8286/8287

Octal Bus Transceivers

DISTINCTIVE CHARACTERISTICS

- Data bus buffer/driver for 8086, 8088, 8080A, 8085A, and 8048 processors
- Fully parallel 8-bit transceivers: 8286 is noninverting
  8287 is inverting
- 3-state inputs/outputs for interfacing with bus-oriented systems
- Available in 20-pin, 0.3" center molded DIP or ceramic package
- Advanced bipolar Schottky processing
- Bus port stays in hi-impedance state during power up/down transition

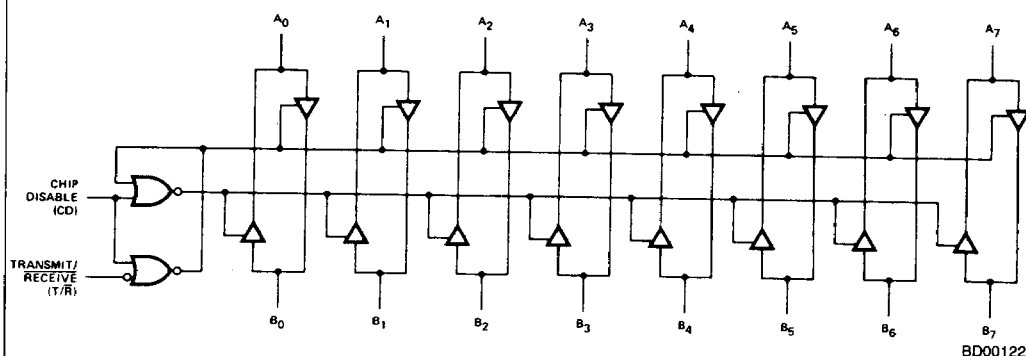
GENERAL DESCRIPTION

The 8286 and 8287 are 8-bit 3-state bipolar Schottky transceivers. They provide bidirectional drive for bus-oriented microprocessor and digital communications systems. Straight through bidirectional transceivers are featured, with 16mA drive capability on the A ports and 32mA bus drive capability on the B ports. PNP inputs are incorporated to reduce input loading.

One input, Transmit/Receive determines the direction of logic signals through the bidirectional transceiver. The Chip Disable input disables both A and B ports by placing them in a 3-state condition. Chip Disable is functionally the same as an active LOW chip select.

BLOCK DIAGRAM

8286*



*8287 has inverting transceivers

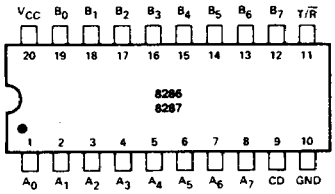
RELATED PRODUCTS

PART NO	DESCRIPTION
2946/47	Octal Bus Transceivers
2948/49	Octal Bus Transceivers
8086	16-Bit Microprocessor

05699A

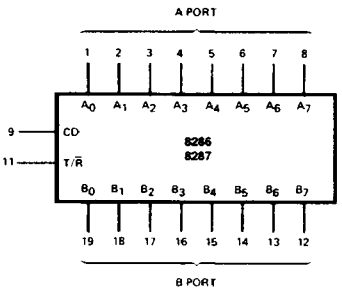
Refer to Page 13-1 for Essential Information on Military Devices

CONNECTION DIAGRAM
Top View



CD001500

LOGIC SYMBOL

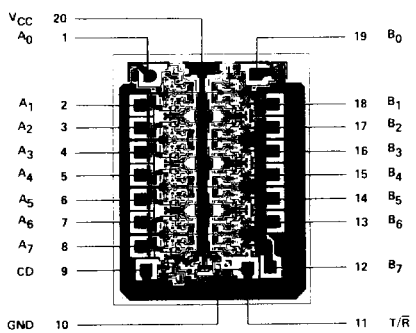


LS000520

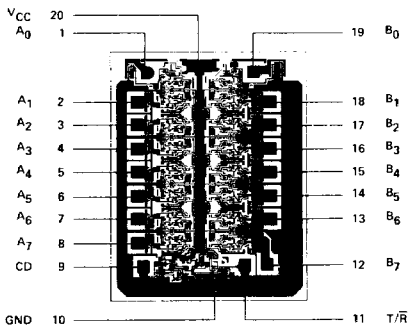
Note: Pin 1 is marked for orientation

METALLIZATION AND PAD LAYOUT

8286



8287



DIE SIZE .069" x .069"

ORDERING INFORMATION

AMD products are available in several packages and operating ranges. The order number is formed by a combination of the following: Device number, speed option (if applicable), package type, operating range and screening option (if desired).

