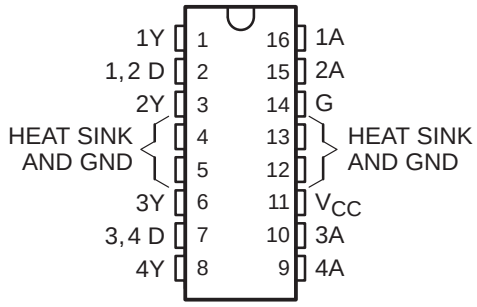
SLRS019A – DECMEBER 1986 – REVISED OCTOBER 1995

- **Saturating Outputs With Low On-State Resistance**
- **High-Impedance Inputs Compatible With CMOS and TTL Levels**
- **Very Low Standby Power . . . 21 mW Max**
- **High-Voltage Outputs . . . 70 V Min**
- **No Power-Up or Power-Down Output Glitch**
- **No Latch-Up Within Recommended Operating Conditions**
- **Output-Clamp Diodes for Transient Suppression**
- **2-W Power Package**

NE PACKAGE
(TOP VIEW)

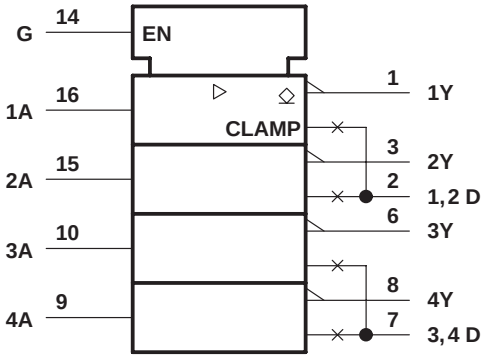


description

The SN75436 and SN75437A quadruple peripheral drivers are designed for use in systems requiring high current, high voltage, and high load power. Each device features four inverting open-collector outputs with a common-enable input that, when taken low, disables all four outputs. The envelope of 1-V characteristics exceeds the specifications sufficiently to avoid high-current latch-up. Applications include driving relays, lamps, solenoids, motors, LEDs, transmission lines, hammers, and other high-power-demand devices.

The SN75436 and SN75437A are offered in a 16-pin wide-body surface-mount (NE) package and is characterized for operation over the free-air temperature of 0°C to 70°C.

logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.

FUNCTION TABLE
(each NAND driver)

INPUTS		OUTPUT
A	G	Y
H	H	L
L	X	H
X	L	H

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

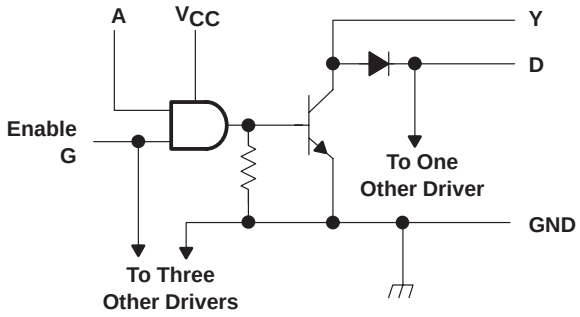
SELECTION GUIDE

FEATURE	SN75436	SN75437A	UNIT
Maximum recommended output current	0.5	0.5	A
Maximum V_{OL} at maximum I_{OL}	0.5	0.5	V
Maximum recommended output supply voltage in an inductive switching circuit, V_S	50	35	V

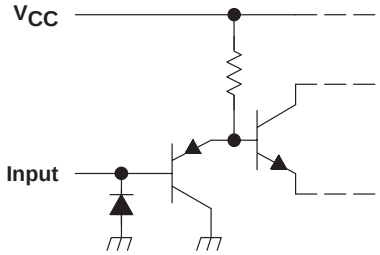
PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

Copyright © 1995, Texas Instruments Incorporated

logic diagram (positive logic, each driver)



equivalent schematic of each input



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

Supply voltage, V_{CC} . . . . . 7 V
Input voltage, V_I . . . . . 30 V
Output current (see Note 1) . . . . . 0.75 A
Output clamp-diode current, I_{OK} . . . . . 1.25 A
Output voltage, V_O (off state) . . . . . 70 V
Continuous total power dissipation at (or below) 25°C free-air temperature (see Note 2) . . . . . 2075 mW
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. All four sections of these circuits may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous dissipation ratings.
2. For operation above 25°C free-air temperature, derate linearly to 1328 mW at 70°C at the rate of 16.6 mW/°C.

recommended operating conditions

PARAMETER	SN75436			SN75437A			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.75	5	5.25	4.75	5	5.25	V
High-level input voltage, V_{IH}	2			2			V
Low-level input voltage, V_{IL}			0.8			0.8	V
Output supply voltage in inductive switching circuit (see Figure 2), V_S			50			35	V
Output current, I_O			0.5			0.5	A
Operating free-air temperature, T_A	0		70	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

