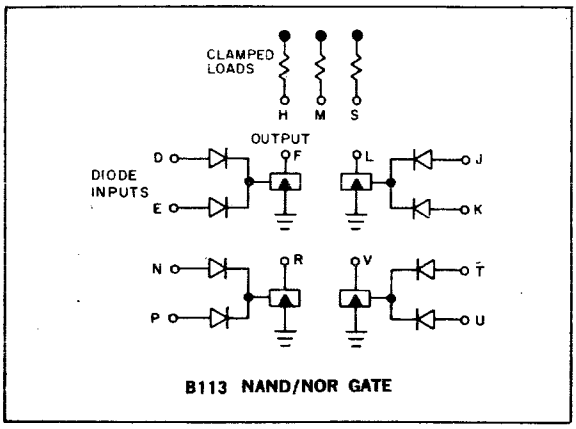
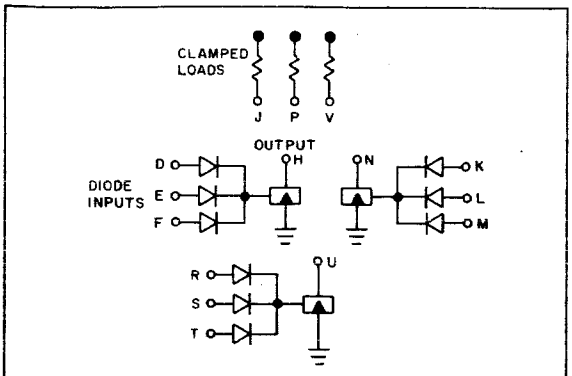
NAND/NOR GATES
TYPES B113, B115, B117, B171

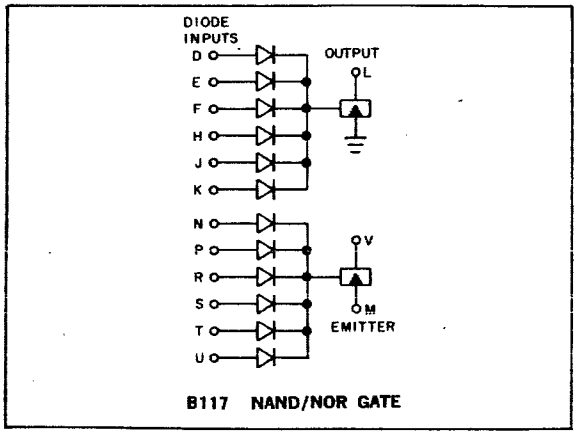
B SERIES



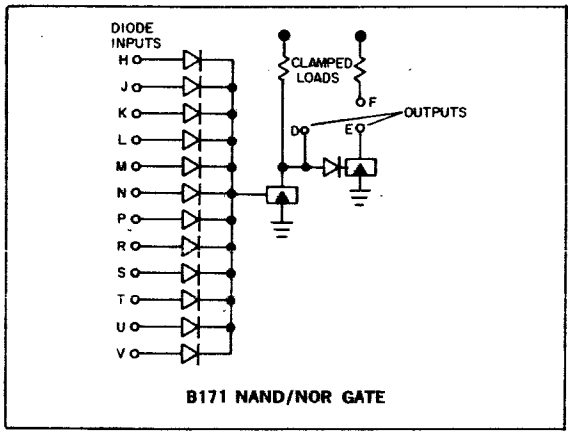
B113 NAND/NOR GATE



B115 NAND/NOR GATE



B117 NAND/NOR GATE



B171 NAND/NOR GATE

The B113, B115, B117, and B171 are positive NOR diode gates; they form NOR gates for ground inputs and NAND gates for —3 v inputs. The outputs of the diode gates drive inverters similar to the B105, for power amplification. The typical total transition time is 40 nsec for output fall and 60 nsec for output rise. (Because the rise and fall delays differ, these diode gates may shorten negative input pulses markedly; see below.)

The B113 provides three standard 10-ma clamped loads and four diode gates, each with two diode inputs and the collector brought out.

The B115 has three standard 10-ma clamped loads and three diode gates, each with three diode inputs and the collector brought out.

The B117 has two diode gates, each with six diode inputs and the collector brought out. In addition, the emitter of one of the inverters is available.

The B171 is a single gate with twelve diode inputs. In addition to the positive NOR output, another inverter has been added at the output; using the inverted output makes the B171 an OR gate for ground inputs and an AND gate for —3 v inputs.

INPUT: Diode Inputs — The static load is 1¼ ma, shared by all inputs which are at ground. **Pulse** — Standard 70-nsec negative input pulses may be used for setting or clearing flip-flops only. Due to

pulse shortening by the gate, 40-nsec negative pulses may not be used as inputs. **Level** — Level inputs are standard levels of ground and −3 v. R series 100-nsec pulses must be regarded as levels when used with B series modules. **Emitter (B117 only)** — If all the base inputs are at −3 v, the B117 will saturate if its emitter is brought to ground by any conducting path. The circuit that establishes this path (another inverter, flip-flop, direct connection to ground, etc.) is loaded with whatever external load may be present at the inverter collector, plus the internal load of 1¼ ma. If the base is at ground (any 1 diode input at ground) or the base and emitter are at −3 v, there is no static load. **Clamped Load** — Each clamped load draws 10 ma from any circuit that brings it to ground.

OUTPUT: Collector Outputs — The collector outputs have a maximum output drive of 16 ma at ground. This current is available if the emitter is connected directly to ground. If the B117 emitter is not directly grounded, the maximum output load is 1¼ ma less than the maximum input available to the emitter. A 10-ma clamped load attached to the output (collector) drives 7 ma at −3 v. **B171 Only** — For the B171, terminal D drives 5 ma at ground and 7 ma at −3 v. Terminal E can drive 16 ma at ground. **Clamped Load** — Each clamped load can supply up to 7 ma at −3 v.

POWER: B113: +10 v(A)/0.7 ma; −15 v(B)/43 ma. **B115:** +10 v(A)/0.5 ma; −15 v(B)/42 ma. **B117:** +10 v(A)/0.3 ma; −15 v(B)/2.5 ma. **B171** +10 v(A)/0.3 ma; −15 v(B)/31 ma.

B113 — $23.00
B115 — $21.00
B117 — $14.00
B171 — $18.00