M D 8286 8287 B

- B — Screening Option: Blank-Standard processing; B-Burn-in
- 8286 8287 — Device Type: Octal Bus Transceivers
- D — Package: D – 20-pin CERDIP (D-20-1); P – 20-pin plastic DIP (P-20-1); X – Dice
- M — Temperature Range: C – Commercial (0°C to +70°C); M – Military (–55°C to +125°C)

Valid Combinations	
MD D P XM, XC	8286
MD D P	8286B
P XC	8287
P	8287B

Valid Combinations

Consult the AMD sales office in your area to determine if a device is currently available in the combination you wish.

PIN DESCRIPTION

Pin No.	Name	I/O	Description
	$A_0 - A_7$	I/O	A port inputs/outputs are receiver output drivers when T/$\overline{R}$ is Low and are transmit inputs when T/$\overline{R}$ is HIGH.
	$B_0 - B_7$	I/O	B port inputs/outputs are transmit output drivers when T/$\overline{R}$ is HIGH and receiver inputs when T/$\overline{R}$ is LOW.
9	CD	I	Chip Disable forces all output drivers into 3-state when HIGH (same function as active LOW chip select, $\overline{CS}$).
11	T/$\overline{R}$	I	Transmit/$\overline{Receiver}$ direction control determines whether A port or B port drivers are in 3-state. With T/$\overline{R}$ HIGH, A port is the input and B port is the output. With T/$\overline{R}$ LOW, A port is the output and B port is the input.

Inputs	Conditions		
Chip Disable	0	0	1
Transmit/$\overline{Receive}$	0	1	X
A Port	Out	In	HI-Z
B Port	In	Out	HI-Z

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Refer to Page 13-1 for Essential Information on Military Devices

ABSOLUTE MAXIMUM RATINGS

Storage Temperature ..... −65°C to +150°C
Supply Voltage ..... +7.0V
Input Voltage ..... +5.5V
Output Voltage ..... +5.5V
Lead Temperature (Soldering, 10 seconds) ..... 300°C

Stresses above those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent device failure. Functionality at or above these limits is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability.

OPERATING RANGES

Commercial (C) Devices
Temperature ..... 0°C to +70°C
Supply Voltage ..... +4.75V to +5.25V

Military (M) Devices
Temperature ..... −55°C to +125°C
Supply Voltage ..... +4.5V to +5.5V

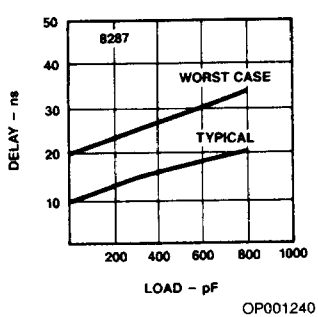
Operating ranges define those limits over which the functionality of the device is guaranteed.

DC CHARACTERISTICS over operating range unless otherwise specified

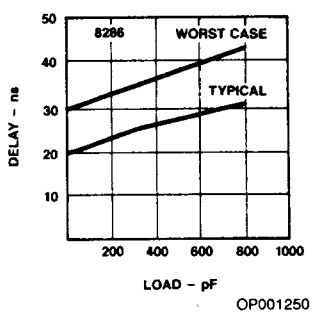
Parameters	Description		Test Conditions	Min	Max	Units
V_C	Input Clamp Voltage		$I_C = -5mA$		−1	Volts
I_{CC}	Power Supply Current	8287			130	mA
		8286			160	
I_F	Forward Input Current		$V_F = 0.45V$		−0.2	mA
I_R	Reverse Input Current		$V_R = 5.25V$		50	µA
V_{OL} (COM'L)	Output Low Voltage	B Outputs	$I_{OL} = 32mA$		.45	Volts
		A Outputs	$I_{OL} = 16mA$		.45	
V_{OL} (MIL)	Output Low Voltage	B Outputs	$I_{OL} = 20mA$		.45	Volts
		A Outputs	$I_{OL} = 10mA$		.45	
V_{OH}	Output High Voltage	B Outputs	$I_{OH} = -5mA$	2.4		Volts
		A Outputs	$I_{OH} = -1mA$	2.4		
I_{OFF}	Output Off Current		$V_{OFF} = 0.45V$		I_F	
			$V_{OFF} = 5.25V$		I_R	
V_{IL}	Input Low Voltage	A Port	$V_{CC} = 5.0V$ (See note 1)		0.8	Volts
		B Port	$V_{CC} = 5.0V$ (See note 1)		0.9	
V_{IH}	Input High Voltage		$V_{CC} = 5.0V$ (See note 1)	2.0		Volts
C_{IN}	Input Capacitance		F = 1MHz $V_{BIAS} = 2.5V$, $V_{CC} = 5V$ $T_A = 25°C$		12	pF

