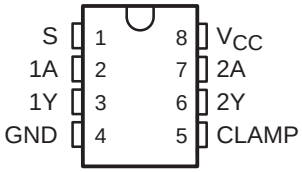
- **Characterized for Use to 300 mA**
- **No Output Latch-Up at 55 V (After Conducting 300 mA)**
- **High-Voltage Outputs (100 V Typ)**
- **Output Clamp Diodes for Transient Suppression (300 mA, 70 V)**
- **TTL- or MOS-Compatible Diode-Clamped Inputs**
- **pnp Transistor Inputs Reduce Input Current**
- **Standard Supply Voltage**
- **Suitable for Hammer-Driver Applications**
- **Plastic DIP (P) With Copper-Lead Frame Provides Cooler Operation and Improved Reliability**

D OR P PACKAGE
(TOP VIEW)

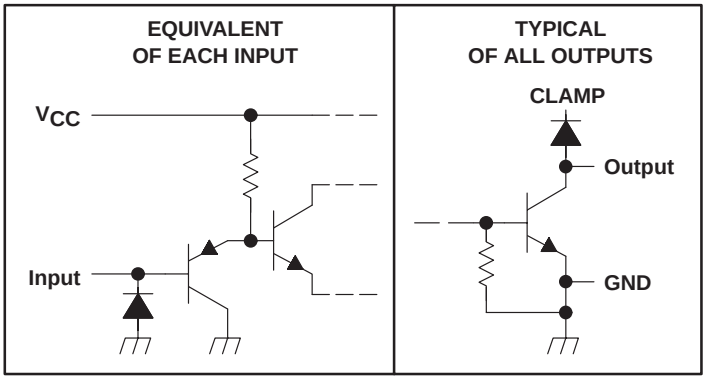


description

The SN75476 through SN75478 are dual peripheral drivers designed for use in systems that require high current, high voltage, and fast switching times. The SN75476, SN75477, and SN75478 provide AND, NAND, and OR drivers respectively. These devices have diode-clamped inputs as well as high-current, high-voltage clamp diodes on the outputs for inductive transient protection.

The SN75476, SN75477, and SN75478 drivers are characterized for operation from 0°C to 70°C.

schematics of inputs and outputs



Function Tables

SN75476
(each AND driver)

INPUTS		OUTPUT
A	S	Y
H	H	H
L	X	L
X	L	L

SN75477
(each NAND driver)

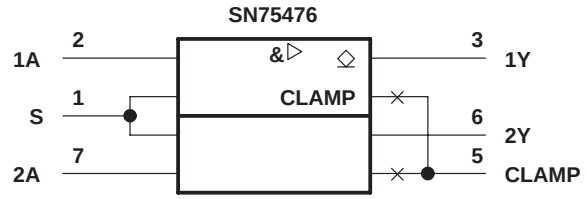
INPUTS		OUTPUT
A	S	Y
H	H	L
L	X	H
X	L	H

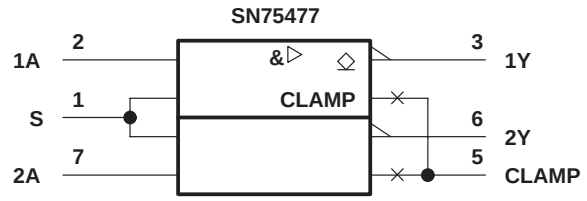
SN75478
(each OR driver)

