

QUAD 2-INPUT EXCLUSIVE OR GATE

S5486 N7486

S5486—A,F,W • N7486—A,F

DIGITAL 54/74 TTL SERIES

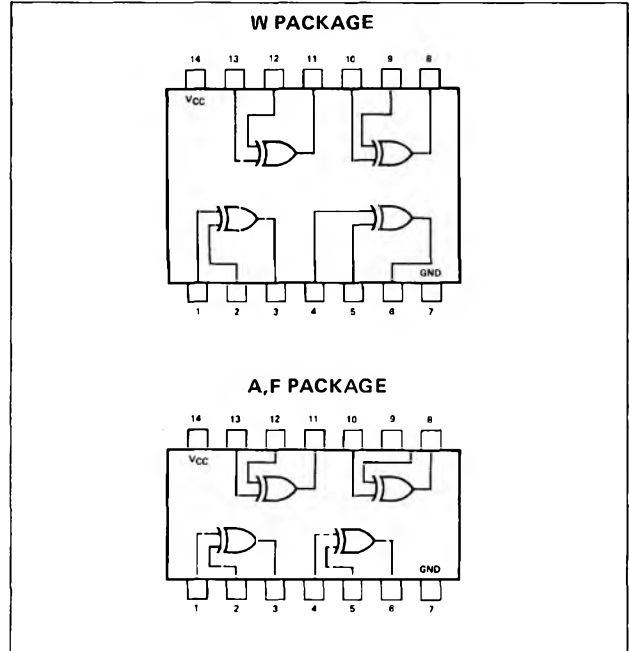
DESCRIPTION

The 54/7486 Quad 2-Input Exclusive OR Gate is a TTL element providing the function $\bar{A}B + A\bar{B}$ at the output.

TRUTH TABLE

| INPUTS | | OUTPUT |
|--------|---|--------|
| A | B | Y |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

PIN CONFIGURATIONS



RECOMMENDED OPERATING CONDITIONS

| | MIN | NOM | MAX | UNIT |
|---|------|-----|------|------|
| Supply Voltage V_{CC} (See Note 1): | | | | |
| S5486 Circuits | 4.5 | 5 | 5.5 | V |
| N7486 Circuits | 4.75 | 5 | 5.25 | V |
| Normalized Fan-Out from each output, N: | | | | |
| Logical 0 | | | 10 | |
| Logical 1 | | | 20 | |

NOTE: 1. These voltage values are with respect to network ground terminal.

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | MIN | TYP** | MAX | UNIT |
|--|---|-----|-------|-----|---------|
| $V_{in(1)}$ Input voltage required to ensure logical 1 at any input terminal | $V_{CC} = \text{MIN}$ | 2 | | | V |
| $V_{in(0)}$ Input voltage required to ensure logical 0 at any input terminal | $V_{CC} = \text{MIN}$ | | | 0.8 | V |
| $V_{out(1)}$ Logical 1 output voltage | $V_{CC} = \text{MIN}, V_{in(1)} = 2V,$ $V_{in(0)} = 0.8V, I_{load} = -800 \mu A$ | 2.4 | | | V |
| $V_{out(0)}$ Logical 0 output voltage | $V_{CC} = \text{MIN}, V_{in(1)} = 2V,$ $V_{in(0)} = 0.8V, I_{sink} = 16mA$ | | | 0.4 | V |
| $I_{in(1)}$ Logical 1 level input current (each input) | $V_{CC} = \text{MAX}, V_{in} = 2.4V$ $V_{CC} = \text{MAX}, V_{in} = 5.5V$ | | | 40 | μA |
| $I_{in(0)}$ Logical 0 level input current (each input) | $V_{CC} = \text{MAX}, V_{in} = 0.4V$ | | | 1 | mA |
| I_{OS} Short circuit output current † | $V_{CC} = \text{MAX}, V_{in(1)} = 4.5V,$ $V_{in(0)} = 0$ | -20 | | -55 | mA |
| I_{CC} Supply current | S5486 | -18 | | -55 | mA |
| | N7486 | | 30 | 43 | mA |
| | N7486 | | 30 | 50 | mA |

SIGNETICS DIGITAL 54/74 TTL SERIES - S5486 • N7486

SWITCHING CHARACTERISTICS, $V_{CC} = 5V$, $T_A = 25^\circ C$, $N = 10$

| PARAMETER | | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|-----------|--|-----------------|-------------|-----|-----|-----|------|
| t_{pd0} | Propagation delay time to logical 0 level (other input low) | $C_L = 15pF$, | $R_L = 400$ | | 11 | 17 | ns |
| t_{pd1} | Propagation delay time to logical 1 level (other input low) | $C_L = 15pF$, | $R_L = 400$ | | 15 | 23 | ns |
| t_{pd0} | Propagation delay time to logical 0 level (other input high) | $C_L = 15pF$, | $R_L = 400$ | | 13 | 22 | ns |
| t_{pd1} | Propagation delay time to logical 1 level (other input high) | $C_L = 15pF$, | $R_L = 400$ | | 18 | 30 | ns |

* For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable circuit type.

** All typical values are at $V_{CC} = 5V$, $T_A = 25^\circ C$.

+ Not more than one output should be shorted at a time.