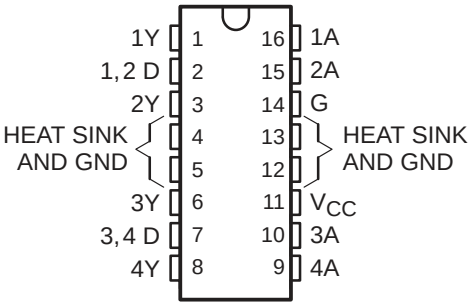
- **Saturating Outputs With Low On-State Resistance**
- **High-Impedance Inputs Compatible With CMOS and TTL Levels**
- **Very Low Standby Power . . . 21 mW Max**
- **High-Voltage Outputs . . . 70 V Min**
- **No Power-Up or Power-Down Output Glitch**
- **No Latch-Up Within Recommended Operating Conditions**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

NE PACKAGE
(TOP VIEW)



description

The SN75437A quadruple peripheral driver is designed for use in systems requiring high current, high voltage, and high load power. This device features four inverting open-collector outputs with a common-enable (G) 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.

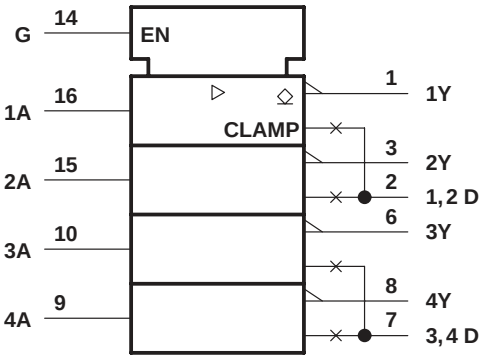
The SN75437A is characterized for operation over the free-air temperature range of 0°C to 70°C.

FUNCTION TABLE
(each NAND driver)

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

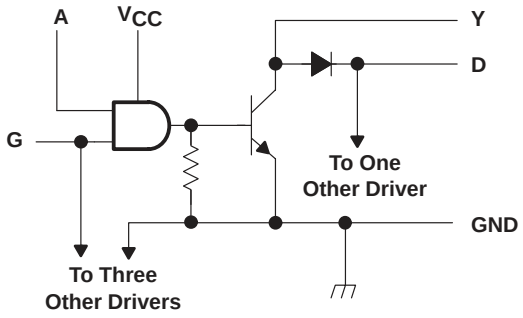
H = high level, L = low level,
X = irrelevant

logic diagram (positive logic)†

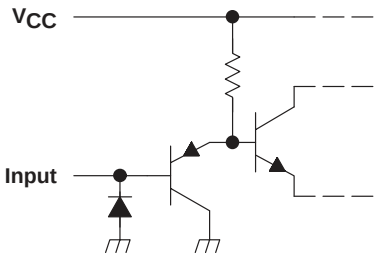


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC publication 617-12.

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
Lead temperature 1,6 mm (1/16-inch) from case for 10 seconds . . . . . 260°C
Storage temperature range, T_{stg} . . . . . –65°C to 150°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	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.75	5	5.25	V
High-level input voltage, V_{IH}	2			V
Low-level input voltage, V_{IL}			0.8	V
Output supply voltage in inductive switching circuit (see Figure 2), V_S			35	V
Output current, I_O			0.5	A
Operating free-air temperature, T_A	0		70	°C

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

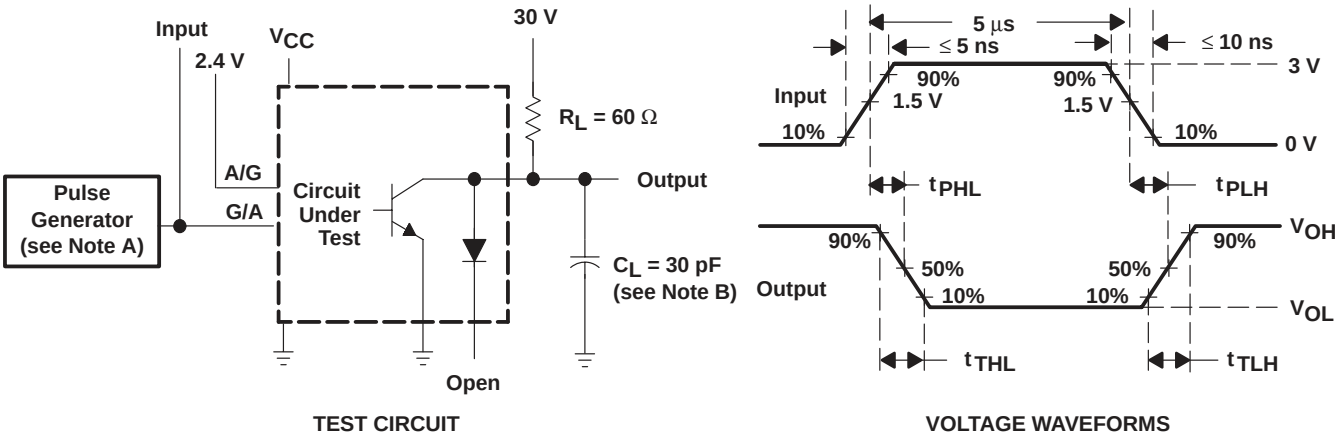
PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V_{IK}	Input clamp voltage	V_{CC} = 4.75 V,	I_I = –12 mA		–0.9	–1.5	V
V_{OL}	Low-level output voltage	V_{CC} = 4.75 V, V_{IH} = 2 V	I_{OL} = 250 mA		0.14	0.25	V
			I_{OL} = 500 mA		0.28	0.5	
$V_{R(K)}$	Output clamp-diode reverse voltage	V_{CC} = 4.75 V,	I_R = 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

