

(Separate clock and preset inputs)

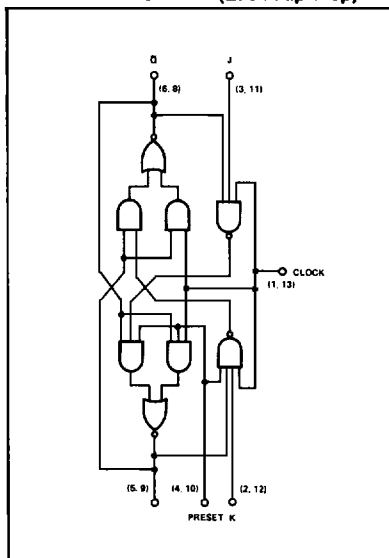
SPEED/PACKAGE AVAILABILITY

54LS F,W 74LS A,F
 54S A,F,W 74S A,F

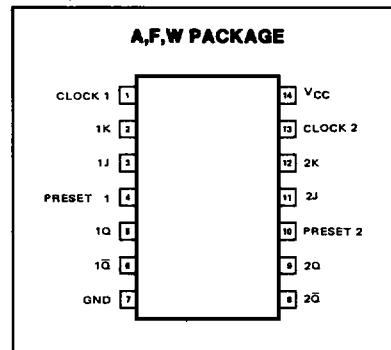
DESCRIPTION

A low level at the preset input sets the Q output high regardless of the levels at the other inputs. When preset is inactive (high), a high level at the clock input enables the J and K inputs and data will be accepted. The logic levels at the J and K inputs may be allowed to change when the clock pulse is high and the bistable will perform according to the function table as long as minimum setup and hold times are observed. Input data is transferred to the outputs on the negative-going edge of the clock pulse.

BLOCK DIAGRAM (Each Flip-Flop)



PIN CONFIGURATION



TRUTH TABLE (Each Flip-Flop)

| Inputs | | | | Outputs | |
|--------|-------|---|---|----------------|-----------------|
| Preset | Clock | J | K | Q | Q̄ |
| L | X | X | X | H | L |
| H | ↓ | L | L | Q ₀ | Q̄ ₀ |
| H | ↓ | H | L | H | L |
| H | ↓ | L | H | L | H |
| H | ↓ | H | H | Toggle | |
| H | H | X | X | Q ₀ | Q̄ ₀ |

SWITCHING CHARACTERISTICS V_{CC} = 5V, T_A = 25°C

| TEST CONDITIONS | | | 54/74LS | | | 54/74S | | | UNIT |
|---|----------------------------------|-----------|---|-----|-----|--|-----|-----|------|
| | | | C _L = 15pF R _L = 2kΩ | | | C _L = 15pF R _L = 200Ω | | | |
| PARAMETER | FROM INPUT | TO OUTPUT | MIN | TYP | MAX | MIN | TYP | MAX | |
| f _{Clock} Clock frequency | | | 30 | 45 | | 80 | 125 | | MHz |
| t _w (Clock) Width of Clock pulse | | | 20 | | | | | | ns |
| | | | | | | 6 | | | |
| | | | | | | 6.5 | | | |
| t _w (Preset) Width of preset pulse | | | 25 | | | 8 | | | ns |
| t _w (Clear) Width of clear pulse | | | 25 | | | | | | ns |
| t _{Setup} Input setup time | | | 20↓ | | | 8 | | | ns |
| t _{Hold} Input hold time | | | 0↓ | | | 3↓ | | | ns |
| Propagation delay time | | | | | | | | | |
| t _{PLH} Low-to-high | CLR, PRE or CLK (as appropriate) | | | 11 | 20 | 2 | 4 | 7 | ns |
| t _{PHL} High-to-low | | | | 15 | 30 | 2 | 5 | 7 | |

Load circuit and typical waveforms are shown at the front of section.

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