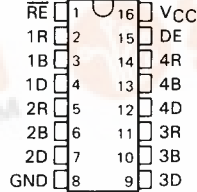


N8T26
QUADRUPLE BUS TRANSCEIVER
WITH 3-STATE OUTPUTS

D2462, MAY 1978—REVISED SEPTEMBER 1986

- P-N-P Inputs for Minimal Input Loading (200 μ A Maximum)
- High-Speed Schottky Circuitry
- 3-State Outputs for Driver and Receiver
- Party-Line (Data-Bus) Operation
- Single 5-V Supply
- Designed to Be Interchangeable with Signetics N8T26, also Called 8T26

D, J, OR N PACKAGE
(TOP VIEW)



description

The N8T26 is a quadruple transceiver utilizing Schottky-diode-clamped transistors. Both the driver and receiver have 3-state outputs. With p-n-p inputs, the input loading is reduced to a maximum input current of 200 μ A. This device is capable of high switching rates into high-capacitance loads and are suitable for driving long bus lines.

The N8T26 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE (DRIVER)

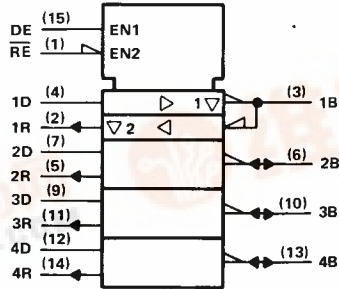
INPUT		OUTPUT
DE	D	B
H	L	H
H	H	L
L	X	Z

FUNCTION TABLE (RECEIVER)

INPUT		OUTPUT
RE	B	R
L	L	H
L	H	L
H	X	Z

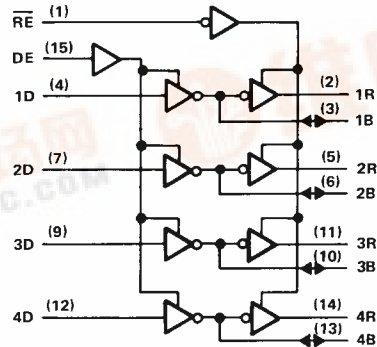
H = high level
L = low level
X = irrelevant
Z = high impedance

logic symbol



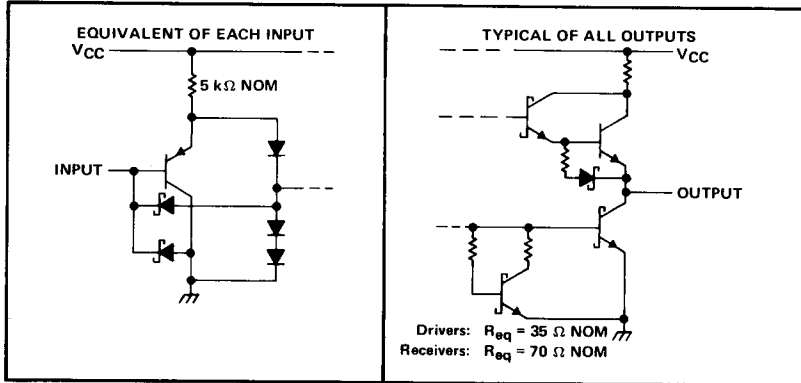
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



N8T26 QUADRUPLE BUS TRANSCEIVER WITH 3-STATE OUTPUTS

schematics of inputs and outputs



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

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage	5.5 V
Continuous total power dissipation	See Dissipation Rating Table
Operating free-air temperature range	0°C to 70°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J package	300°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package	260°C

NOTE 1: Voltage values are with respect to network ground terminal.

DISSIPATION RATING TABLE

PACKAGE	$T_A = 25^\circ\text{C}$	DERATING FACTOR	$T_A = 70^\circ\text{C}$
	POWER RATING	ABOVE $T_A = 25^\circ\text{C}$	POWER RATING
D	950 mW	7.6 mW/°C	608 mW
J	1025 mW	8.2 mW/°C	656 mW
N	1150 mW	9.2 mW/°C	736 mW

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.75	5	5.25	V
High-level input voltage, V_{IH}	B, D, DE, \overline{RE}			V
Low-level input voltage, V_{IL}	B, D, DE, \overline{RE}			V
High-level output current, I_{OH}	Driver, B			-10
	Receiver, R			-2
Low-level output current, I_{OL}	Driver, B			40
	Receiver, R			16
Operating free-air temperature, T_A	0	70		°C