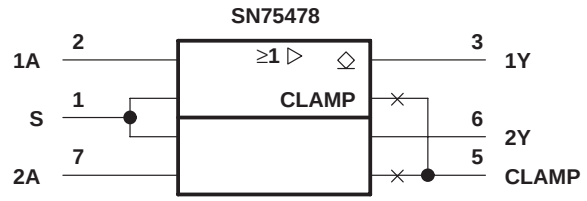
INPUTS		OUTPUT
A	S	Y
H	X	H
X	H	H
L	L	L

H = high level, L = low level
X = irrelevant

logic symbols†

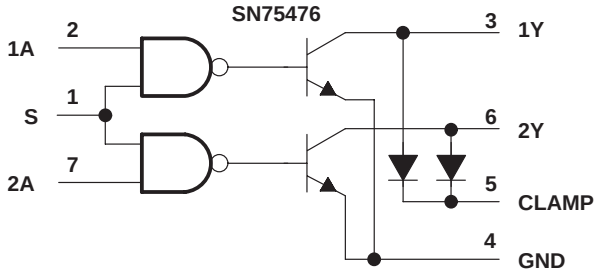




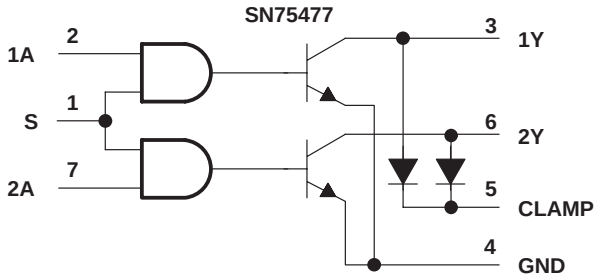


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.

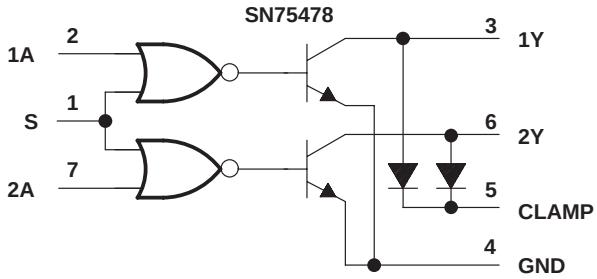
logic diagrams (positive logic)



Positive Logic: $Y = AS$ or $\overline{\overline{A}+\overline{S}}$



Positive Logic: $Y = \overline{AS}$ or $\overline{A}+\overline{S}$



Positive Logic: $Y = A+S$ or $\overline{\overline{A}\,\overline{S}}$

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage, V_I . . . . . 5.5 V
Continuous output current (see Note 2) . . . . . 400 mA
Peak output current: $t_w \leq 10$ ms, duty cycle $\leq 50\%$ . . . . . 500 mA
$t_w \leq 30$ ns, duty cycle $\leq 0.002\%$ . . . . . 3 A
Output clamp current, I_{OK} . . . . . 400 mA
Continuous total power dissipation . . . . . See Dissipation Rating Table
Operating free-air temperature range, T_A . . . . . 0°C to 70°C
Storage temperature range, T_{stg} . . . . . –65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds . . . . . 260°C

NOTES: 1. Voltage values are with respect to network GND.
2. Both halves of this dual circuit may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous power dissipation ratings.

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25°C$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25°C$	$T_A = 70°C$ POWER RATING
D	725 mW	5.8 mW/°C	464 mW
P	1000 mW	8.0 mW/°C	640 mW

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.5	5	5.5	V
High-level input voltage, V_{IH}	2			V
Low-level input voltage, V_{IL}			0.8	V
Operating free-air temperature, T_A	0		70	°C

electrical characteristics over recommended operating free-air temperature range

PARAMETER			TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IK}	Input clamp voltage		I_I = –12 mA			–0.95	–1.5	V
V_{OL}	Low-level output voltage		V_{CC} = 4.5 V, V_{IH} = 2 V, V_{IL} = 0.8 V	I_{OL} = 100 mA		0.16	0.3	V
				I_{OL} = 175 mA		0.22	0.5	
				I_{OL} = 300 mA		0.33	0.6	
$V_{O(BR)}$	Output breakdown voltage		V_{CC} = 4.5 V,	I_{OH} = 100 μA	70	100		V
$V_{R(K)}$	Output clamp reverse voltage		V_{CC} = 4.5 V,	I_R = 100 μA	70	100		V
$V_{F(K)}$	Output clamp forward voltage		V_{CC} = 4.5 V,	I_F = 300 mA	0.8	1.15	1.6	V
I_{OH}	High-level output current		V_{CC} = 4.5 V, V_{IL} = 0.8 V,	V_{IH} = 2 V, V_{OH} = 70 V		1	100	μA
I_{IH}	High-level input current		V_{CC} = 5.5 V,	V_I = 5.5 V		0.01	10	μA
I_{IL}	Low-level input current	A input	V_{CC} = 5.5 V,	V_I = 0.8 V		–80	–110	μA
		S input				–160	–220	
I_{CCH}	Supply current, outputs high	SN75476	V_{CC} = 5.5 V	V_I = 5 V		10	17	mA
		SN75477		V_I = 0		10	17	
		SN75478		V_I = 5 V		10	17	
I_{CCL}	Supply current, outputs low	SN75476	V_{CC} = 5.5 V	V_I = 0		54	75	mA
		SN75477		V_I = 5 V		54	75	
		SN75478		V_I = 0		54	75	

