Signetics

8T26A
Bus Transceiver

3-State Quad Bus Transceiver

Product Specification

Military Logic Products

FEATURES

- **High-speed Schottky quad transceiver**
- **32mA Low-state drive**
- **200μA 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 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 8T26 from conventional multi-IC implementations. In addition, the 8T26As 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 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 200μA maximum.

ORDERING INFORMATION

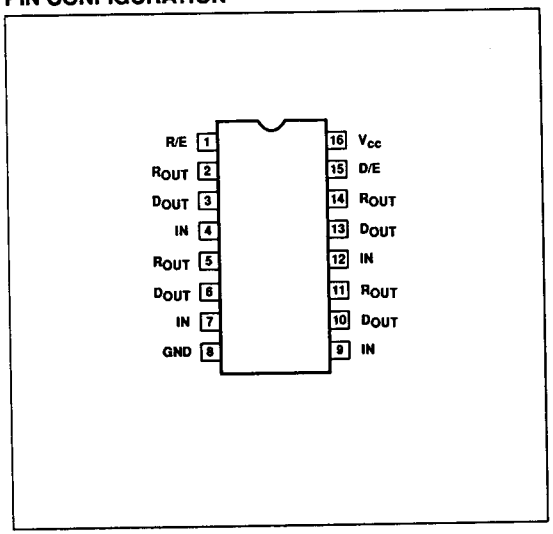
DESCRIPTION	ORDER CODE
Ceramic DIP	8T26A/BEA

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

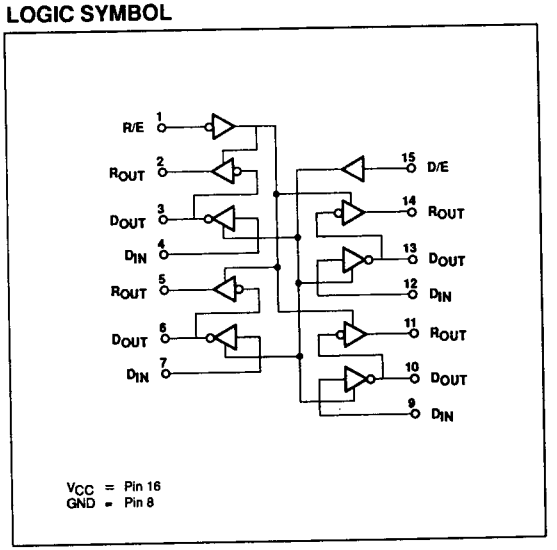
PINS	DESCRIPTION	8T
I_N	Input	0.5SUL
D/E, R/E	Inputs	0.5SUL
D_{OUT}	Output	16SUL
R_{OUT}	Output	6SUL

NOTE: A Unit Load (SUL) is 50μA I_{IH} and -2.0mA I_{IL}.

PIN CONFIGURATION



LOGIC SYMBOL



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

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	7.0	V
V_I	Input voltage range	-0.5 to +5.5	V
I_I	Input current range	-30 to +5	mA
I_{OL}	Continuous range	100	mA
V_O	Voltage applied to output in High output state range	-0.5 to V_{CC}	V
T_{STG}	Storage temperature range	-65 to +150	°C

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER		LIMITS			UNIT
			Min	Nom	Max	
V_{CC}	Supply voltage		4.5	5.0	5.5	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	Driver			-2	µA
I_{OL}	Low-level output current	Driver			32	mA
		Receiver			12	mA
T_A	Operating free-air temperature range		-55		+125	°C

