

8T26A, 28 Bus Transceivers

3-State Quad Bus Transceiver Product Specification

Logic Products

FEATURES

- High speed Schottky quad transceivers
- 48mA LOW-state drive
- 200 μ A bus loading
- Ideal for:
 - Half-duplex data transmission
 - Memory interface buffers
 - Data routing in bus oriented systems
 - High current drivers
 - MOS/CMOS-to-TTL interface

DESCRIPTION

The 8T26A/28 consists of four pairs of 3-state logic elements configured as quad bus drivers/receivers, along with separate buffered receiver enable and driver enable lines. This single IC quad transceiver design distinguishes the 8T26A/28 from conventional multi-IC implementations. In addition, the 8T26/28's ultra high speed while driving heavy bus capacitance (300pF) makes these devices particularly suitable for memory systems and bidirectional data buses.

Both the driver and receiver gates have 3-State outputs and low-current PNP

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
N8T26A	7ns	48mA
N8T28	10ns	67mA

ORDERING CODE

PACKAGES	COMMERCIAL RANGE $V_{CC} = 5V \pm 5\%$; $T_A = 0^\circ C$ to $+70^\circ C$
Plastic DIP	N8T26AN, N8T28N

NOTE:

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

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	N8T	S8T
I_N	Input	0.5Sul	0.5Sul
D/E, R/E	Inputs	0.5Sul	0.5Sul
D_{OUT}	Output	24Sul	16Sul
R_{OUT}	Output	10Sul	6Sul

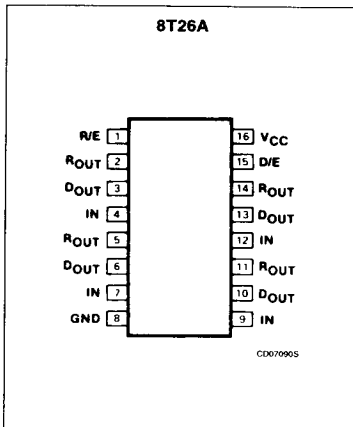
NOTE:

A unit load (Sul) is 50 μ A I_{IH} and $-2.0mA$ I_{IL} .

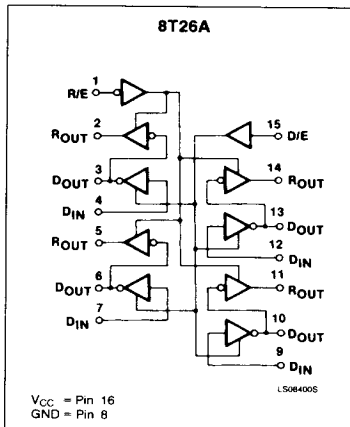
inputs. 3-State outputs provide the high switching speeds of totem-pole TTL circuits while offering the bus capability of

open collector gates. PNP inputs reduce input loading to 200 μ A maximum.

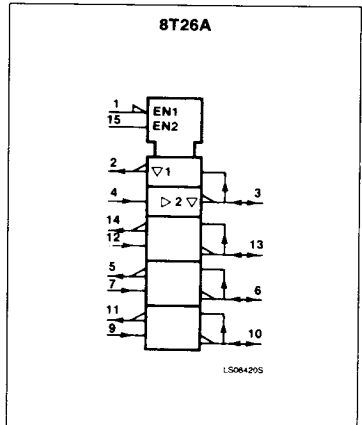
PIN CONFIGURATION



LOGIC SYMBOL



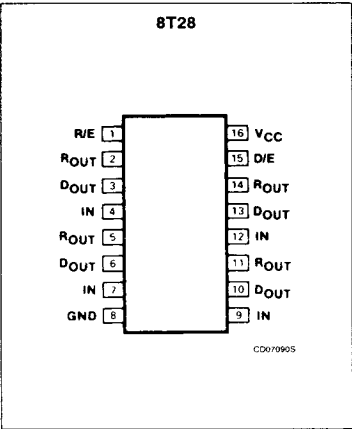
LOGIC SYMBOL (IEEE/IEC)



