QUAD 2-INPUT EXCLUSIVE OR GATE

S5486
N7486

S5486–A,F,W • N7486–A,F

DIGITAL 54/74 TTL SERIES

DESCRIPTION

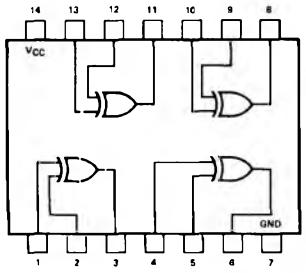
The 54/7486 Quad 2-Input Exclusive OR Gate is a TTL element providing the function $\overline{A}B + A\overline{B}$ at the output.

TRUTH TABLE

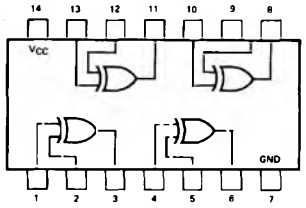
INPUTS		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

PIN CONFIGURATIONS

W PACKAGE



A,F PACKAGE



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} = MIN		2			V
$V_{in(0)}$	Input voltage required to ensure logical 0 at any input terminal	V_{CC} = MIN				0.8	V
$V_{out(1)}$	Logical 1 output voltage	V_{CC} = MIN, $V_{in(1)}$ = 2V, $V_{in(0)}$ = 0.8V, I_{load} = -800 μA		2.4			V
$V_{out(0)}$	Logical 0 output voltage	V_{CC} = 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} = MAX, V_{in} = 2.4V				40	μA
		V_{CC} = MAX, V_{in} = 5.5V				1	mA
$I_{in(0)}$	Logical 0 level input current (each input)	V_{CC} = MAX, V_{in} = 0.4V				-1.6	mA
I_{OS}	Short circuit output current†	V_{CC} = MAX, $V_{in(1)}$ = 4.5V, $V_{in(0)}$ = 0	S5486	-20		-55	mA
			N7486	-18		-55	mA
I_{CC}	Supply current	V_{CC} = MAX, V_{in} = 4.5V	S5486		30	43	mA
			N7486		30	50	mA

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

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