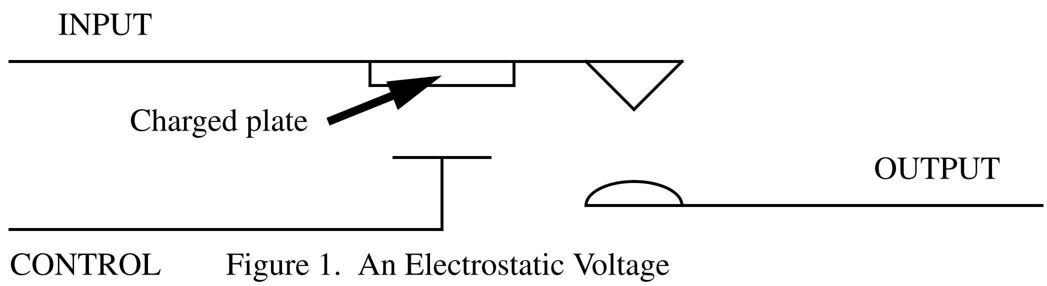


Figure 1. An Electrostatic Voltage Controlled Switch

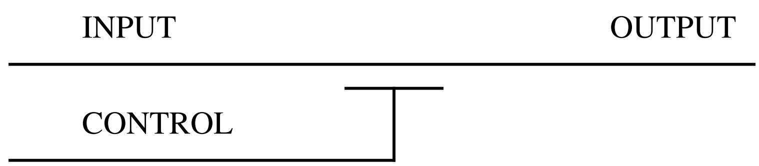


Figure 2. Symbol for a Voltage Controlled Switch

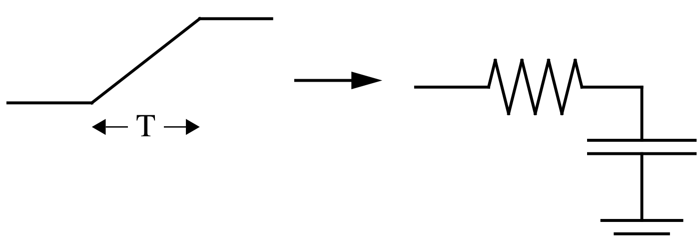


Figure 3
Power Dissipated is
$1/2\ CV^2 \times 2RC/T$
(for $T \gg RC$)