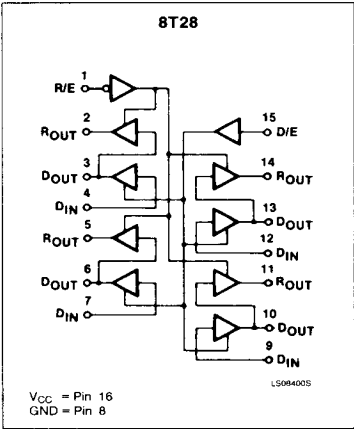
Bus Transceivers

8T26A, 28

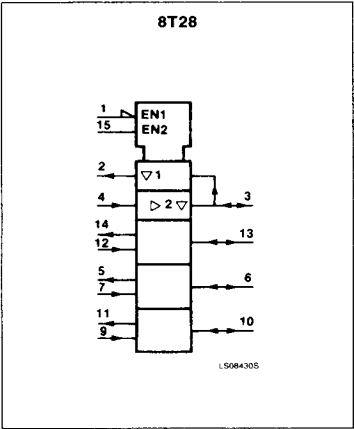
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



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

PARAMETER		S8T	N8T	UNIT
V _{CC}	Supply voltage	7.0	7.0	V
V _{IN}	Input voltage	-0.5 to +5.5	-0.5 to +5.5	V
I _{IN}	Input current	-30 to +5	-30 to +5	mA
I _{OL}	Continuous	100	100	mA
V _{OUT}	Voltage applied to output in HIGH output state	-0.5 to +V _{CC}	-0.5 to +V _{CC}	V
T _A	Operating free-air temperature range	-55 to +125	0 to 70	°C

RECOMMENDED OPERATING CONDITIONS

PARAMETER		8T			UNIT
		Min	Nom	Max	
V _{CC}	Supply voltage	4.75	5.0	5.25	V
V _{IH}	HIGH-level input voltage	2.0			V
V _{IL}	LOW-level input voltage			+0.8	V
I _{IK}	Input clamp current			-18	mA
I _{OH}	HIGH-level output current			-10	mA
I _{OL}	LOW-level output current		Driver	48	mA
			Receiver	20	mA
T _A	Operating free-air temperature	0		70	°C

Bus Transceivers

8T26A, 28

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

PARAMETER	TEST CONDITIONS ¹		N8T26A, N8T28		S8T26A, S8T28		UNIT
			Min	Max	Min	Max	
V _{IH} Input HIGH voltage	Guaranteed input HIGH threshold voltage		2.0		2.0		V
V _{IL} Input LOW voltage	Guaranteed input LOW threshold voltage			0.8		0.8	V
V _{IK} Input clamp diode voltage	V _{CC} = MIN, I _{IK} = -18mA			-1.2		-1.2	V
V _{BD} Input breakdown voltage	V _{CC} = MAX, I _I = 1mA		5.5		5.5		V
V _{OH} HIGH-level output voltage, Driver outputs	V _{CC} = MIN	I _{OH} = -10mA	2.4				V
		I _{OH} = -2mA			2.4		V
V _{OH} HIGH-level output voltage, Receiver outputs	V _{CC} = MIN, I _{OH} = -100μA		3.25				V
	V _{CC} = 5.0V, I _{OH} = -100μA				3.0		V
V _{OL} LOW-level output voltage, Driver outputs	V _{CC} = MIN	I _{OL} = 48mA		0.5			V
		I _{OL} = 32mA				0.5	V
V _{OL} LOW-level output voltage, Receiver outputs	V _{CC} = MIN	I _{OL} = 20mA		0.5			V
		I _{OL} = 12mA				0.5	V
I _{OZH} Off-state output current, HIGH-level voltage applied	V _{CC} = MAX, V _O = 2.4V			100		100	μA
I _{OZL} Off-state output current, LOW-level voltage applied	V _{CC} = MAX, V _O = 0.5V			-100		-100	μA
I _{IH} HIGH-level input current	V _{CC} = MAX, V _I = 4.5V			25		25	μA
I _{IL} LOW-level input current	V _{CC} = MAX, V _I = 0.5V	Driver, receiver		-200		-200	μA
		Disabled		-25		-25	μA
I _{OS} Short-circuit output current ²	V _{CC} = MAX	Driver	-50	-150	-50	-150	mA
		Receiver	-30	-100	-30	-100	mA
I _{CC} Supply current	V _{CC} = MAX	8T26A		87		87	mA
		8T28		110		110	mA

NOTES:

1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.