N8T26
QUADRUPLE BUS TRANSCEIVER
WITH 3-STATE OUTPUTS

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

PARAMETER		TEST CONDITIONS		MIN	TYP [†]	MAX	UNIT
V _{IK}	Input clamp voltage	B,D,DE,RE	I _I = -5 mA			-1	V
V _{OH}	High-level output voltage	B	V _{IH} = 2 V, V _{IL} = 0.85 V, I _{OH} = -10 mA	2.6	3.1		V
		R	V _{IL} = 0.85 V, I _{OH} = -2 mA	2.6	3.1		
V _{OL}	Low-level output voltage	B	V _{IH} = 2 V, I _{OL} = 40 mA			0.5	V
		R	V _{IH} = 2 V, V _{IL} = 0.85 V, I _{OL} = 16 mA			0.5	
I _{OZ}	Off-state (high-impedance state) output current	B,R	DE at 0.85 V, RE at 2 V, V _O = 2.6 V			100	μA
		R	RE at 2 V, V _O = 0.5 V			-100	
I _{IH}	High-level input current	D,DE,RE	V _I = 5.25 V			25	μA
I _{IL}	Low-level input current	B,D,DE,RE	V _I = 0.4 V			-200	μA
I _{OS}	Short-circuit output current [‡]	B	V _{CC} = 5.25 V	-50		-150	mA
		R		-30		-75	
I _{CC}	Supply current		V _{CC} = 5.25 V, No load			87	mA

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

[‡]Only one output should be shorted to ground at a time, and duration of the short circuit should not exceed one second.

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

PARAMETER		FROM	TO	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t _{PLH}	Propagation delay time, low-to-high-level output	B	R	C _L = 30 pF,		8	18	ns
t _{PHL}	Propagation delay time, high-to-low-level output			See Figure 1		7	10	
t _{PLH}	Propagation delay time, low-to-high-level output	D	B	C _L = 300 pF,		14	20	ns
t _{PHL}	Propagation delay time, high-to-low-level output			See Figure 2		12	20	
t _{PLZ}	Output disable time from low level	RE	R	C _L = 30 pF,		9	17	ns
t _{PZL}	Output enable time to low level			See Figure 3		15	30	
t _{PLZ}	Output disable time from low level	DE	B	C _L = 300 pF,		20	43	ns
t _{PZL}	Output enable time to low level			See Figure 4		20	38	