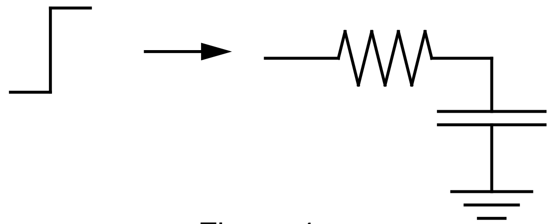


Figure 4
Power Dissipated is
1/2 CV^2

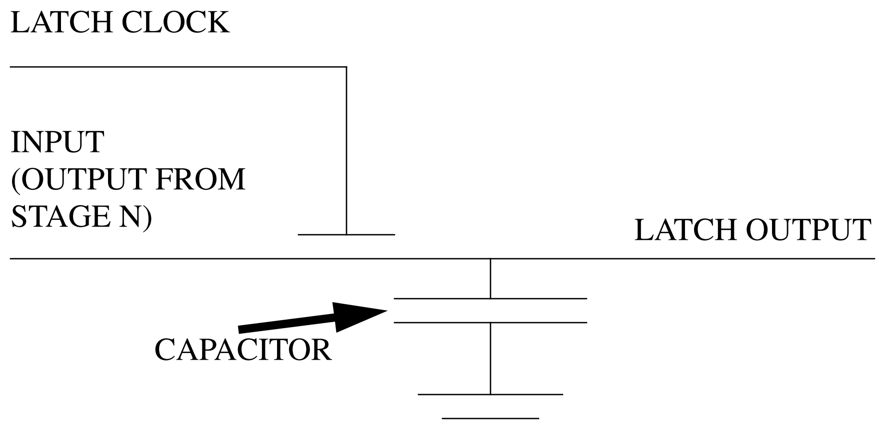


Figure 7. A latch

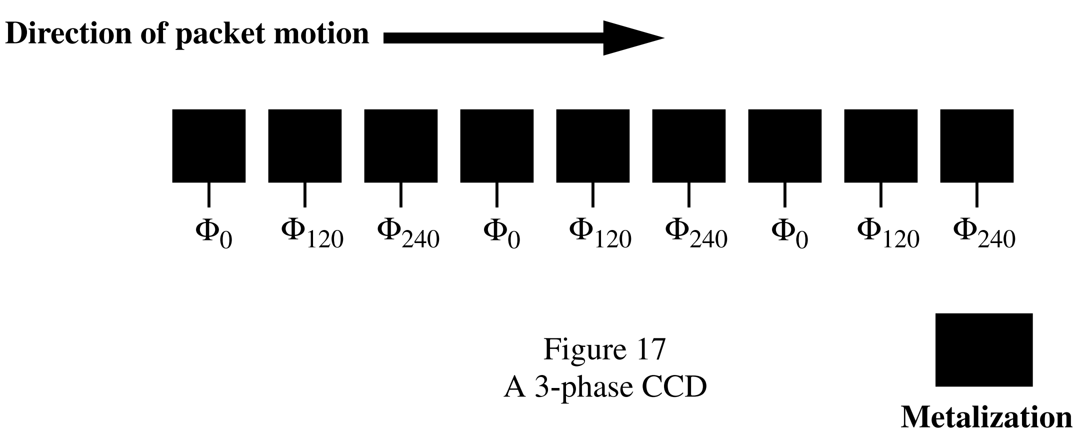


Figure 17
A 3-phase CCD

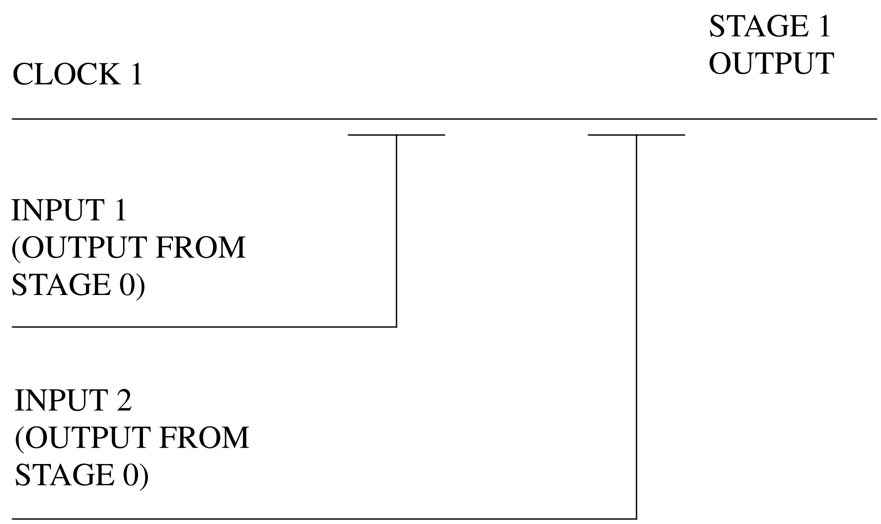


Figure 5. NOR gate

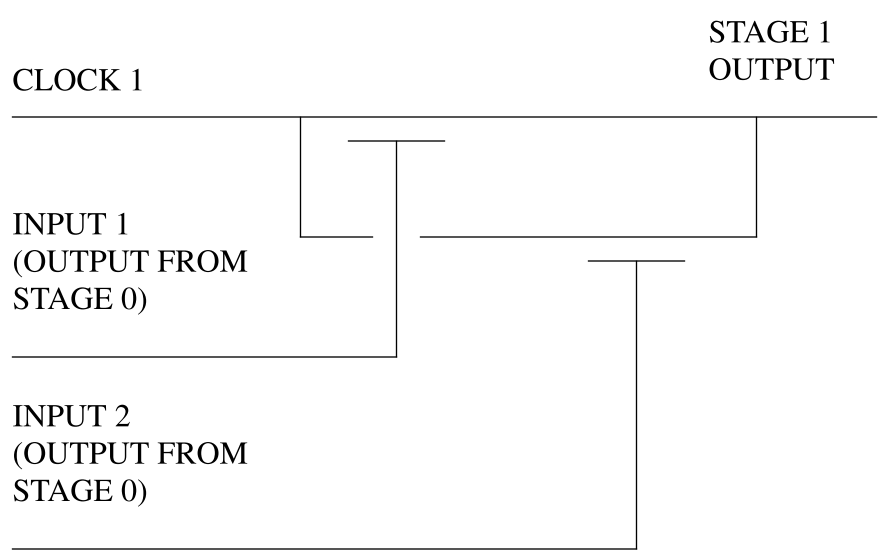


Figure 6. NAND gate