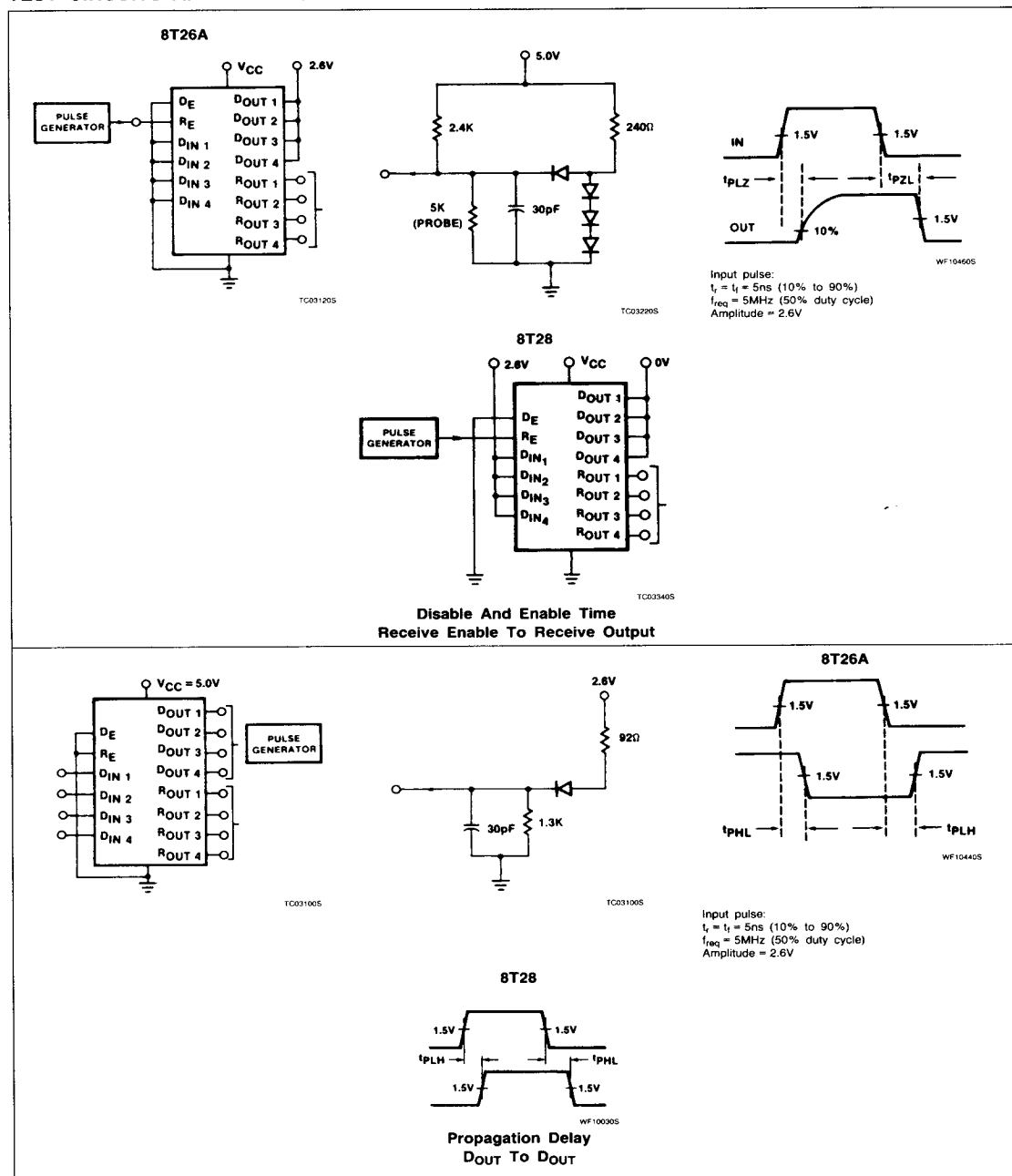
2. I_{OS} is tested with V_{OUT} = +0.5V and V_{CC} = V_{CC} MAX + 0.5V. Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.**AC ELECTRICAL CHARACTERISTICS** T_A = 25°C, V_{CC} = 5.0V