**N8T26
 QUADRUPLE BUS TRANSCEIVER
 WITH 3-STATE OUTPUTS**

PARAMETER MEASUREMENT INFORMATION

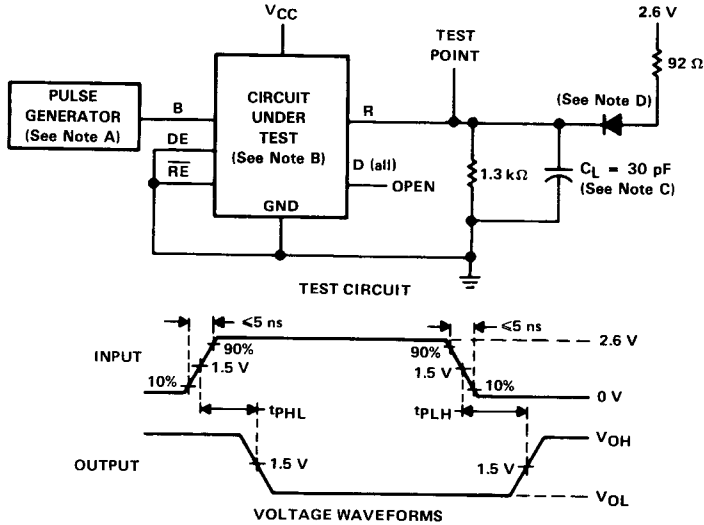


FIGURE 1. PROPAGATION DELAY TIMES FROM BUS TO RECEIVER OUTPUT

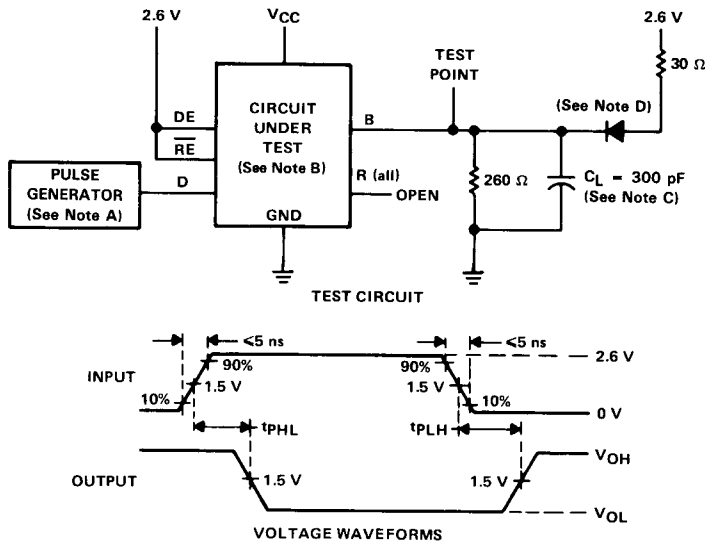
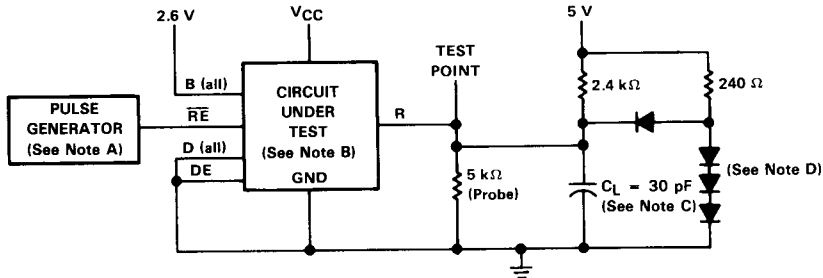


FIGURE 2. PROPAGATION DELAY TIMES FROM DRIVER INPUT TO BUS

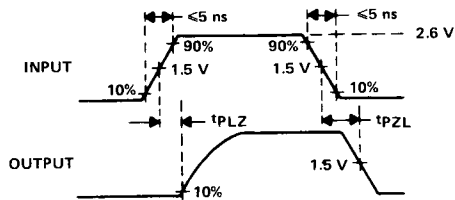
- NOTES: A. The pulse generator in Figures 1 and 2 has the following characteristics: PRR \leq 10 MHz, duty cycle = 50%, $Z_0 = 50 \Omega$.
 B. All inputs and outputs not shown are open.
 C. C_L includes probe and jig capacitance.
 D. All diodes are 1N916 or 1N3064.

N8T26 QUADRUPLE BUS TRANSCEIVER WITH 3-STATE OUTPUTS

PARAMETER MEASUREMENT INFORMATION

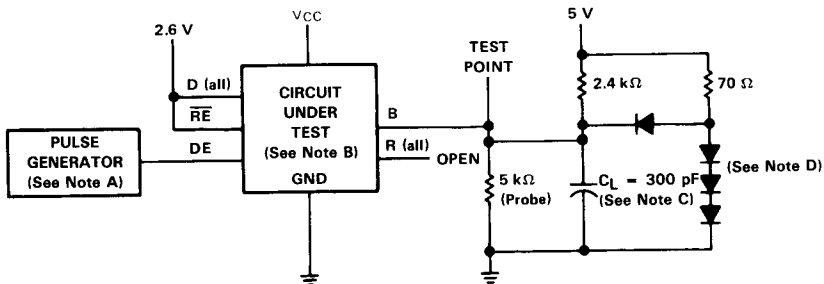


TEST CIRCUIT

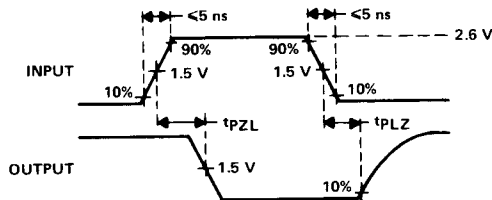


VOLTAGE WAVEFORMS

FIGURE 3. RECEIVER ENABLE AND DISABLE TIMES



TEST CIRCUIT



VOLTAGE WAVEFORMS

FIGURE 4. DRIVER ENABLE AND DISABLE TIMES

- NOTES: A. The pulse generator in Figures 3 and 4 has the following characteristics: PRR \leq 5 MHz, duty cycle = 50%, $Z_0 \approx 50 \Omega$.
 B. All inputs and outputs not shown are open.
 C. C_L includes probe and jig capacitance.
 D. All diodes are 1N916 or 1N3064.