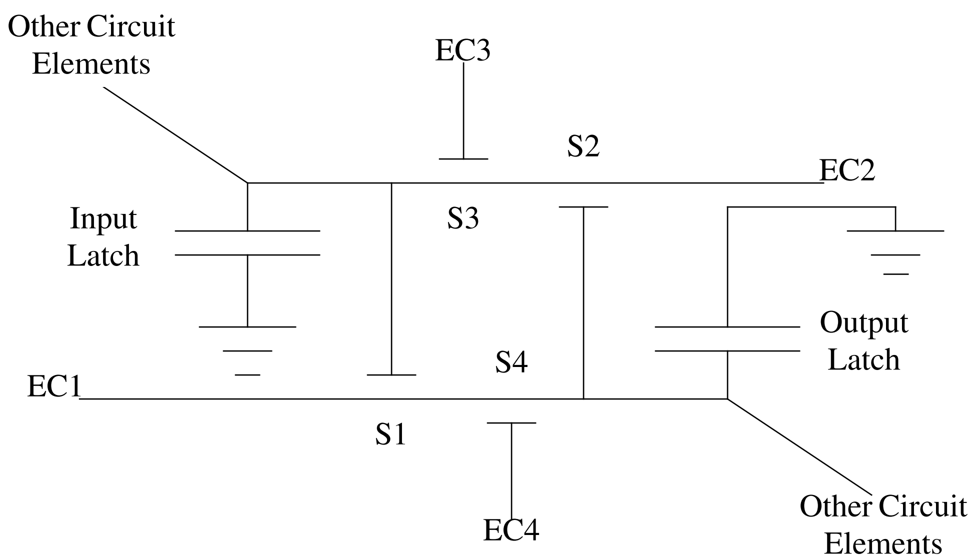


Figure 8
Exchanging Data
Between Two Latches

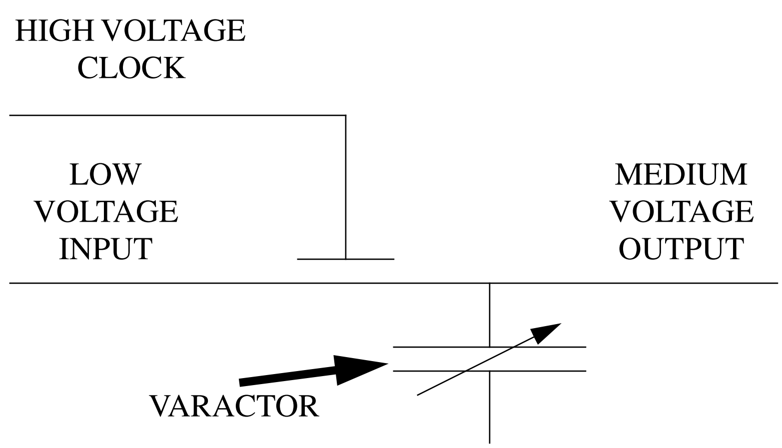


Figure 9. A Reversible
Voltage Booster

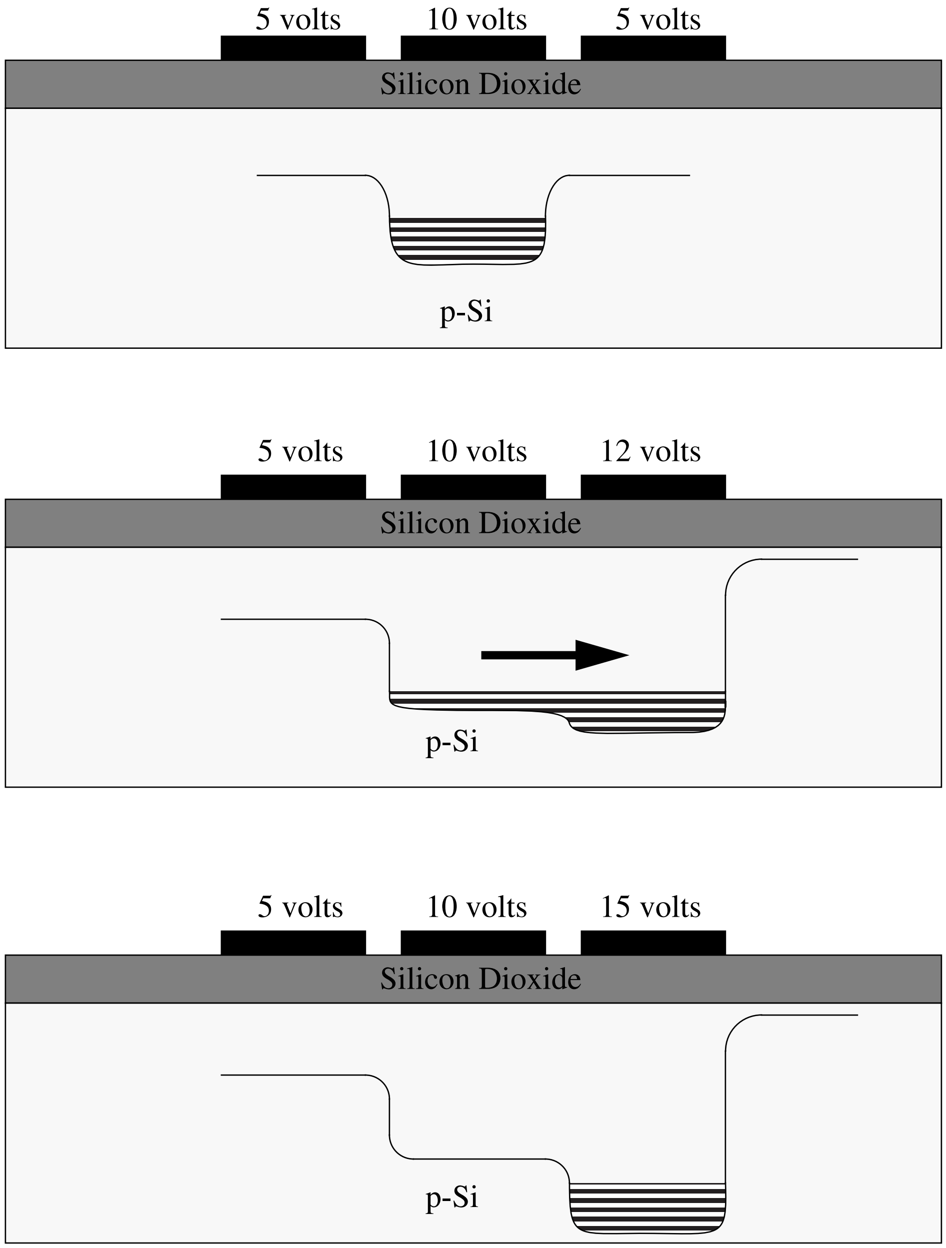


Figure 10
Hydraulic Model of Charge Transfer
in a CCD (Adapted from Sze[1])

Negative Charge
(electrons)

