

614 QUAD LATCH consists of four identical bistable flip flops. Each has DATA, CLOCK, SET, and RESET inputs and a buffered GATE output that toggles between high and low states.

Usage:

With comparators on all inputs, **614** responds to any signal that crosses a 1-volt threshold. The rising edge of a threshold-crossing signal at CLOCK sets GATE high (roughly 5v) or low (0v) depending on the state of the signal at DATA (i.e., if DATA is above 1 volt, GATE goes high; if DATA is lower than 1 volt, GATE goes low). The rising edge of a threshold-crossing signal at SET will force GATE high asynchronously. Vice versa, the rising edge of a threshold-crossing signal at RESET will force GATE low asynchronously.

DATA is normalled to the logical inversion of GATE, meaning that if nothing is patched into DATA, the default operation of each flip flop is as a divide-by-two counter, with GATE going high at every other CLOCK event. CLOCKS 2, 3, and 4 are normalled to the preceding GATE, meaning that if only CLOCK 1 is used, **614** defaults as a a four-stage divider, with GATE 2 going high at every fourth CLOCK 1 event, GATE 3 at every eighth, and GATE 4 at every sixteenth.

Construction notes:

- The prototype includes a trimming potentiometer to set the voltage for the high state from the front panel. This needs modifications from marked values to work. The trimming potentiometer should be 5k rather than 100k and the 220k resistors should be 10M. RL should be 10k. V2 needs no modifications.
- All diodes should be installed vertically with the cathode oriented toward the thicker line in the footprint silkscreen. This might be a little hard to see.
- It is best to install LEDs last. It might be difficult to see the required orientation from the LED footprint, so make sure that LEDs are positioned with cathodes (flat side, short leg) directly next to the associated jack. Place LEDs without soldering; secure the panel with one or two nuts; flip module over so LEDs are resting against the panel; solder one leg; remove panel; use tweezers to center LEDs over footprint; solder second leg; snip legs.
- Some component spacing is very tight, be careful to avoid solder bridges.

614 QUAD LATCH

Bill of Materials:

| Part | | Quantity | Supplier | Supplier Part |
|----------|-----------------|----------|----------|---------------|
| 100n | capacitor | 11 | | |
| 10n | capacitor | 8 | | |
| 1N4148 | diode | 16 | TAYDA | A-157 |
| 100u | elec. capacitor | 1 | TAYDA | A-4538 |
| 10u | elec. capacitor | 2 | TAYDA | A-1799 |
| CD4013 | ic | 2 | TAYDA | A-556 |
| TL074 | ic | 4 | TAYDA | A-1138 |
| 14 PIN | ic socket | 6 | TAYDA | A-004 |
| PJ-3001F | jack | 20 | TAYDA | A-2563 |
| LED 3mm | led | 4 | TAYDA | A-261 |
| BC547 | nnp transistor | 4 | TAYDA | A-137 |
| 10 PIN | power header | 1 | TAYDA | A-2939 |
| 100k | resistor | 41 | | |
| 10k | resistor | 21 | | |
| 10K | resistor | 4 | | |
| 10r | resistor | 3 | | |
| 1K | resistor | 4 | | |
| 1M | resistor | 16 | | |
| 4k7 | resistor | 8 | | |