SIEMENS

Preliminary

SAB 8286A/SAB 8287A Octal Bus Transceiver

- Fully compatible with SAB 8286/SAB 8287
- 40% Less Power Supply Current than Standard SAB 8286/SAB 8287
- Data Bus Buffer Driver for SAB 80286, SAB 80186, SAB 8086, SAB 8085, SAB 8048 and SAB 8051 Families
- High Output Drive Capability for Driving System Data Bus
- Fully Parallel 8-Bit Transceivers
- 3-State Outputs
- 20-Pin Package
- No Output Low Noise when Entering or Leaving High Impedance State

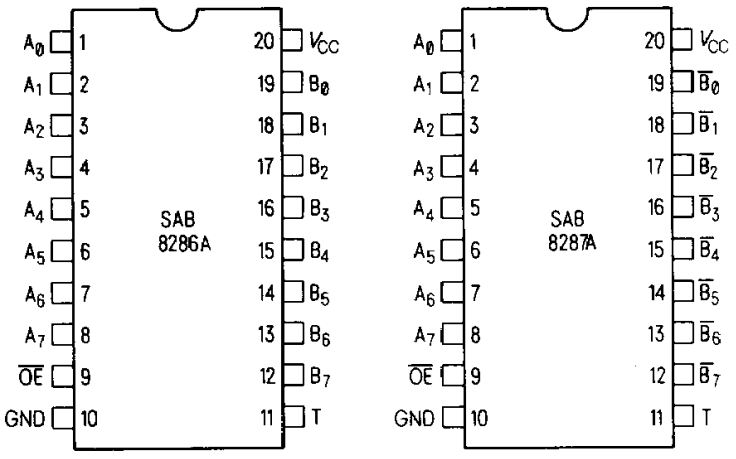
Functional Description

The SAB 8286A and SAB 8287A transceivers are 8-bit transceivers with high impedance outputs. With T active HIGH and $\overline{OE}$ active LOW, data at the A_0-A_7 pins is driven onto the B_0-B_7 pins. With T inactive LOW and $\overline{OE}$ active LOW, data at the B_0-B_7 pins is driven onto the A_0-A_7 pins. No output low glitching will occur whenever the transceivers are entering or leaving the high impedance state.

Absolute Maximum Ratings[1)]

Temperature Under Bias	0 to +70°C
Storage Temperature	−65 to +150°C
All Output and Supply Voltages	−0.5 to +7V
All Input Voltages	−1.0 to +5.5V
Power Dissipation	1W