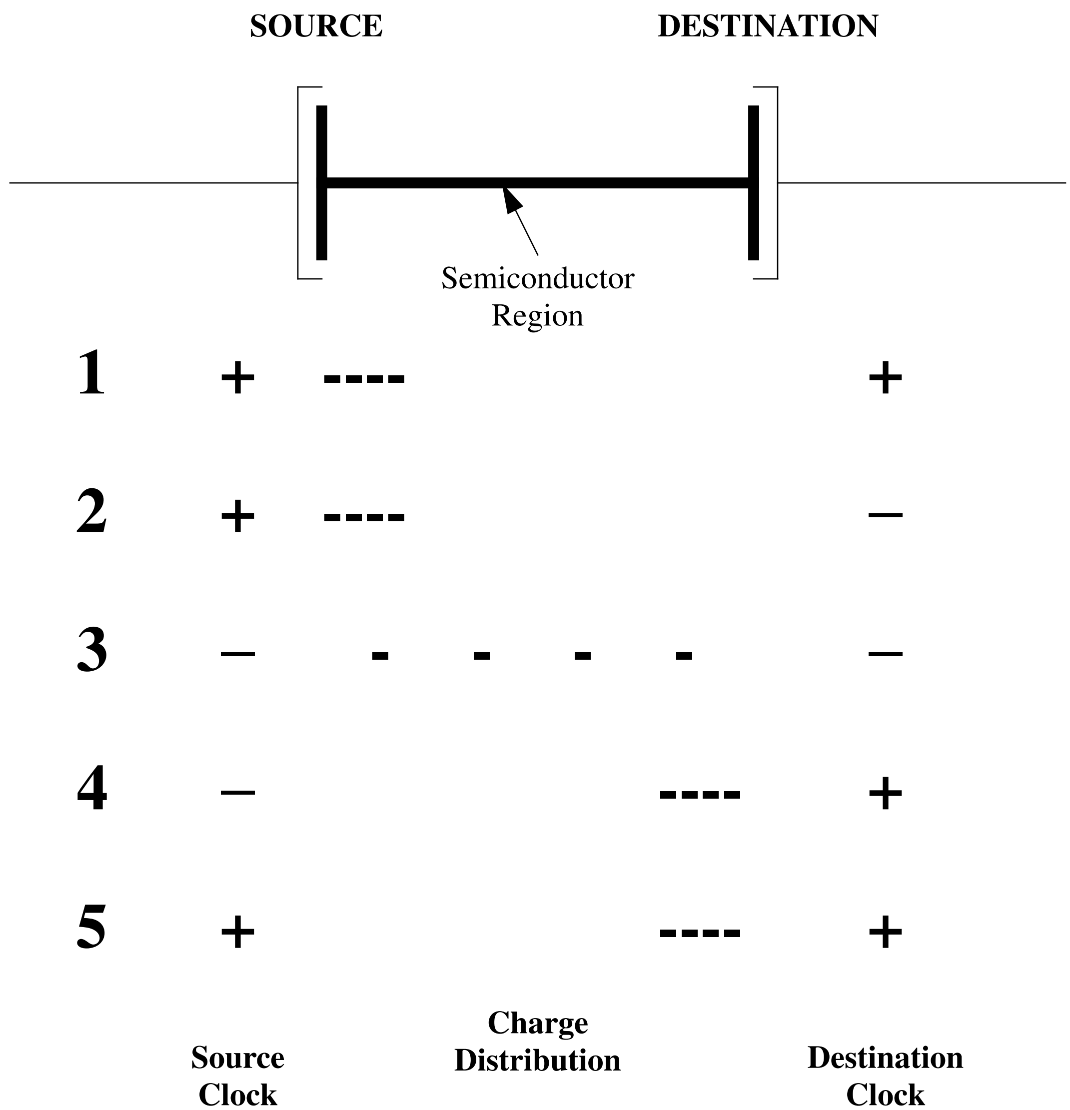


Figure 11
Transferring Charge
With Little Dissipation

Initial State				Final State		
Source	Condition	Destination		Source	Condition	Destination
0	0	0		0	0	0
~~0~~	~~0~~	~~1~~		~~0~~	~~0~~	~~1~~
0	1	0		0	1	0
0	1	1		0	1	1
1	0	0	↔	0	0	1
~~1~~	~~0~~	~~1~~		~~0~~	~~0~~	~~2~~
1	1	0		1	1	0
1	1	1		1	1	1

Figure 12
Allowed states and state changes of a 3−bucket RCT device.
Double headed arrow denotes the only legal, nontrivial change of state.