† All typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	C_L = 15 pF, See Figure 1	R_L = 100 Ω,		200	350	ns
t_{PHL}	Propagation delay time, high-to-low-level output				200	350	ns
t_{TLH}	Transition time, low-to-high-level output				50	125	ns
t_{THL}	Transition time, high-to-low-level output				90	125	ns
V_{OH}	High-level output voltage after switching	V_S = 55 V, See Figure 2	I_O ≈ 300 mA,	V_S–18			mV

TEXAS INSTRUMENTS
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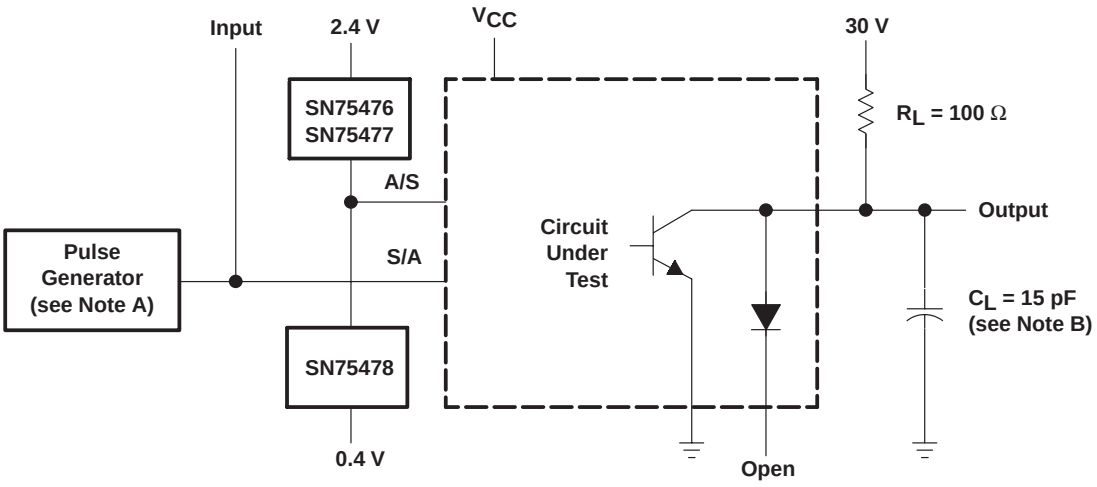
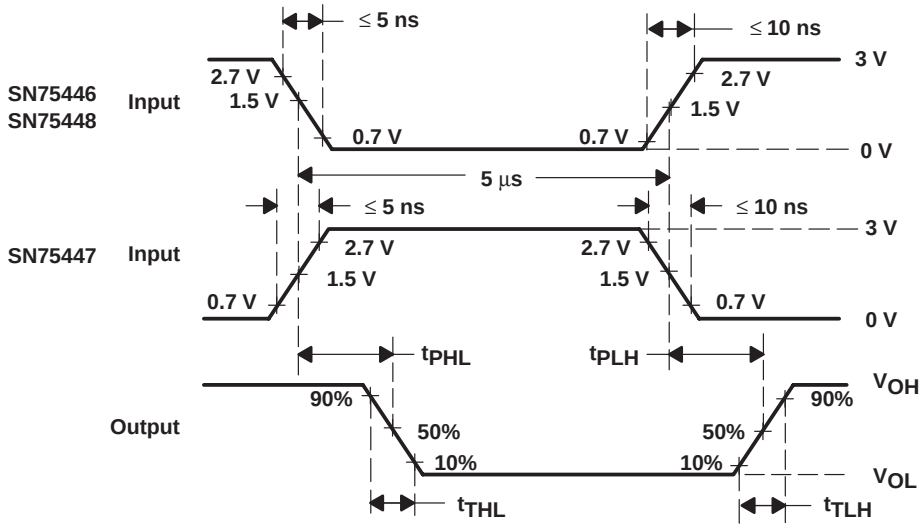
PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT

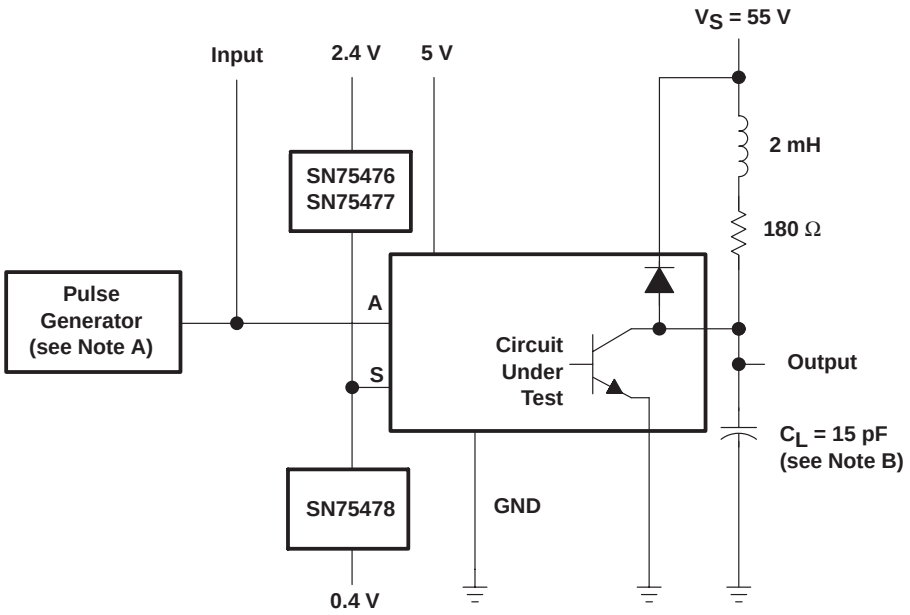


VOLTAGE WAVEFORMS

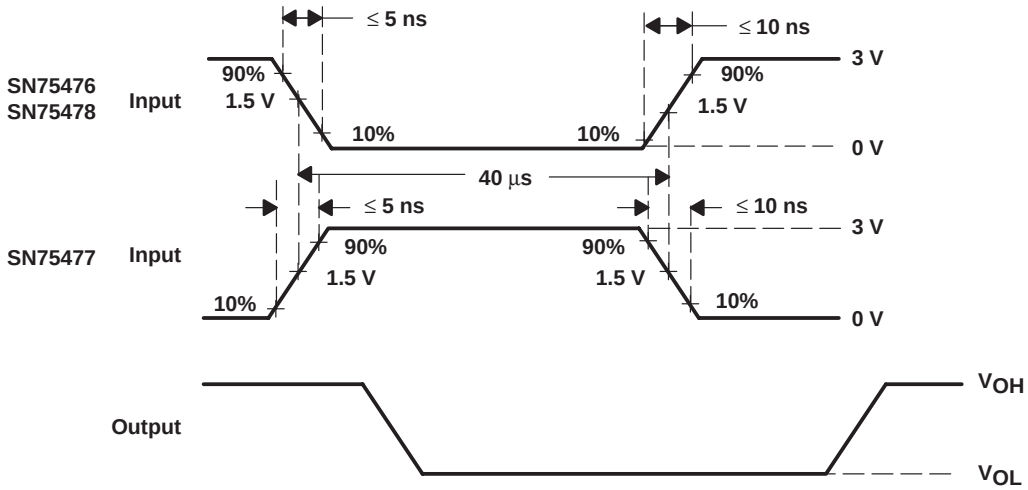
NOTES: A. The pulse generator has the following characteristics: PRR = 100 kHz, Z_O = 50 Ω.
B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms, Switching Characteristics

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

NOTES: A. The pulse generator has the following characteristics: PRR = 12.5 kHz, Z_O = 50 Ω.
B. C_L includes probe and jig capacitance.

Figure 2. Latch-Up Test Circuit and Voltage Waveforms

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