

## 7426, LS26 Gates

Quad Two-Input NAND Gate (Open Collector)  
Product Specification

Logic Products

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
7426	14ns	8mA
74LS26	16ns	1.6mA

### ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$ ; $T_A = 0^\circ C$ to $+70^\circ C$
Plastic DIP	N7426N, N74LS26N
Plastic SO	N74LS26D

**NOTE:**

For information regarding devices processed to Military Specifications, see the Signetics Military Products Data Manual.

### FUNCTION TABLE

INPUTS		OUTPUT
A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

H = HIGH voltage level  
L = LOW voltage level

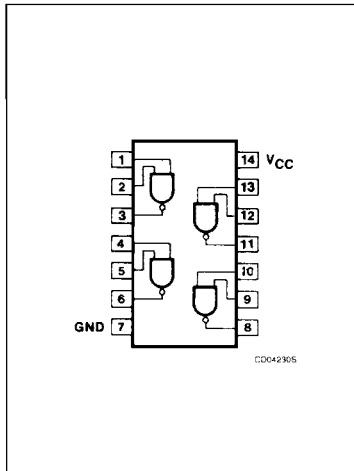
### INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	74	74LS
A,B	Inputs	1ul	1LSul
Y	Output	10ul	10LSul

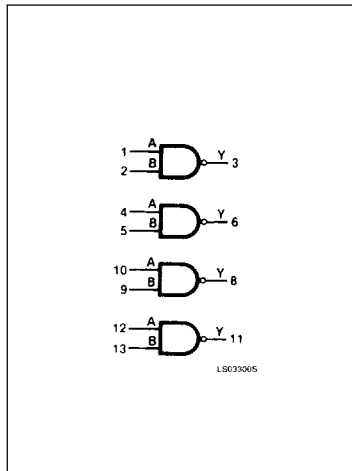
**NOTE:**

Where a 74 unit load (ul) is understood to be  $40\mu A$   $I_{IH}$  and  $-1.6mA$   $I_{IL}$  and a 74LS unit load (LSul) is  $20\mu A$   $I_{IH}$  and  $-0.4mA$   $I_{IL}$ .

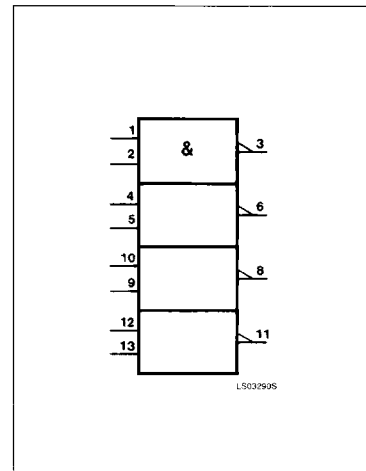
### PIN CONFIGURATION



### LOGIC SYMBOL



### LOGIC SYMBOL (IEEE/IEC)



# Gates

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### ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

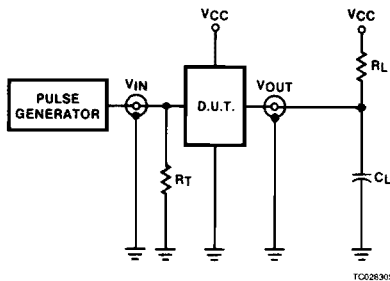
PARAMETER	74	74LS	UNIT
V <sub>CC</sub> Supply voltage	7.0	7.0	V
V <sub>IN</sub> Input voltage	-0.5 to +5.5	-0.5 to +7.0	V
I <sub>IN</sub> Input current	-30 to +5	-30 to +1	mA
V <sub>OUT</sub> Voltage applied to output in HIGH output state	-0.5 to +15	-0.5 to +15	V
T <sub>A</sub> Operating free-air temperature range	0 to 70		°C

### RECOMMENDED OPERATING CONDITIONS

PARAMETER	74			74LS			UNIT
	Min	Nom	Max	Min	Nom	Max	
V <sub>CC</sub> Supply voltage	4.75	5.0	5.25	4.75	5.0	5.25	V
V <sub>IH</sub> HIGH-level input voltage	2.0			2.0			V
V <sub>IL</sub> LOW-level input voltage			+0.8			+0.8	V
I <sub>IK</sub> Input clamp current			-12			-18	mA
I <sub>OH</sub> HIGH-level output current			15			15	V
I <sub>OL</sub> LOW-level output current			16			8	mA
T <sub>A</sub> Operating free-air temperature	0		70	0		70	°C

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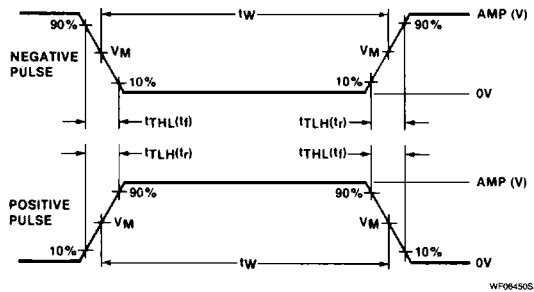
### TEST CIRCUITS AND WAVEFORMS