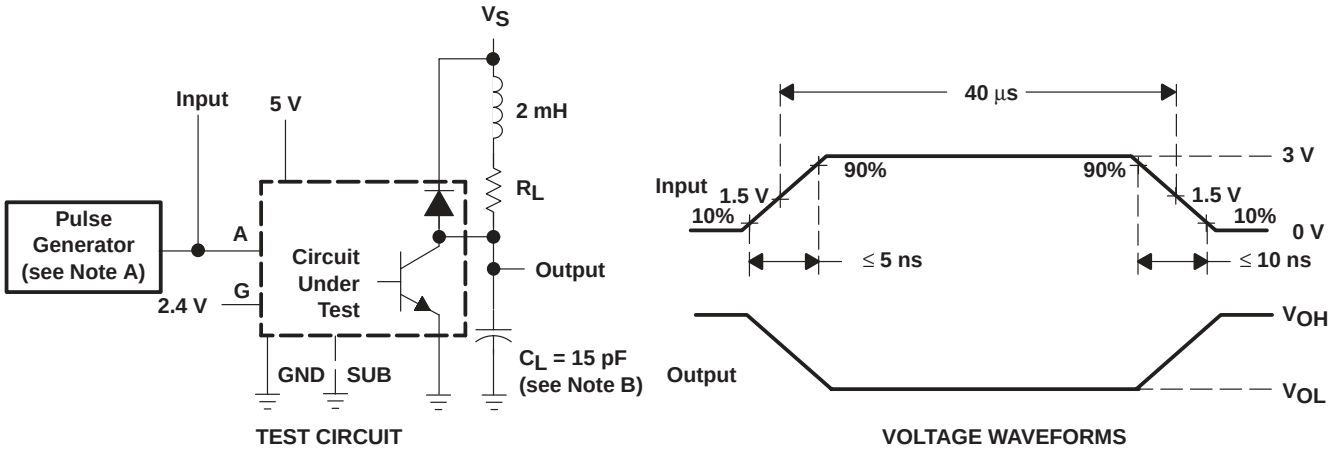
PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	C_L = 30 pF, See Figure 1	R_L = 60 Ω,		1950	5000	ns
t_{PHL}	Propagation delay time, high-to-low-level output				150	500	ns
t_{TLH}	Transition time, low-to-high-level output				40		ns
t_{THL}	Transition time, high-to-low-level output				36		ns
V_{OH}	High-level output voltage after switching	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

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN75437ANE	ACTIVE	PDIP	NE	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	0 to 70	SN75437ANE	Samples
SN75437ANEE4	ACTIVE	PDIP	NE	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	0 to 70	SN75437ANE	Samples

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

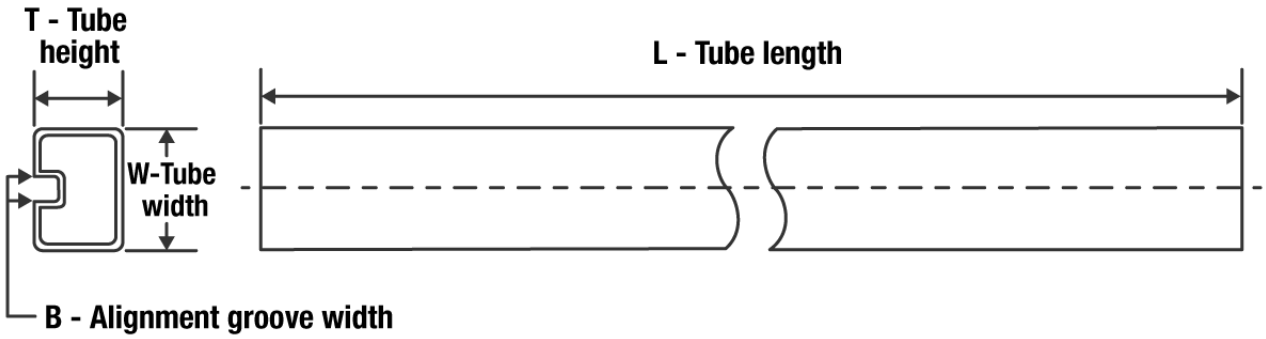
(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
SN75437ANE	NE	PDIP	16	25	506	13.97	11230	4.32
SN75437ANEE4	NE	PDIP	16	25	506	13.97	11230	4.32