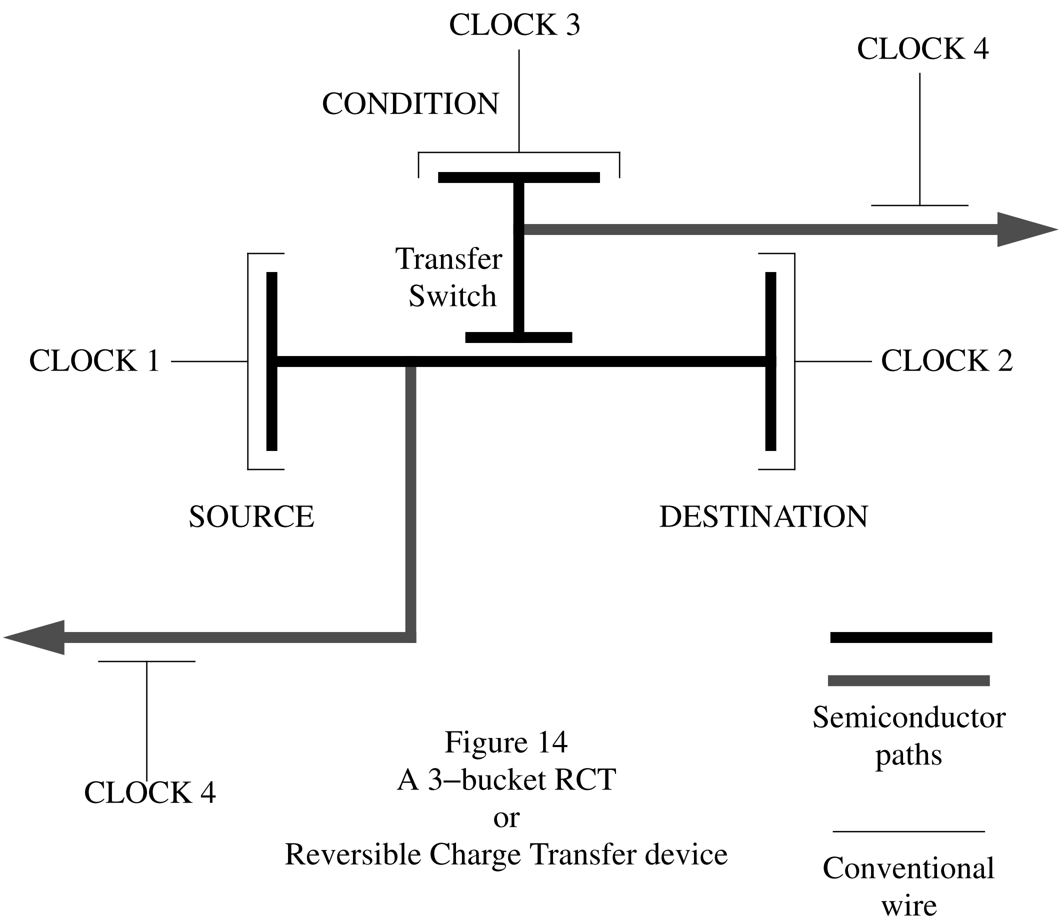


Figure 14
A 3−bucket RCT
or
Reversible Charge Transfer device

