0	!A1&B0	0.4050	Y(LH)	0.1081	1.4514
A1(HL)	!A0&!B0	0.4050	n/a	n/a	0.3767
A1(HL)	A0&!B0	0.4050	n/a	n/a	0.3756
A1(HL)	A0&B0	0.4050	n/a	n/a	0.3761
A0(HL)	!A1&!B0	0.4050	n/a	n/a	0.3754
A0(HL)	A1&!B0	0.4050	n/a	n/a	0.3748
A0(HL)	A1&B0	0.4050	n/a	n/a	0.3609
A0(LH)	!A1&!B0	0.4050	n/a	n/a	-0.3758
A0(LH)	A1&!B0	0.4050	n/a	n/a	-0.3643
A0(LH)	A1&B0	0.4050	n/a	n/a	-0.1143
A1(LH)	!A0&!B0	0.4050	n/a	n/a	-0.3757
A1(LH)	A0&!B0	0.4050	n/a	n/a	-0.3681
A1(LH)	A0&B0	0.4050	n/a	n/a	-0.3684

| B0(LH) | !A0&!A1 | 0.4050 | n/a | | n/a | 0.1726 |
| B0(HL) | !A0&!A1 | 0.4050 | n/a | | n/a | 0.2162 |

LEAKAGE POWER

When Condition	Power (nW)
!A0&!A1&!B0	0.0830
!A0&!A1&B0	0.1307
!A0&A1&!B0	0.0830
A0&!A1&!B0	0.0830
A0&A1&!B0	0.0830
!A0&A1&B0	0.0913
A0&!A1&B0	0.0598
A0&A1&B0	0.0598

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

OR2X2 (tt_3p3v_25c/3.300000/25.0)

The OR2 cell provides the logical OR of two inputs (A, B).
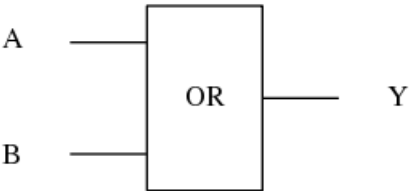
Attributes

Attribute	Value
area	315.52 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A|B)

TRUTH TABLE FOR Y

A	B	Y
1	?	1
?	1	1
0	0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0189
B	input	0.0179

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	!B	0.4050	0.1647	0.6343	0.4665
A(HL)	Y(HL)	!B	0.4050	0.2318	0.6574	0.4726
B(HL)	Y(HL)	!A	0.4050	0.2315	0.6328	0.4720
B(LH)	Y(LH)	!A	0.4050	0.1648	0.5625	0.4637

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.1647	0.5240
B	!A	0.4050	Y(HL)	0.2315	0.7115
A	!B	0.4050	Y(HL)	0.2318	0.8094
B	!A	0.4050	Y(LH)	0.1648	0.3937
B(HL)	A	0.4050	n/a	n/a	0.1590
A(LH)	B	0.4050	n/a	n/a	-0.1532
B(LH)	A	0.4050	n/a	n/a	-0.0545
A(HL)	B	0.4050	n/a	n/a	0.1578

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.0620
!A&B	0.0337
A&!B	0.0481
A&B	0.0337

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

OR2X2 (tt_5v_25c/5.0000/25.0)

The OR2 cell provides the logical OR of two inputs (A, B).
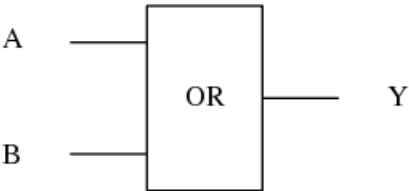
Attributes

Attribute	Value
area	315.52 µm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	(A|B)

TRUTH TABLE FOR Y

A	B	Y
1	?	1
?	1	1
0	0	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0199
B	input	0.0188

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	!B	0.4050	0.2310	0.5417	0.4458
A(HL)	Y(HL)	!B	0.4050	0.2872	0.5175	0.4505
B(HL)	Y(HL)	!A	0.4050	0.2866	0.5217	0.4499
B(LH)	Y(LH)	!A	0.4050	0.2310	0.4780	0.4435

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	!B	0.4050	Y(LH)	0.2310	1.3581
B	!A	0.4050	Y(HL)	0.2866	1.8208
A	!B	0.4050	Y(HL)	0.2872	2.0271
B	!A	0.4050	Y(LH)	0.2310	1.0506
B(HL)	A	0.4050	n/a	n/a	0.3636
A(LH)	B	0.4050	n/a	n/a	-0.3681
B(LH)	A	0.4050	n/a	n/a	-0.1145
A(HL)	B	0.4050	n/a	n/a	0.3757

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.2265
!A&B	0.1146
A&!B	0.1461
A&B	0.1146

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

TLATNCAX2 (tt_3p3v_25c/3.300000/25.0)

The TLATNCA cell is a positive edge-triggered clock-gating latch. The positive edge clock (CK) is qualified by the latched enable signal (E) to create the gated positive edge clock (ECK).

