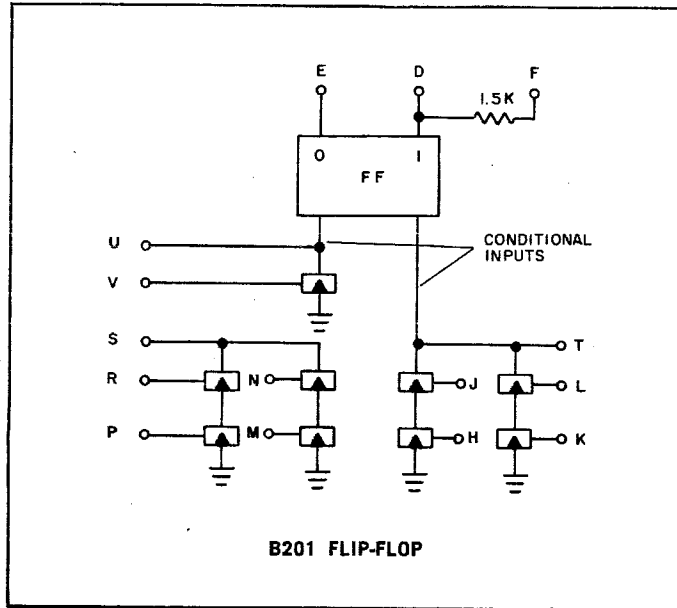


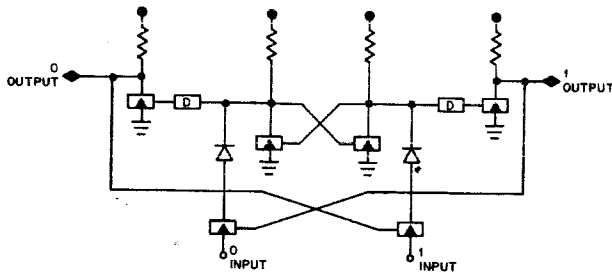
# FLIP-FLOP TYPE B201

# B SERIES



Some 10 mc operations require a greater variety of pulse inputs than the B200 can provide. For example read in from several sources, bi-directional shifting, and arithmetic operations all require the greater flexibility of the B201.

In order to allow the outputs to be sampled by the same pulse that is changing the state of the internal flip-flop, the buffers include a controlled amount of delay. The diagram below shows the internal construction of the B201.



The B201 has nine built-in inverters for accomplishing such operations as set, clear, jam-transfer, shift, and complement without the need for additional gating. The B201 can also be used in counters. Logic diagrams for these operations are shown under "B Series Logic Configurations."

**INPUT:** All built-in inverters are similar to B104 and B105 circuits. Each conditional input is equivalent to a 15-ma clamped load. Counting internal and external inverter collectors as 8 pf each, not more than 40 pf capacitive loading is allowable at either input T or input U. Each input gate must consist either of one inverter, or of two series-connected inverters with the top inverter pulsed (see "Inverter Usage", page 99) If a level or pulse wider than 40 nsec is used to set or clear the flip-flop, 50 nsec must be allowed between the trailing edge of that signal and the leading edge of the next input that changes the state of the flip-flop. The B201 is complemented by simultaneously bringing both inputs to ground with pulse inverters (40-nsec pulses only). Since the inputs are conditioned by the state of the flip-flop, the total load is equivalent to one 15-ma clamped load.

**OUTPUT: 0 and 1 Outputs** — Each output can supply 16 ma at ground or 12 ma at -3 v. When the flip-flop input rate exceeds 3 mc, dynamic loading must be considered. The table below shows the maximum number of inverter bases that can be driven at selected frequencies, both with and without an extra 10 ma clamped load that increases drive at -3 volts while reducing to 6 ma the drive available at ground (See "Special Instructions for B series Logic Design" for more information about fall times and dynamic loading.)

B201 Flip-Flop Input Frequency	Maximum Inverter Base Inputs With Short Leads	Inverter Bases With Short Leads and 10 ma Clamped Load
10 mc	3	4
8 mc	5	7
6 mc	7	10
5 mc	9	13
3 mc and below	12	18

**Indicator Output** — A separate output at pin F drives an indicator-with-amplifier (4910) through Connector Board W020 without loading the flip-flop output excessively with stray wiring capacitance. When in use, this output reduces the 1 output drive at  $-3v$  by 1 ma when used with W020, or by 2 ma when used to drive a 4910 directly.

**POWER:** +10(A)/5 ma;  $-15(B)/63$  ma.