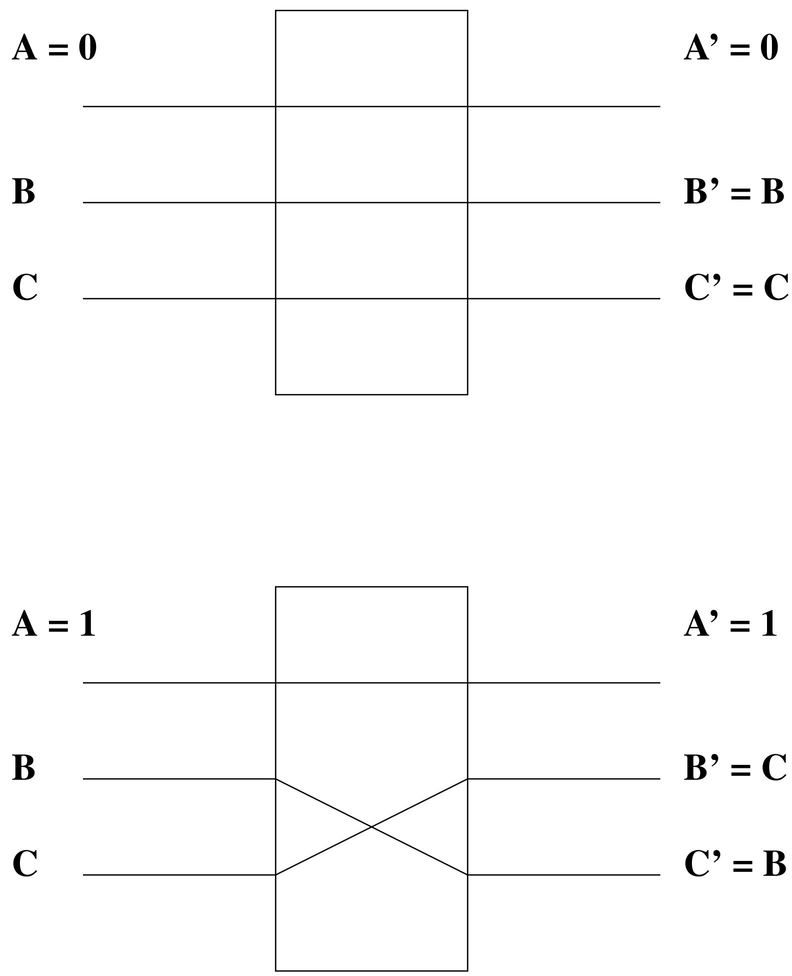
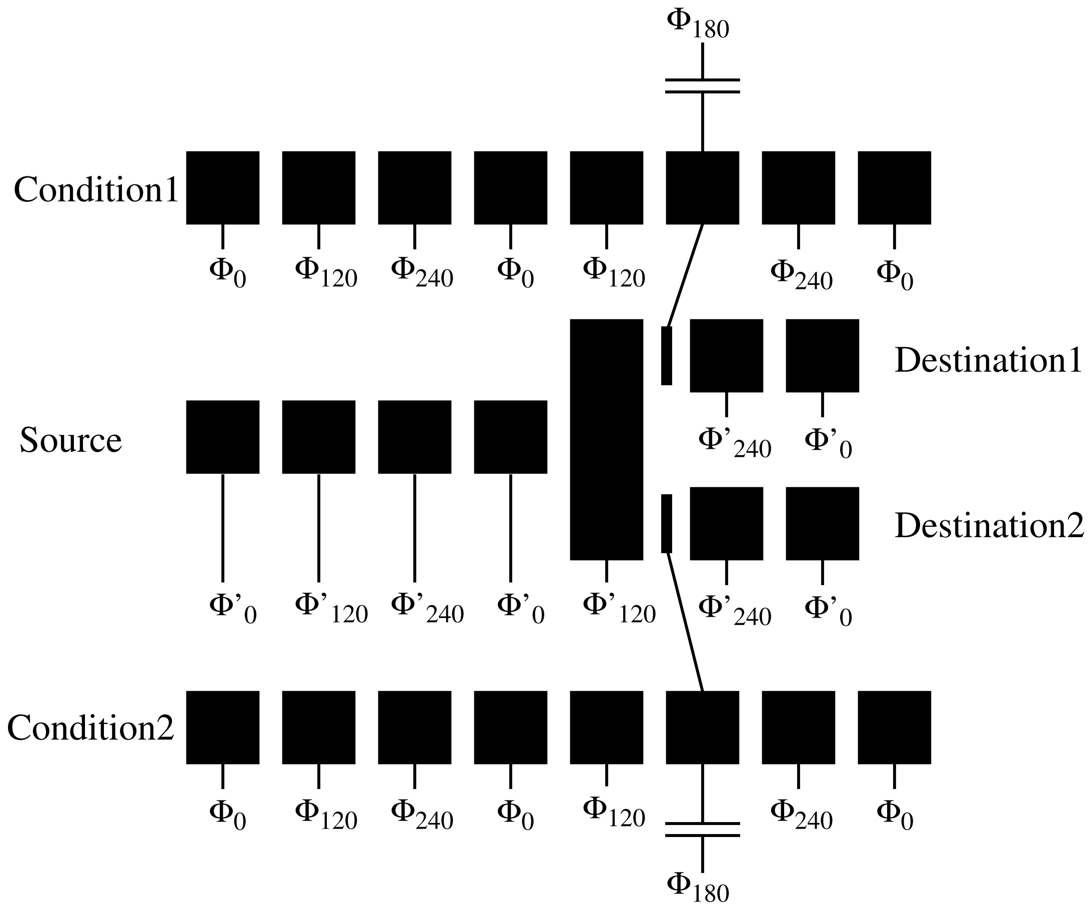


