MBL8286
MBL8287
Bipolar Octal Bus Transceiver

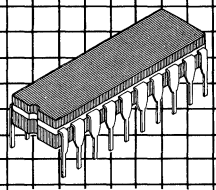
November 1986
Edition 4.0

Description

The MBL8286 and MBL8287 are 8-bit bipolar transceivers with 3-state outputs. The MBL8287 inverts the input data at its outputs while the MBL8286 does not. Thus, a wide variety of applications for buffering in microcomputer systems can be met.

Features

- **Data Bus Buffer Driver for MBL8086, MBL8088, BML8089, MCS-80*, MCS-85*, and MCS-48* Families**
- **High Output Drive Capability for Driving System Data Bus**
- **Fully Parallel 8-Bit Transceivers**
- **3-State Outputs**
- **20-Pin DIP**
- **No Output Low Noise when Entering or Leaving High Impedance State**



Ceramic Package
DIP-20C-C01

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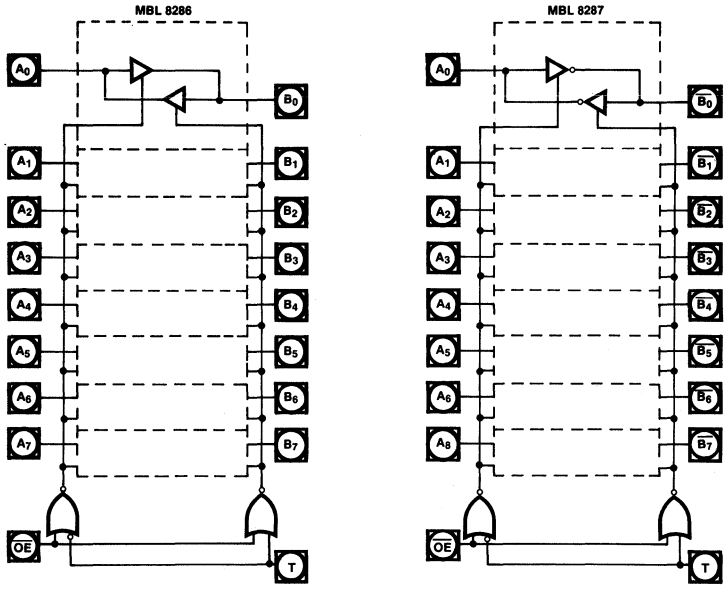
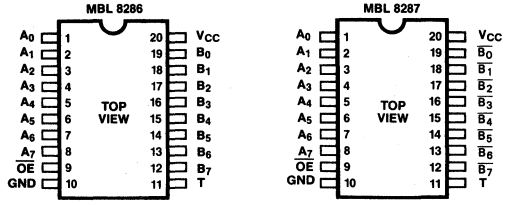
Logic Diagrams



Pin Configurations



Pin Description

Symbol	Type	Name and Function
T	I	**Transmit:** T is an input control signal used to control the direction of the transceivers. When HIGH, it configures the transceiver's B_0–B_7 as outputs with A_0–A_7 as inputs. T LOW configures A_0–A_7 as the outputs and B_0–B_7 as the inputs.
$\overline{OE}$	O	**Output Enable:** $\overline{OE}$ is an input control signal used to enable the appropriate output driver (as selected by T) onto its respective bus. This signal is active LOW.
A_0–A_7	I/O	**Local Bus Data Pins:** These pins serve to either send data to or accept data from the processor's local bus, depending upon the state of the T pin.
B_0–B_7 (MBL8286) $\overline{B_0}$–$\overline{B_7}$ (MBL8287)	I/O	**System Bus Data Pins:** These pins serve to either send data to or accept data from the system bus, depending upon the state of the T pin.

Functional Description

The MBL8286 and MBL 8287 are 8-bit transsceivers with high impedance outputs. With T active HIGH and $\overline{OE}$ active LOW, data at the A_0–A_7 pins are sent to the B_0–B_7 pins. With T inactive low and $\overline{OE}$ active LOW, data at the B_0–B_7 pins is sent to the A_0–A_7 pins. No output low glitching will occur when the transceivers are entering or leaving the high impedance state.

Absolute Maximum Ratings

Parameter	Rating	Unit
Temperature Under Bias	0° to 70°	°C
Storage Temperature	–65° to +150°	°C
Supply Voltage	–0.5 to +7.0	V
All Output Voltages (3-State Output)	+5.5	V
All Input Voltages	–0.5 to +7.0	V
Power Dissipation	1.0	W

Note: Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC Characteristics

(V_{CC} = +5V ±10%, T_A = 0°C to 70°C)

