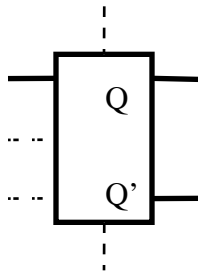


Basic
Symbol



- Outputs are always inverses
- One or two inputs (see behaviors below)
- Enable or clock not present on asynchronous type
- Latch or master-slave may also have asynchronous preset and/or clear - often active low

Three basic types

Asynchronous - Outputs change instantly when inputs changed

Latch - Has “enable” or “trigger”

- when inactive, inputs have no effect on outputs

- when active, outputs may change instantaneously when inputs changed

Master-slave - Has “clock”

- Outputs change on rising/falling edge of clock, based on inputs at that time

Three kinds of behavior

S'	R'	Q _{before}	Q _{after}		SR	Q _{before}	Q _{after}
00	0		(disallowed)		00	0	0 (no change)
00	1		(disallowed)		00	1	1 (no change)
01	0		1	OR	01	0	0
01	1		1		01	1	0
10	0		0		10	0	1
10	1		0		10	1	1
11	0		0 (no change)		11	0	(disallowed)
11	1		1 (no change)		11	1	(disallowed)

(Asynchronous, latch, or master-slave possible)

D	Q _{before}	Q _{after}
0	0	0
0	1	0
1	0	1
1	1	1

(Would be meaningless as asynchronous. Latch or master-slave possible.

Asynchronous preset and/or clear often present as well)

JK	Q _{before}	Q _{after}
00	0	0 (no change)
00	1	1 (no change)
01	0	0
01	1	0
10	0	1
10	1	1
11	0	1
11	1	0

(Master-slave is only option. Asynchronous preset and/or clear often present as well)