Figure 13
A Fredkin Gate



Metalization

Figure 18
A Planar RCT
Conceptually similar to the 5−bucket RCT
Charge packets move from left to right

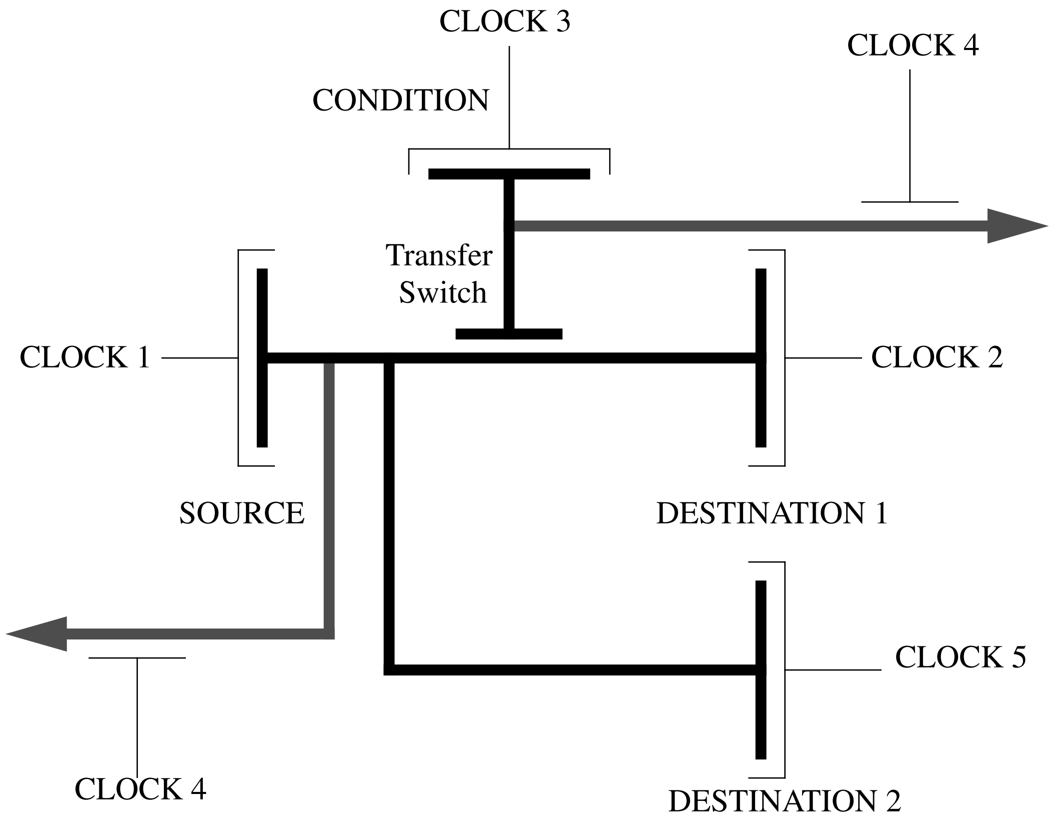
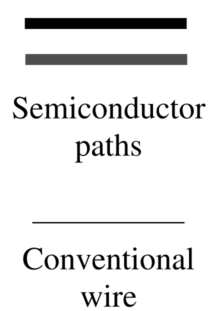