Pin Configuration

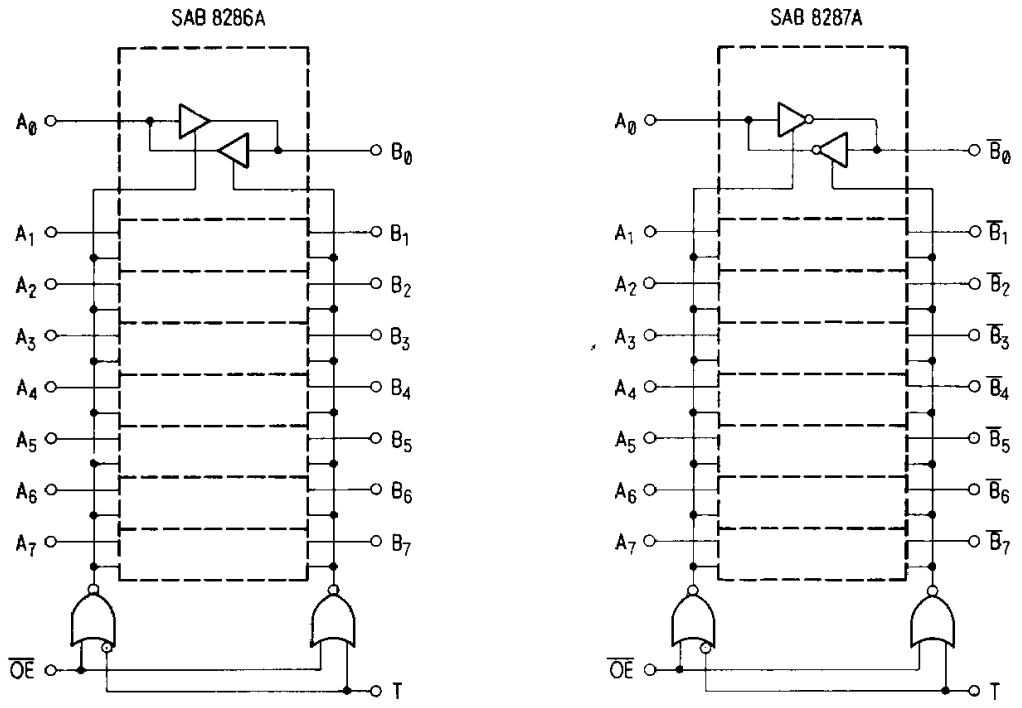


Pin Names

A_0-A_7	Local Bus Data
B_0-B_7	System Bus Data
$\overline{OE}$	Output Enable
T	Transmit
V_{CC}	Power Supply (+5V)
GND	Ground (0V)

The SAB 8286A and SAB 8287A are 8-bit bipolar transceivers with 3-state outputs. The SAB 8287A inverts the input data at its outputs while the SAB 8286A does not. Thus, a wide variety of applications for buffering in microcomputer systems can be met. This device is fabricated in a fast bipolar ASBC (Advanced Standard Buried Collector) process of Siemens.

Logic Diagrams



Pin Definitions and Functions

Symbol	Number	Input (I) Output (O)	Function
T	11	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_{0-7} as the outputs with B_0–B_7 serving as the inputs.
$\overline{OE}$	9	I	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	1–8	I/O	LOCAL BUS DATA PINS – These pins serve to either present data to or accept data from the processor's local bus depending upon the state of the T pin.
B_0–B_7 (SAB 8286A) $\overline{B_0}$–$\overline{B_7}$ (SAB 8287A)	12–19	I/O	SYSTEM BUS DATA PINS – These pins serve to either present data to or accept data from the system bus depending upon the state of the T pin.
V_{CC}	20	–	Power Supply (+5V)
GND	10	–	Ground (0V)

Functional Description

The SAB 8286A and SAB 8287A transceivers are 8-bit transceivers with high impedance outputs. With T active HIGH and $\overline{OE}$ active LOW, data at the A_0–A_7 pins is driven onto the B_0–B_7 pins.

With T inactive LOW and $\overline{OE}$ active LOW, data at the B_0–B_7 pins is driven onto the A_0–A_7 pins. No output low glitching will occur whenever the transceivers are entering or leaving the high impedance state.

Absolute Maximum Ratings[1)]

Temperature Under Bias	0 to +70°C
Storage Temperature	−65 to +150°C
All Output and Supply Voltages	−0.5 to +7V
All Input Voltages	−1.0 to +5.5V
Power Dissipation	1W

D. C. Characteristics

T_A = 0 to 70°C; V_{CC} = +5V ±10%

Symbol	Parameter	Limit Values		Unit	Test Condition
		Min.	Max.		
V_C	Input Clamp Voltage	–	−1	V	I_C = −5 mA
I_{CC}	Power Supply Current	–	90	mA	All outputs open
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 – A Outputs	–	0.45 0.45	V	I_{OL} = 32 mA I_{OL} = 16 mA
V_{OH}	Output HIGH Voltage – B Outputs – A Outputs	2.4 2.4	–	V	I_{OH} = −5 mA I_{OH} = −1 mA
I_{OFF} I_{OFF}	Output Off Current Output Off Current	–	I_F I_R	–	V_{OFF} = 0.45V V_{OFF} = 5.25V
V_{IL}	Input LOW Voltage – A Side – B Side	–	0.8 0.9	V	V_{CC} = 5.0V, See Note 2 V_{CC} = 5.0V, See Note 2
V_{IH}	Input HIGH Voltage	2.0			V_{CC} = 5.0V, See Note 2
C_{IN}	Input Capacitance	–	12	pF	F = 1 MHz V_{BIAS} = 2.5V, V_{CC} = 5V T_A = 25°C

1) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

2) 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

A.C. Characteristics

T_A = 0 to +70°C; V_{CC} = +5 V ± 10%

Loading
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

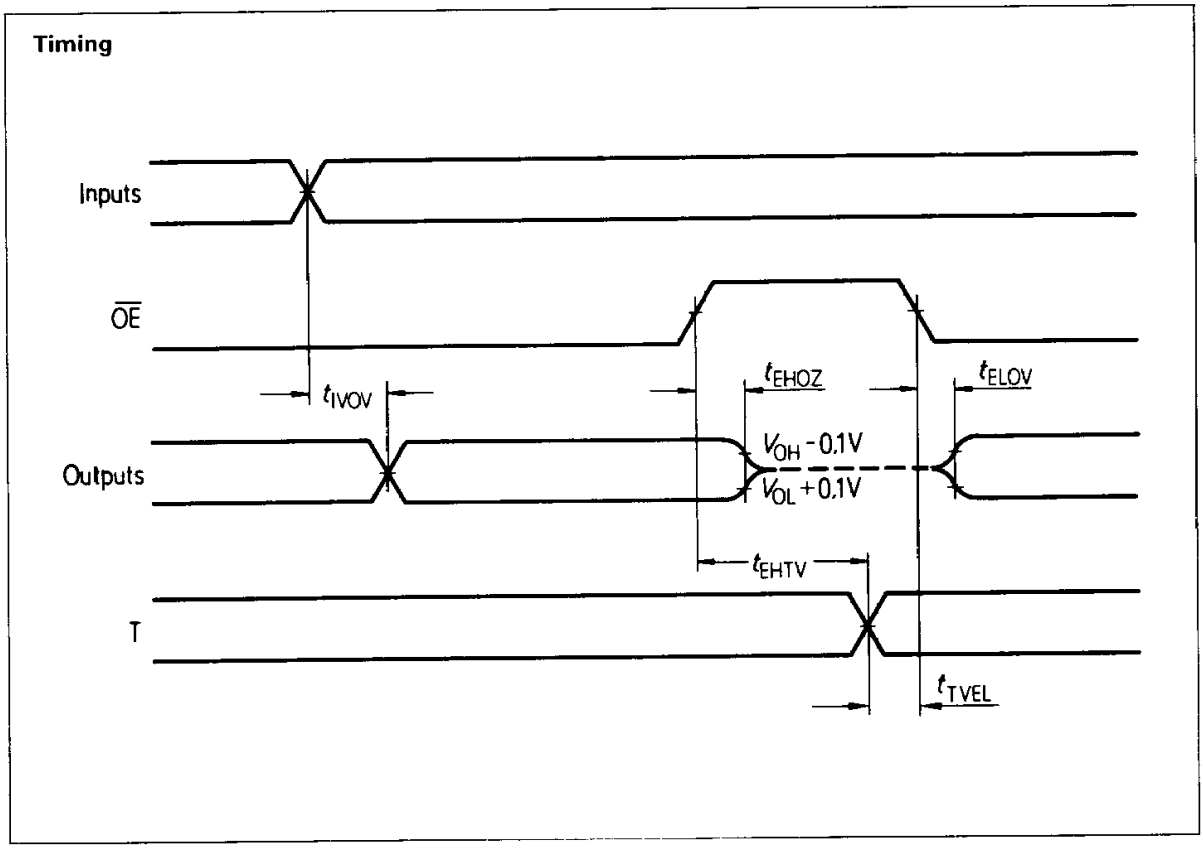
Symbol	Parameter	Limit Values		Unit	Test Condition
		Min.	Max.		
t_{IVOV}	Input to Output Delay Inverting Non-Inverting	 5 5	 22 30	ns	1)
t_{EHTV}	Transmit/Receive Hold Time	5	–		
t_{TVEL}	Transmit/Receive Setup	10			
t_{EHOZ}	Output Disable Time	5	18		
t_{ELOV}	Output Enable Time	10	30		
t_{ILIH}, t_{OLOH}	Input, Output Rise Time	–	20		From 0.8 to 2.0 V
t_{IHIL}, t_{OHOL}	Input, Output Fall Time		12		From 2.0 to 0.8 V

1) See waveforms and test load circuit.