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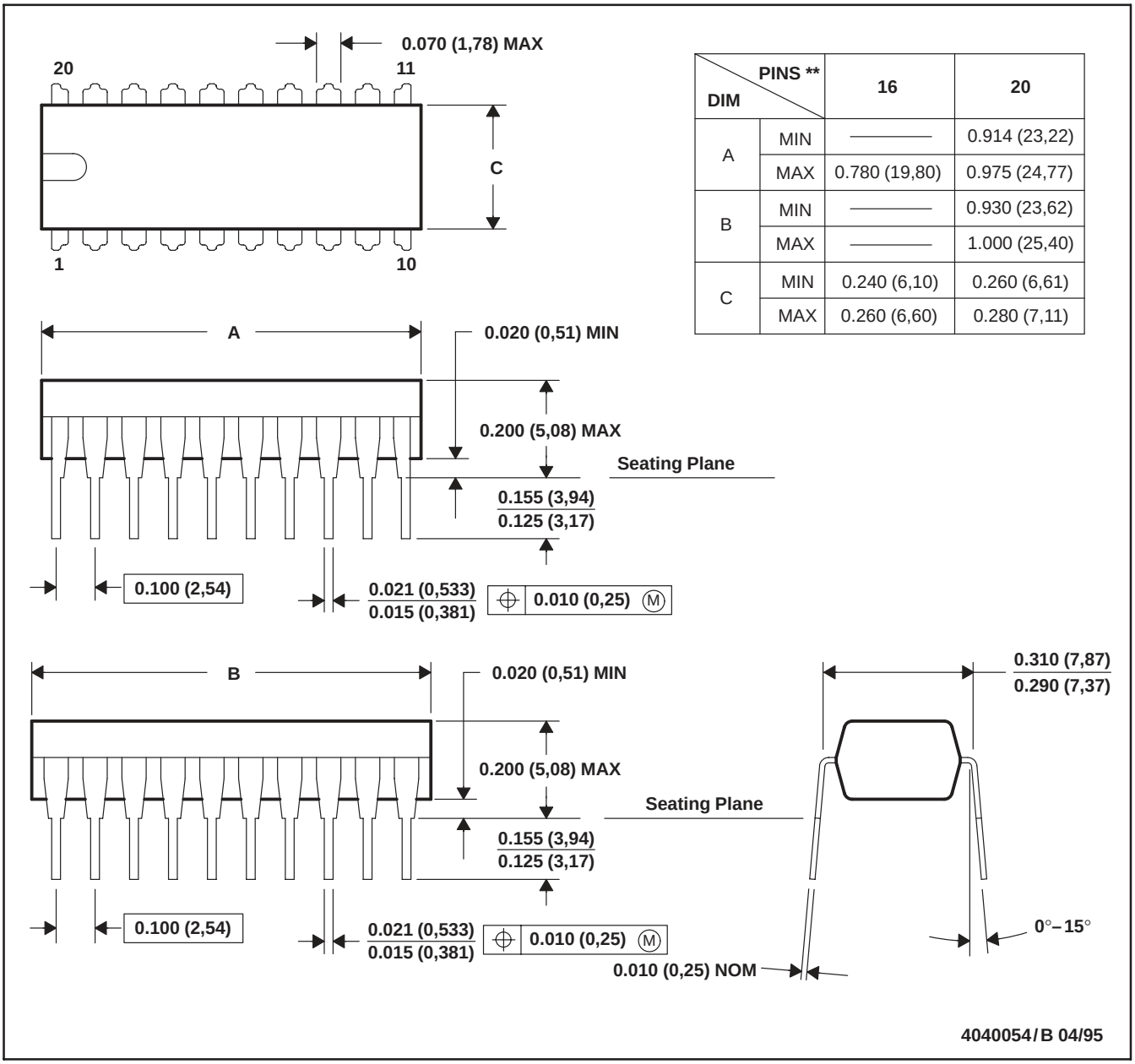
NE (R-PDIP-T)** **PLASTIC DUAL-IN-LINE PACKAGE**

20 PIN SHOWN



DIM \ PINS **		16	20
A	MIN	———	0.914 (23,22)
	MAX	0.780 (19,80)	0.975 (24,77)
B	MIN	———	0.930 (23,62)
	MAX	———	1.000 (25,40)
C	MIN	0.240 (6,10)	0.260 (6,61)
	MAX	0.260 (6,60)	0.280 (7,11)

NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Falls within JEDEC MS-001 (16 pin only)

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