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

SYMBOL	PARAMETER	TEST CONDITIONS[1]		LIMITS		UNIT
				Min	Max	
V_{IH}	Input High voltage	Guaranteed input High threshold voltage		2.0		V
V_{IL}	Input Low voltage	Guaranteed input Low threshold voltage			0.8	V
V_{IK}	Input clamp diode voltage	V_{CC} = Min, I_{IK} = -18mA			-1.2	V
V_{BD}	Input breakdown voltage	V_{CC} = Max, I_I = 1mA		5.5		V
V_{OH}	High-level output voltage, Driver outputs	V_{CC} = Min, I_{OH} = -2mA		2.4		V
V_{OH}	High-level output voltage, Receiver outputs	V_{CC} = 5.0V, I_{OH} = -100µA		3.0		V
V_{OL}	Low-level output voltage, Driver outputs	V_{CC} = Min, I_{OL} = 32mA			0.5	V
V_{OL}	Low-level output voltage, Receiver outputs	V_{CC} = Min, I_{OL} = 12mA			0.5	V
I_{OZH}	Off-state output current, High-level voltage applied	V_{CC} = Max, V_O = 2.4V			100	µA
I_{OZL}	Off-state output current, Low-level voltage applied	V_{CC} = Max, V_O = 0.5V			-100	µA
I_{IH}	High-level input current	V_{CC} = Max, V_I = 4.5V			25	µA
I_{IL}	Low-level input current	V_{CC} = Max, V_I = 0.5V	Driver, receiver		-200	µA
			Disabled		-25	µA
I_{OS}	Short-circuit output current[2]	V_{CC} = Max	Driver	-50	-150	mA
			Receiver	-30	-100	mA
I_{CC}	Supply current	V_{CC} = Max			87	mA

AC ELECTRICAL CHARACTERISTICS $T_A = 25°C$, $V_{CC} = 5.0V$

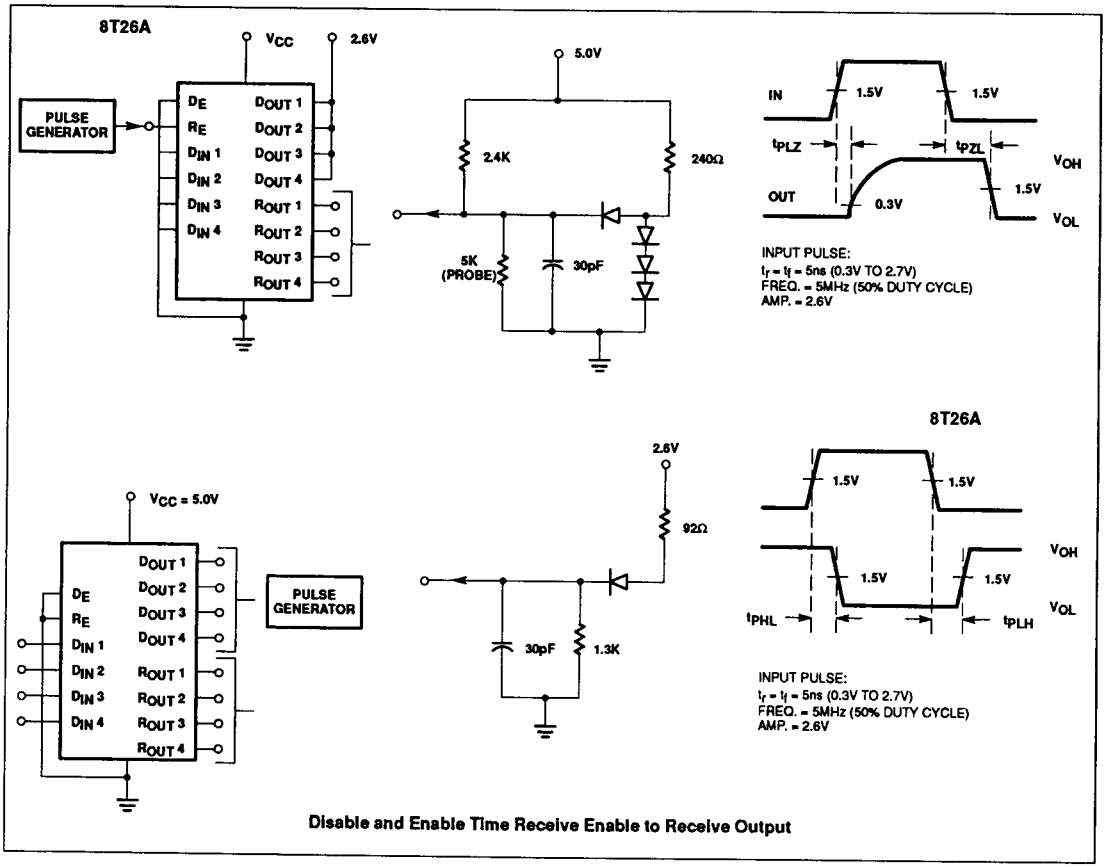
SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			Min	Max	
t_{PHL}	Propagation delay, D_{OUT} to R_{OUT}	$C_L = 30pF$		14	ns
t_{PHL}	Propagation delay, D_{IN} to D_{OUT}	$C_L = 300pF$		14	ns
t_{PLH}	Propagation delay, D_{OUT} to R_{OUT}	$C_L = 30pF$		14	ns
t_{PLH}	Propagation delay, D_{IN} to D_{OUT}	$C_L = 300pF$		14	ns
t_{PZL}	Data enable to data output, Hi-Z to 0	$C_L = 300pF$		25	ns
t_{PLZ}	Data enable to data output, 0 to Hi-Z	$C_L = 300pF$		20	ns
t_{PZL}	Receive enable to receive output, Hi-Z to 0	$C_L = 30pF$		20	ns
t_{PLZ}	Receive enable to receive output, 0 to Hi-Z	$C_L = 30pF$		15	ns