Attributes

Attribute	Value
area	true µm^2
area	true µm^2
area	true µm^2
area	1856.0 µm^2
area	latch_posedge µm^2

LATCH GROUP

Attribute	Expression
Registers	IQ IQN
Enable	(!CK)
Data In	E

OUTPUT FUNCTIONS

Output Pin	Function
ECK	(IQ&CK)

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
E(LH)	CK(LH)	0.4055	0.2720
E(HL)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.5928
CK(HLH)	CK(HL)	0.4793

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
E	input	0.0228
CK	input	0.0118

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(HL)	ECK(HL)	!E	0.4050	0.4665	1.0584	0.4671
CK(HL)	ECK(HL)	E	0.4050	0.4649	1.0458	0.4636
CK(LH)	ECK(LH)	E	0.4050	0.3275	0.9156	0.4602

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!E	0.4050	ECK(HL)	0.4665	3.0199
CK	E	0.4050	ECK(HL)	0.4649	1.6868
CK	E	0.4050	ECK(LH)	0.3275	1.8955
E(LH)	!CK	0.4050	n/a	n/a	1.1582
E(LH)	CK	0.4050	n/a	n/a	-0.1571
E(HL)	!CK	0.4050	n/a	n/a	1.4819
E(HL)	CK	0.4050	n/a	n/a	0.1755
CK(LH)	!E	0.4050	n/a	n/a	0.7709
CK(HL)	!E	0.4050	n/a	n/a	0.7722
CK(HL)	E	0.4050	n/a	n/a	2.0212

LEAKAGE POWER

When Condition	Power (nW)
!CK&!E	0.2349
!CK&E	0.2277
CK&!E	228.8614
CK&E	130.0600

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

TLATNCAX2 (tt_5v_25c/5.0000/25.0)

The TLATNCA cell is a positive edge-triggered clock-gating latch. The positive edge clock (CK) is qualified by the latched enable signal (E) to create the gated positive edge clock (ECK).

Attributes

Attribute	Value
area	true μm^2
area	true μm^2
area	true μm^2
area	1856.0 μm^2
area	latch_posedge μm^2

LATCH GROUP

Attribute	Expression
Registers	IQ IQN
Enable	(!CK)
Data In	E

OUTPUT FUNCTIONS

Output Pin	Function
ECK	(IQ&CK)

FUNCTIONAL SCHEMATIC

CONSTRAINTS

Constraint Pin	Related Pin	setup(ns)	hold(ns)
E(LH)	CK(LH)	0.4055	0.2720
E(HL)	CK(LH)	0.4055	0.2720

Constraint Pin	Related Pin	Minimum Pulse Width(ns)
CK(HLH)	CK(HL)	0.4073
CK(HLH)	CK(HL)	0.3267

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
E	input	0.0241
CK	input	0.0124

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
CK(HL)	ECK(HL)	!E	0.4050	0.5721	0.8353	0.4412
CK(HL)	ECK(HL)	E	0.4050	0.5707	0.8243	0.4411
CK(LH)	ECK(LH)	E	0.4050	0.4611	0.7079	0.4415

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
CK	!E	0.4050	ECK(HL)	0.5721	7.4794
CK	E	0.4050	ECK(HL)	0.5707	4.1762
CK	E	0.4050	ECK(LH)	0.4611	4.5975
E(LH)	!CK	0.4050	n/a	n/a	2.8762
E(LH)	CK	0.4050	n/a	n/a	-0.3758
E(HL)	!CK	0.4050	n/a	n/a	3.7365
E(HL)	CK	0.4050	n/a	n/a	0.4183
CK(LH)	!E	0.4050	n/a	n/a	1.9410
CK(HL)	!E	0.4050	n/a	n/a	1.9668
CK(HL)	E	0.4050	n/a	n/a	4.9503

LEAKAGE POWER

When Condition	Power (nW)
!CK&!E	0.7918
!CK&E	0.7301
CK&!E	322.2640
CK&E	174.8336

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade

XNOR2X1 (tt_3p3v_25c/3.300000/25.0)