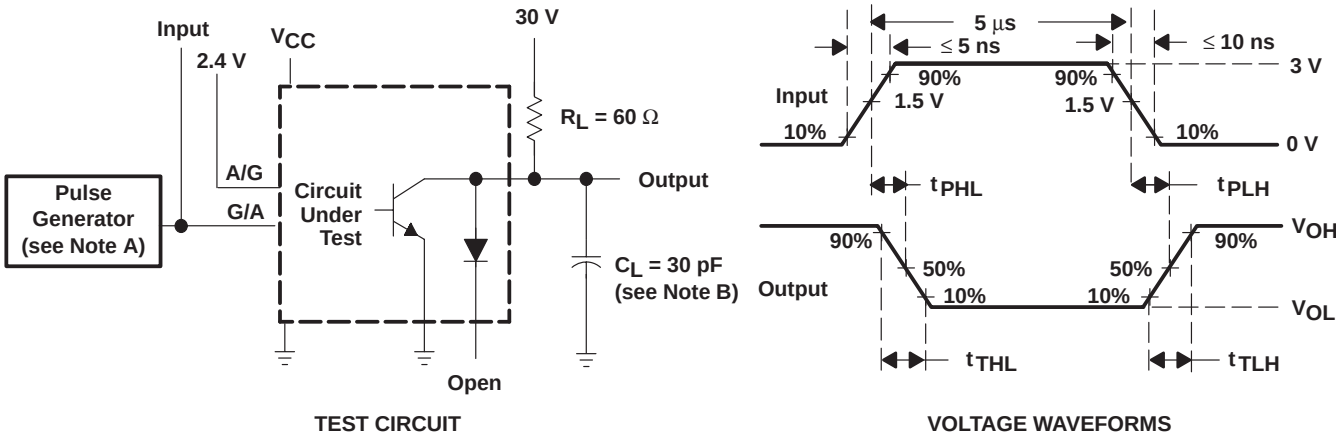
PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IK}	Input clamp voltage	V_{CC} = 4.75 V,	I_I = –12 mA		–0.9	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = 4.75 V, V_{IH} = 2 V	I_{OL} = 250 mA		0.14	0.25	V
			I_{OL} = 500 mA		0.28	0.5	
$V_{R(K)}$	Output clamp-diode reverse voltage	V_{CC} = 4.75 V,	I_R = 100 μA	70	100		V
$V_{F(K)}$	Output clamp-diode forward voltage	I_F = 500 mA			1	1.6	V
I_{OH}	High-level output current	V_{CC} = 4.75 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} = 5.25 V,	V_I = 5.25 V		0.1	10	μA
I_{IL}	Low-level input current	V_{CC} = 5.25 V,	V_I = 0.8 V		–0.25	–10	μA
I_{CCH}	Supply current, outputs high	V_{CC} = 5.25 V,	V_I = 0		1	4	mA
I_{CCL}	Supply current, outputs low	V_{CC} = 5.25 V,	V_I = 5 V		45	65	mA

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

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

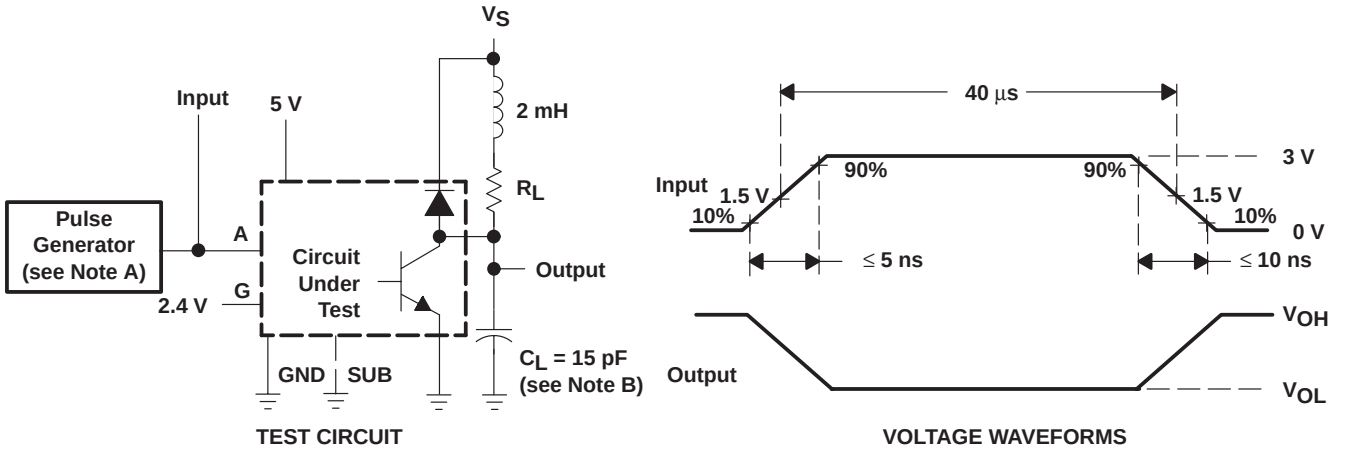
PARAMETER			TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output		C_L = 30 pF, See Figure 1	R_L = 60 Ω,		1950	5000	ns
t_{PHL}	Propagation delay time, high-to-low-level output					150	500	ns
t_{TLH}	Transition time, low-to-high-level output					40		ns
t_{THL}	Transition time, high-to-low-level output					36		ns
V_{OH}	High-level output voltage after switching	SN75436	V_S = 50 V, R_L = 100 Ω,	I_O ≈ 500 mA, See Figure 2	V_S–10			mV
		SN75437A	V_S = 35 V, R_L = 70 Ω,	I_O ≈ 500 mA, See Figure 2	V_S–10			mV

PARAMETER MEASUREMENT INFORMATION



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



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

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.

Copyright © 1998, Texas Instruments Incorporated