AC ELECTRICAL CHARACTERISTICS $T_A = -55°C$ and $+125°C$, $V_{CC} = 5.0V$[3]

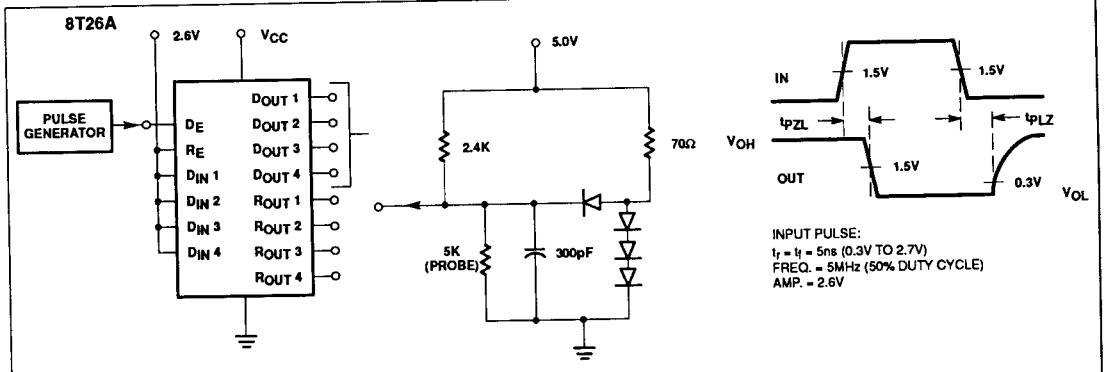
SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			Min	Max	
t_{PHL}	Propagation delay, D_{OUT} to R_{OUT}	$C_L = 30pF$		18	ns
t_{PHL}	Propagation delay, D_{IN} to D_{OUT}	$C_L = 300pF$		18	ns
t_{PLH}	Propagation delay, D_{OUT} to R_{OUT}	$C_L = 30pF$		18	ns
t_{PLH}	Propagation delay, D_{IN} to D_{OUT}	$C_L = 300pF$		18	ns
t_{PZL}	Data enable to data output, Hi-Z to 0	$C_L = 300pF$		35	ns
t_{PLZ}	Data enable to data output, 0 to Hi-Z	$C_L = 300pF$		26	ns
t_{PZL}	Receive enable to receive output, Hi-Z to 0	$C_L = 30pF$		38	ns
t_{PLZ}	Receive enable to receive output, 0 to Hi-Z	$C_L = 30pF$		19	ns

NOTES:
1. For conditions shown as Min or Max, use the appropriate value specified under recommended operating conditions for the applicable type.
2. Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.
3. These parameters are guaranteed, but not tested.