Test Circuit For 74 Open Collector Outputs

**DEFINITIONS**

R<sub>L</sub> = Load resistor to V<sub>CC</sub>; see AC CHARACTERISTICS for value.  
 C<sub>L</sub> = Load capacitance includes jig and probe capacitance; see AC CHARACTERISTICS for value.  
 R<sub>T</sub> = Termination resistance should be equal to Z<sub>OUT</sub> of Pulse Generators.  
 D = Diodes are 1N916, 1N3064, or equivalent.  
 t<sub>TLH</sub>, t<sub>THL</sub> Values should be less than or equal to the table entries.



V<sub>M</sub> = 1.3V for 74LS; V<sub>M</sub> = 1.5V for all other TTL families.

**Input Pulse Definition**

FAMILY	INPUT PULSE REQUIREMENTS				
	Amplitude	Rep. Rate	Pulse Width	t <sub>TLH</sub>	t <sub>THL</sub>
74	3.0V	1MHz	500ns	7ns	7ns
74LS	3.0V	1MHz	500ns	15ns	6ns
74S	3.0V	1MHz	500ns	2.5ns	2.5ns

## Gates

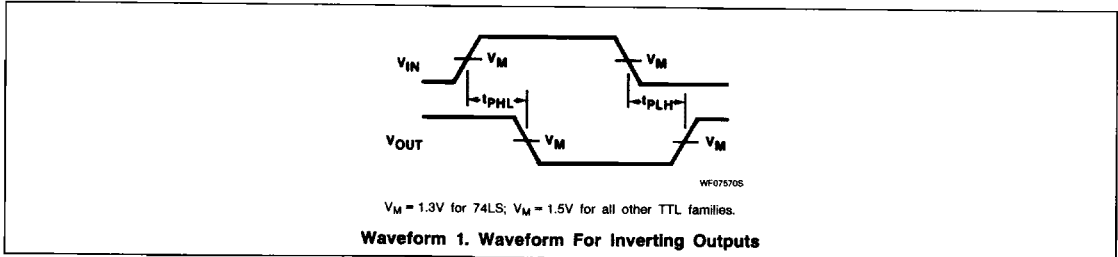
## 7426, LS26

**DC ELECTRICAL CHARACTERISTICS** (Over recommended operating free-air temperature range unless otherwise noted.)

PARAMETER	TEST CONDITIONS <sup>1</sup>		7426			74LS26			UNIT
			Min	Typ <sup>2</sup>	Max	Min	Typ <sup>2</sup>	Max	
$I_{OH}$ HIGH-level output voltage	$V_{CC} = \text{MIN.}$ $V_{IL} = \text{MAX.}$	$V_{OH} = 15V$			1000			1000	$\mu A$
		$V_{OH} = 12V$			50			50	$\mu A$
$V_{OL}$ LOW-level output voltage	$V_{CC} = \text{MIN.}$ $V_{IH} = \text{MIN.}$	$I_{OL} = \text{MAX.}$		0.2	0.4		0.35	0.5	V
		$I_{OL} = 4\text{mA}$					0.25	0.4	V
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN.}, I_I = I_{IK}$				-1.5			-1.5	V
$I_I$ Input current at maximum input voltage	$V_{CC} = \text{MAX.}$	$V_I = 5.5V$			1.0				mA
		$V_I = 7.0V$						0.1	mA
$I_{IH}$ HIGH-level input current	$V_{CC} = \text{MAX.}$	$V_I = 2.4V$			40				$\mu A$
		$V_I = 2.7V$						20	$\mu A$
$I_{IL}$ LOW-level input current	$V_{CC} = \text{MAX.}, V_I = 0.4V$				-1.6			-0.4	mA
$I_{CC}$ Supply current (total)	$V_{CC} = \text{MAX.}$	$I_{CCH}$ Outputs HIGH		4	8		0.8	1.6	mA
		$I_{CCL}$ Outputs LOW		12	22		2.4	4.4	mA

**NOTES**

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at  $V_{CC} = 5V, T_A = 25^\circ C$ .

**AC WAVEFORM****AC ELECTRICAL CHARACTERISTICS**  $T_A = 25^\circ C, V_{CC} = 5.0V$ 

PARAMETER	TEST CONDITIONS	74		74LS		UNIT
		$C_L = 15\text{pF}, R_L = 1\text{k}\Omega$		$C_L = 15\text{pF}, R_L = 2\text{k}\Omega$		
		Min	Max	Min	Max	
$t_{PLH}$ $t_{PHL}$ Propagation delay	Waveform 1		24 17		32 28	ns