PARAMETER	TEST CONDITIONS	8T26A		8T28		UNIT
		Min	Max	Min	Max	
t _{PHL} Propagation delay, D _{OUT} to R _{OUT}	C _L = 30pF		14		17	ns
t _{PHL} Propagation delay, D _{IN} to D _{OUT}	C _L = 300pF		14		17	ns
t _{PLH} Propagation delay, D _{OUT} to R _{OUT}	C _L = 30pF		14		17	ns
t _{PLH} Propagation delay, D _{IN} to D _{OUT}	C _L = 300pF		14		17	ns
t _{pZL} Data enable to data output, high Z to 0	C _L = 300pF		25		28	ns
t _{PLZ} Data enable to data output, 0 to high Z	C _L = 300pF		20		23	ns
t _{pZL} Receive enable to receive output, high Z to 0	C _L = 30pF		20		23	ns
t _{PLZ} Receive enable to receive output, 0 to high Z	C _L = 30pF		15		18	ns

Bus Transceivers

8T26A, 28

TEST CIRCUITS AND WAVEFORMS

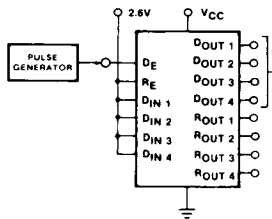


Bus Transceivers

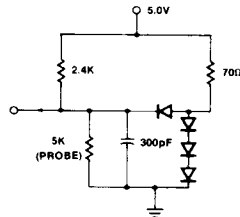
8T26A, 28

TEST CIRCUITS AND WAVEFORMS (Continued)

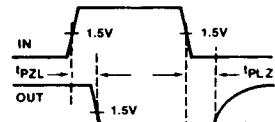
8T26A



TC032105



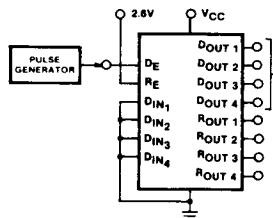
TC032005



WF114505

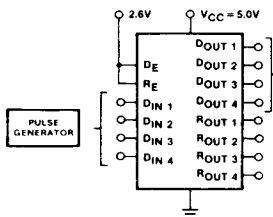
Input pulse:
 $t_r = t_f = 5\text{ns}$ (10% to 90%)
 $f_{\text{req}} = 5\text{MHz}$ (50% duty cycle)
 Amplitude = 2.6V

8T28

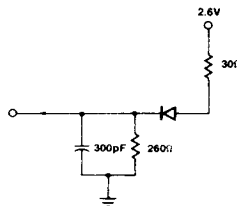


TC032405

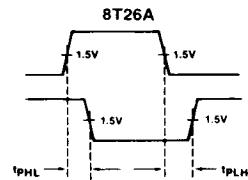
Disable And Enable Time
 Data Enable To Data Output



TC031405



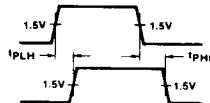
TC031505



WF104405

Input pulse:
 $t_r = t_f = 5\text{ns}$ (10% to 90%)
 $f_{\text{req}} = 5\text{MHz}$ (50% duty cycle)
 Amplitude = 2.6V

8T28



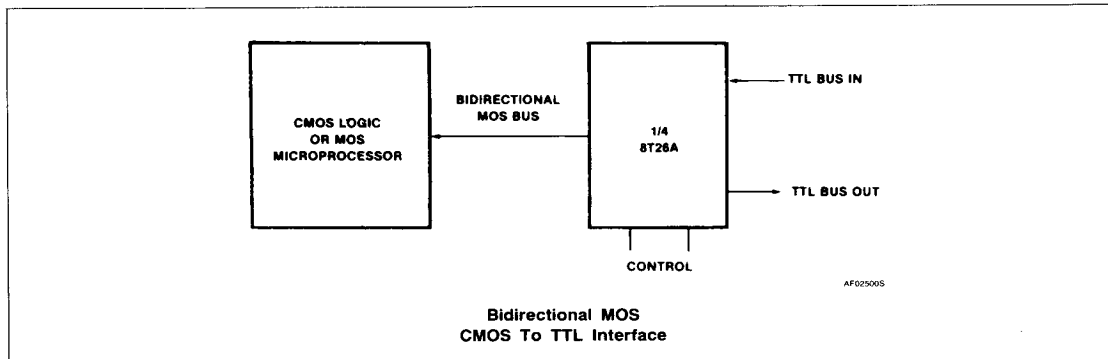
WF100305

Propagation Delay
 D_{IN} To D_{OUT}

Bus Transceivers

8T26A, 28

TYPICAL APPLICATION



TYPICAL APPLICATION