OPERATING CHARACTERISTICS

Output Delay versus Capacitance



OP001240



OP001250

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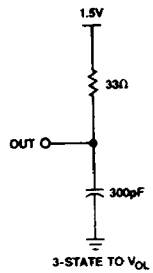
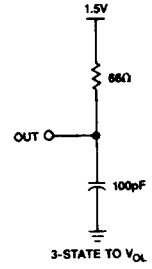
Refer to Page 13-1 for Essential Information on Military Devices

SWITCHING TEST CIRCUITS



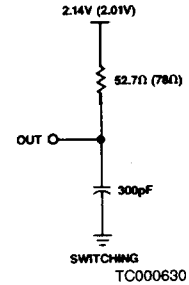
TC000610

B OUTPUT



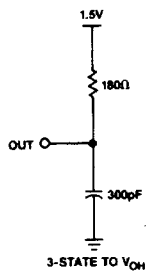
TC000620

A OUTPUT



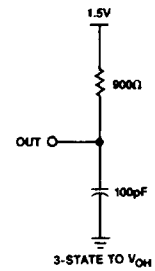
TC000630

B OUTPUT



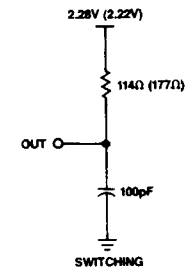
TC000580

B OUTPUT



TC000590

A OUTPUT



TC000600

A OUTPUT

Values in parenthesis reflect MIL temp. conditions.

SWITCHING CHARACTERISTICS (See Note 2)

Parameters	Description		Test Conditions (See Notes)	Min (COM'L)	Min (MIL)	Max	Units
TIVOV	Input to Output Delay	Inverting		5		22	ns
		Non-inverting		5		30	
TEHTV	Transmit/Receive Hold Time			5	TENHOZ		ns
TTVEL	Transmit/Receive Setup			10	30		ns
TEHOZ	Output Disable Time			3		18	ns
TELOV	Output Enable Time			10	10	30	ns
TILIH, TOLOH	Input, Output Rise Time		From 0.8 to 2.0V			20	ns
TIHIL, TOHOL	Input, Output Fall Time		From 2.0 to 0.8V			12	ns

Notes:
1. COM'L temperature loading conditions

   MIL temperature loading conditions
2. Refer to waveforms and SWITCHING TEST CIRCUITS on following pages.

B outputs: I_{OL} = 32mA, I_{OH} = -5mA, C_L = 300pF
A outputs: I_{OL} = 16mA, I_{OH} = -1mA, C_L = 100pF
B outputs: I_L = 20mA, I_{OH} = -5mA, C_L = 300pF
A outputs: I_{OL} = 10mA, I_{OH} = -1mA, C_L = 100pF

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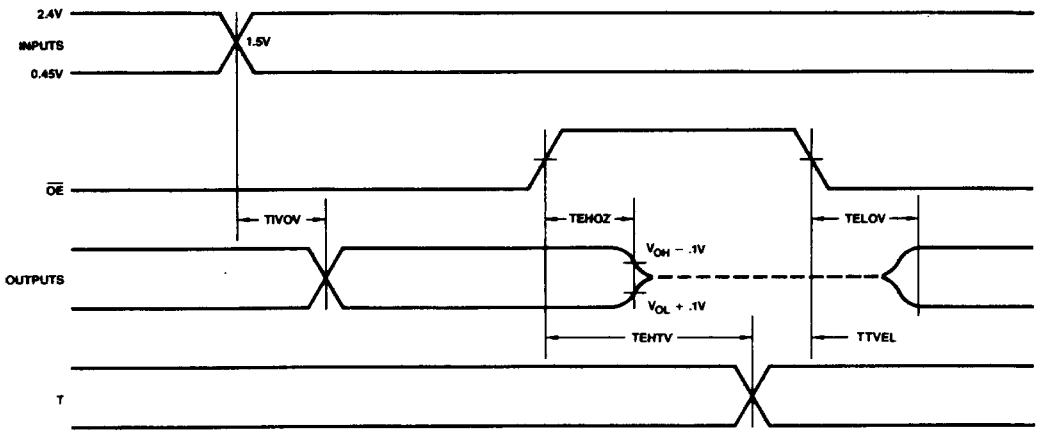
Refer to Page 13-1 for Essential Information on Military Devices

SWITCHING WAVEFORMS



WF001910

AC testing inputs are driven at 2.4V for a logic "1" and 0.45V for a logic "0"; timing measurements are made at 1.5V for both a logic "1" and "0."

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Refer to Page 13-1 for Essential Information on Military Devices