Symbol	Parameter	Min.	Max.	Units	Test Conditions
V_C	Input Clamp Voltage		-1	V	I_C = -5mA
I_{CC}	Power Supply Current —MBL8287		130	mA	
	—MBL8286		160	mA	
I_F	Forward Input Current		-0.2	mA	V_F = 0.45V
I_R	Reverse Input Current		50	μA	V_R = 5.25V
V_{OL}	Output Low Voltage —B Outputs		0.45	V	I_{OL} = 32 mA
	—A Outputs		0.45	V	I_{OL} = 16 mA
V_{OH}	Output High Voltage —B Outputs	2.4		V	I_{OH} = -5 mA
	—A Outputs	2.4		V	I_{OH} = -1 mA
I_{OFF}	Output Off Current		I_F		V_{OFF} = 0.45V
I_{OFF}	Output Off Current		I_R		V_{OFF} = 5.25V
V_{IL}	Input Low Voltage —A Side		0.8	V	V_{CC} = 5.0V, See Note 1
	—B Side		0.9	V	V_{CC} = 5.0V, See Note 1
V_{IH}	Input High Voltage	2.0		V	V_{CC} = 5.0V, See Note 1
C_{IN}	Input Capacitance		12	pF	F = 1 MHz, V_{BIAS} = 2.5V, V_{CC} = 5V, T_A = 25°C

Note: 1. B Outputs—I_{OL} = 32 mA, I_{OH} = -5 mA, C_L = 300 pF;
A Outputs—I_{OL} = 16 mA, I_{OH} = -1 mA, C_L = 100 pF.

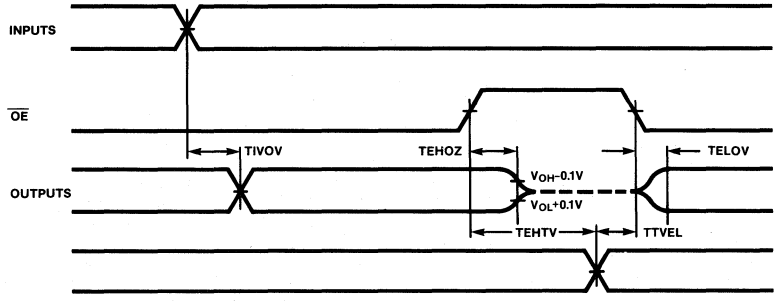
AC Characteristics

(V_{CC} = +5V ±10%, T_A = 0°C to 70°C)
Loading:
1. B Outputs—I_{OL} = 32 mA, I_{OH} = -5 mA, C_L = 300 pF;
A Outputs—I_{OL} = 16 mA, I_{OH} = -1 mA, C_L = 100 pF.

Symbol	Parameter	Min.	Max.	Units	Test Conditions
TIVOV	Input to Output Delay Inverting —MBL8287	5	22	ns	(See Note 1)
	Non-Inverting —MBL8286	5	30	ns	
TEHTV	Transmit/Receive Hold Time	5		ns	
TTVEL	Transmit/Receive Setup	10		ns	
TEHOZ	Output Disable Time	5	18	ns	
TELOV	Output Enable Time	10	30	ns	
TILIH, TOLOH	Input/Output Rise Time		20	ns	From 0.8V to 2.0V
TIHIL, TOHOL	Input/Output FallTime		12	ns	From 2.0V to 8.0V

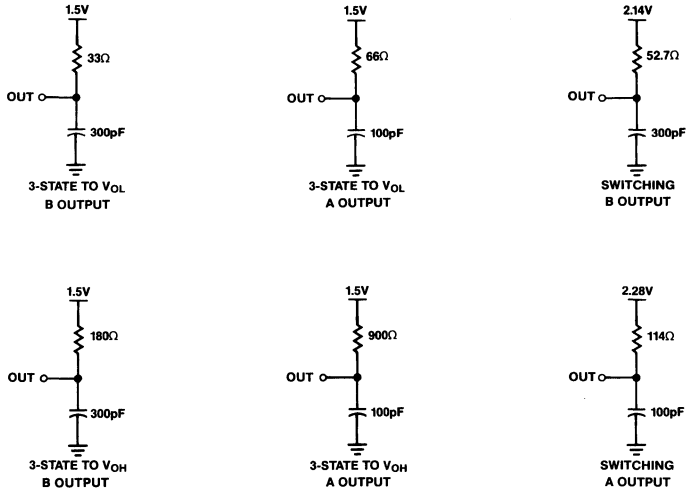
Note: 1. See the following waveforms and test load circuits.

Waveforms

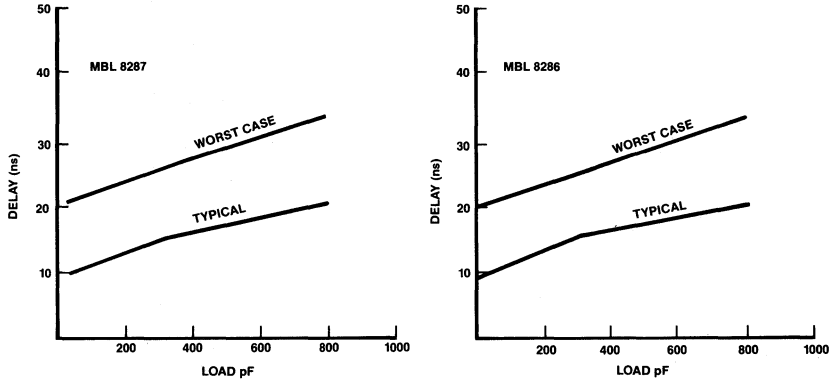


Note: All timing measurements are made at 1.5V unless otherwise noted.

Test Load Circuits



Output Delay Versus Capacitance



Package Dimensions

Dimensions in inches
(millimeters)

20-Lead Ceramic (CERDIP)
Dual In-Line Package
DIP-20C-C01