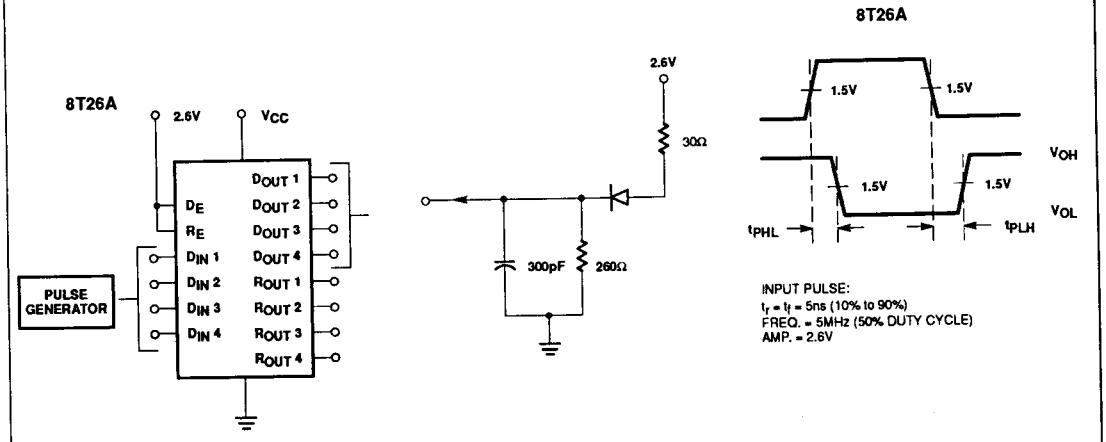
TEST CIRCUITS AND WAVEFORMS



TEST CIRCUITS AND WAVEFORMS (Continued)



Disable and Enable Time Data Enable to Data Output

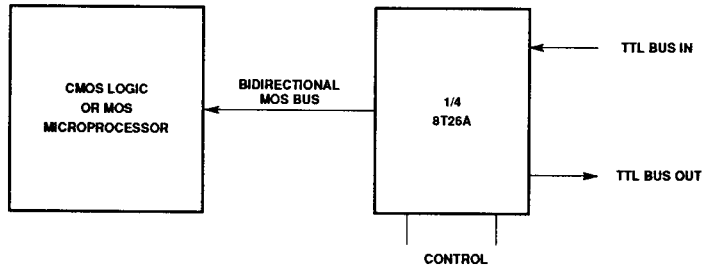


Propagation Delay D_{IN} to D_{OUT}

Bus Transceiver

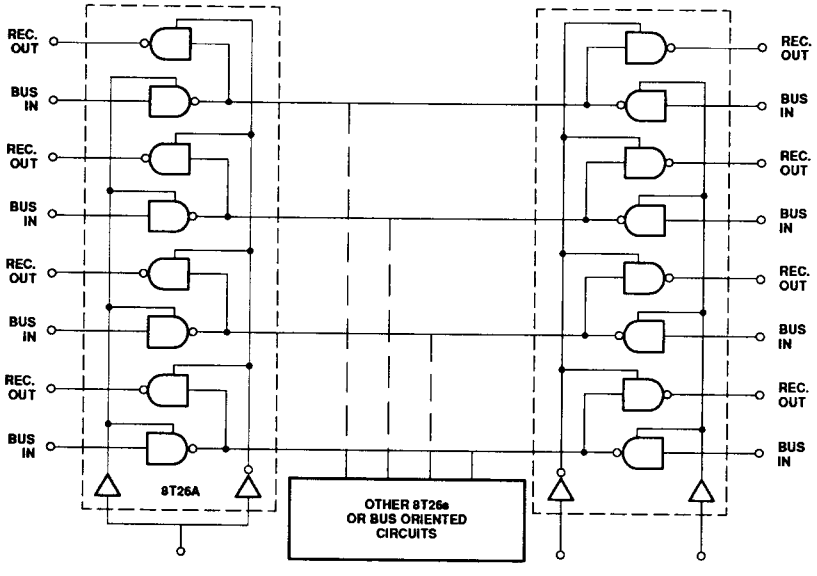
8T26A

TYPICAL APPLICATION



Bidirectional MOS
CMOS to TTL Interface

TYPICAL APPLICATION



Control lines may be tied together, such that logical "1" transmit, logical "0" receive.
Logical "0" = active
Logical "1" = active
Logical "11" = Hi-Z
Logical "0" = Hi-Z

Bidirectional Data Bus