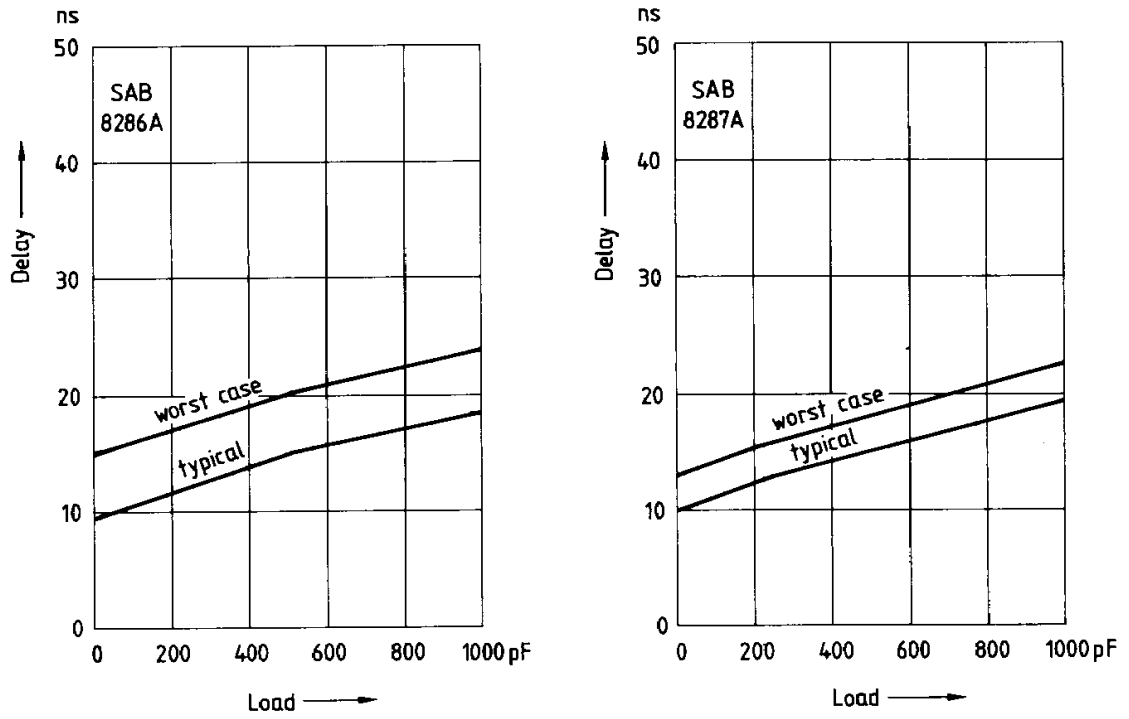
Waveforms

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

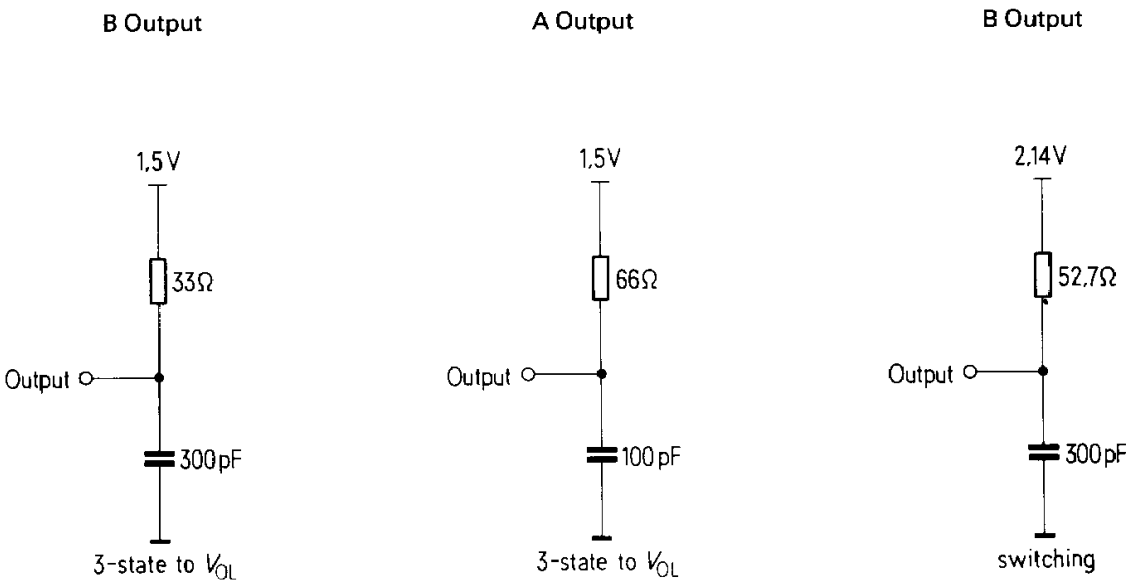
Timing



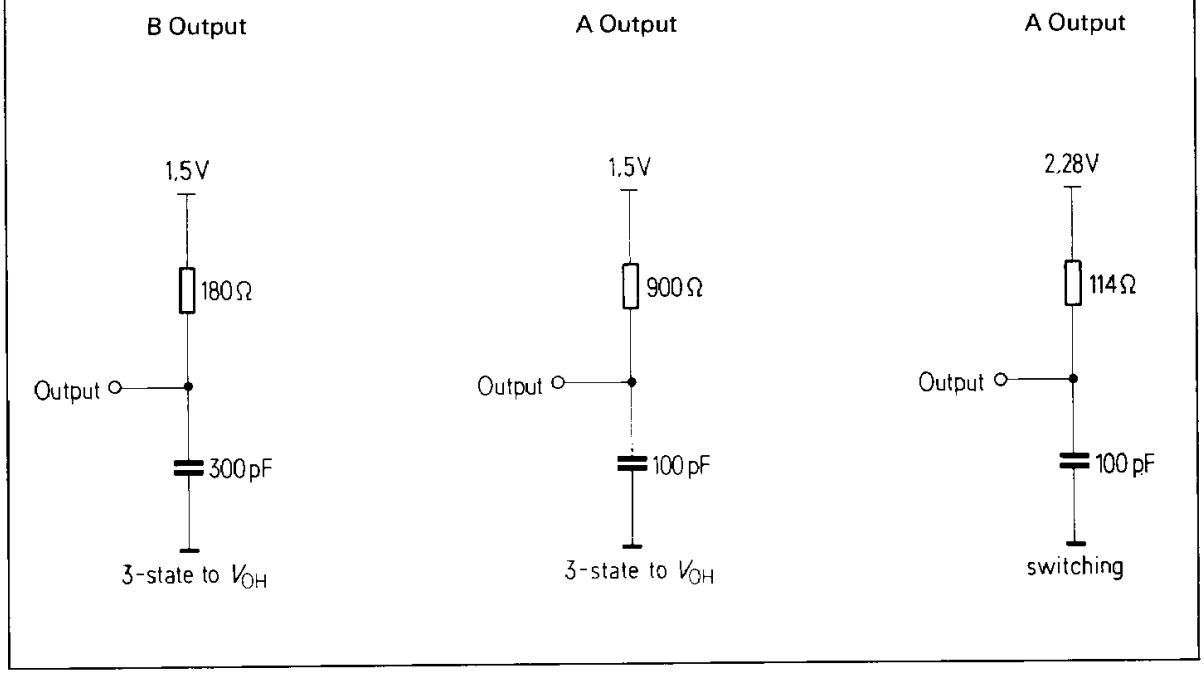
Output Delay vs. Capacitance



Output Test Load Circuit



Output Test Load Circuit



Ordering Information

Type	Description	Ordering code
SAB 8286A–P	Octal Bus Transceiver, non inverting (plastic)	Q 67020–Y 153
SAB 8287A–P	Octal Bus Transceiver, inverting (plastic)	Q 67020–Y 154