The XNOR2 cell provides a logical EXCLUSIVE NOR of two inputs (A, B).
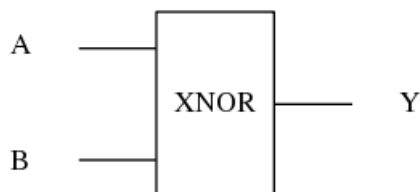
Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	((A&B)|((!A)&(!B)))

TRUTH TABLE FOR Y

A	B	Y
1	1	1
0	0	1
1	0	0
0	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0233
B	input	0.0232

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	B	0.4050	0.0560	0.3368	0.4869
A(HL)	Y(HL)	B	0.4050	0.1357	0.4498	0.4587

A(HL)	Y(LH)		!B	0.4050	0.0566	0.3583	0.4775
A(LH)	Y(HL)		!B	0.4050	0.1273	0.3226	0.4301
B(HL)	Y(HL)		A	0.4050	0.1386	0.6011	0.4579
B(LH)	Y(LH)		A	0.4050	0.0627	0.4881	0.5825
B(HL)	Y(LH)		!A	0.4050	0.0556	0.4182	0.6290
B(LH)	Y(HL)		!A	0.4050	0.1330	0.4540	0.4633

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.0560	0.3944
A	!B	0.4050	Y(LH)	0.0566	0.4259
B	A	0.4050	Y(HL)	0.1386	0.9561
B	!A	0.4050	Y(HL)	0.1330	0.7397
A	B	0.4050	Y(HL)	0.1357	0.4587
A	!B	0.4050	Y(HL)	0.1273	0.0905
B	A	0.4050	Y(LH)	0.0627	0.8035
B	!A	0.4050	Y(LH)	0.0556	1.0299

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.1143
A&B	0.1000
!A&B	0.1143
A&!B	0.1000

SETUP AND CONDITIONS

PVT: tt_3p3v_25c
Voltage: 3.3000 volt
Temperature: 25.0 centigrade

XNOR2X1 (tt_5v_25c/5.0000/25.0)

The XNOR2 cell provides a logical EXCLUSIVE NOR of two inputs (A, B).
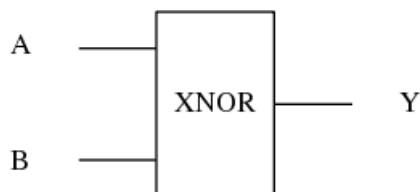
Attributes

Attribute	Value
area	519.6800000000001 μm^2

OUTPUT FUNCTIONS

Output Pin	Function
Y	((A&B)|((!A)& (!B)))

TRUTH TABLE FOR Y

A	B	Y
1	1	1
0	0	1
1	0	0
0	1	0

FUNCTIONAL SCHEMATIC

PIN CAPACITANCE (pf)

Pin	Type	Capacitance (pf)
A	input	0.0241
B	input	0.0243

DELAY AND OUTPUT TRANSITION TIME

Input Pin	Output	When Condition	Tin (ns)	Out Load (pf)	Delay (ns)	Tout (ns)
A(LH)	Y(LH)	B	0.4050	0.0829	0.2804	0.4369
A(HL)	Y(HL)	B	0.4050	0.1850	0.3801	0.4401

A(HL)	Y(LH)		!B	0.4050	0.0935	0.3032	0.4680
A(LH)	Y(HL)		!B	0.4050	0.1702	0.2868	0.4217
B(HL)	Y(HL)		A	0.4050	0.1901	0.4983	0.4446
B(LH)	Y(LH)		A	0.4050	0.1010	0.3819	0.5127
B(HL)	Y(LH)		!A	0.4050	0.0941	0.3485	0.5542
B(LH)	Y(HL)		!A	0.4050	0.1824	0.4009	0.4523

DYNAMIC ENERGY

Input Pin	When Condition	Tin (ns)	Output	Out Load (pf)	Energy (pJ)
A	B	0.4050	Y(LH)	0.0829	1.1652
A	!B	0.4050	Y(LH)	0.0935	1.2606
B	A	0.4050	Y(HL)	0.1901	2.5183
B	!A	0.4050	Y(HL)	0.1824	2.1652
A	B	0.4050	Y(HL)	0.1850	1.2794
A	!B	0.4050	Y(HL)	0.1702	0.3681
B	A	0.4050	Y(LH)	0.1010	2.0949
B	!A	0.4050	Y(LH)	0.0941	2.7615

LEAKAGE POWER

When Condition	Power (nW)
!A&!B	0.3741
A&B	0.3048
!A&B	0.3740
A&!B	0.3048

SETUP AND CONDITIONS

PVT: tt_5v_25c
Voltage: 5.0000 volt
Temperature: 25.0 centigrade