Figure 16
A 4–bucket RCT
After trying to transfer charge from
Source to Destination 1, any remaining
charge is transferred to Destination 2.



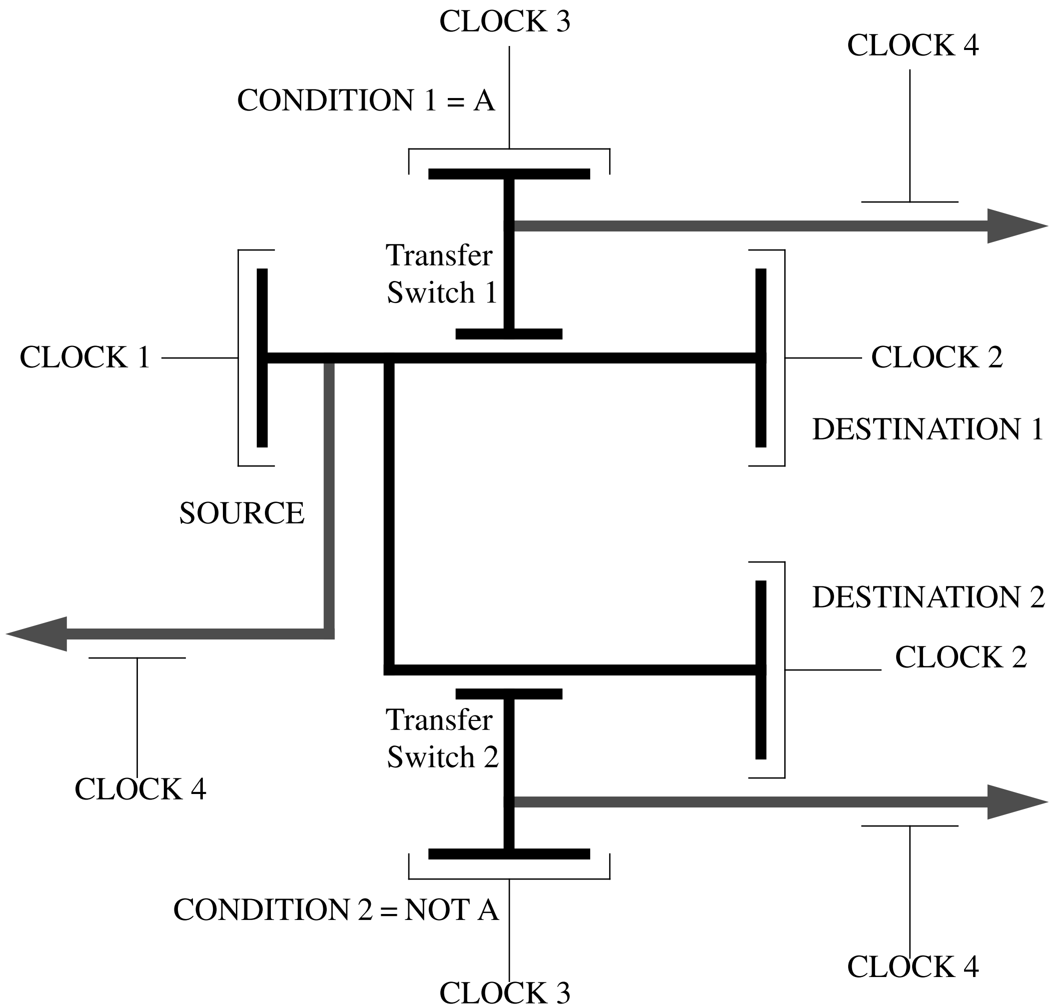


Figure 15
A 5–bucket RCT
Charge flows either to
Destination 1 or 2.
Condition 1 and 2
are Complimentary