

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 OE active LOW, data at the A₀–A₇ pins is driven onto the B₀–B₇ pins.

With T inactive LOW and OE active LOW, data at the B₀–B₇ pins is driven onto the A₀–A₇ pins. No output low glitching will occur whenever the transceivers are entering or leaving the high impedance state.

Absolute Maximum Ratings¹⁾

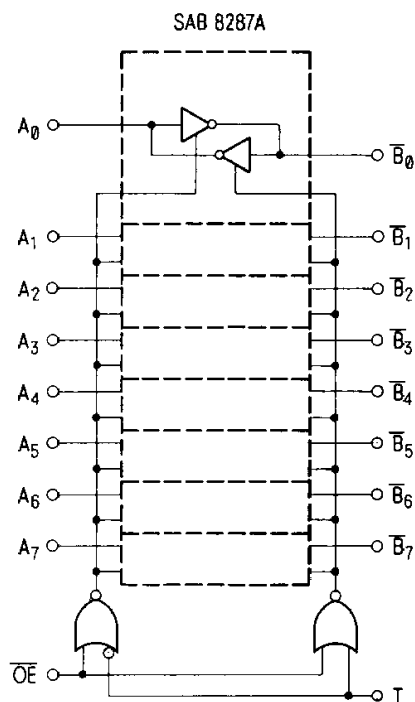
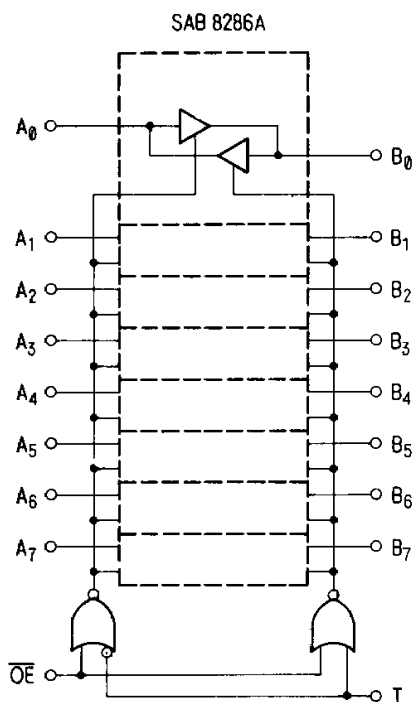
Temperature Under Bias	0 to +70°C
Storage Temperature	–65 to +150°C
All Output and Supply Voltages	–0.5 to +7 V
All Input Voltages	–1.0 to +5.5V
Power Dissipation	1W

Pin Configuration		Pin Names	
A ₀	1	A ₀ –A ₇	Local Bus Data
A ₁	2	B ₀ –B ₇	System Bus Data
A ₂	3	OE	Output Enable
A ₃	4	T	Transmit
A ₄	5	V _{CC}	Power Supply (+5V)
A ₅	6	GND	Ground (0V)
A ₆	7		
A ₇	8		
OE	9		
GND	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		

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 Ratings¹⁾

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

D. C. Characteristics

$T_A = 0$ to 70°C ; $V_{CC} = +5\text{V} \pm 10\%$

Symbol	Parameter	Limit Values		Unit	Test Condition
		Min.	Max.		
V_C	Input Clamp Voltage	–	–1	V	$I_C = -5\text{ mA}$
I_{CC}	Power Supply Current	–	90	mA	All outputs open
I_F	Forward Input Current	–	–0.2		$V_F = 0.45\text{ V}$
I_R	Reverse Input Current	–	50	μA	$V_R = 5.25\text{ V}$
V_{OL}	Output LOW Voltage – B Outputs – A Outputs	–	0.45 0.45	V	$I_{OL} = 32\text{ mA}$ $I_{OL} = 16\text{ mA}$
V_{OH}	Output HIGH Voltage – B Outputs – A Outputs	2.4 2.4	–		$I_{OH} = -5\text{ mA}$ $I_{OH} = -1\text{ mA}$
I_{OFF} I_{OFF}	Output Off Current Output Off Current	–	I_F I_R	–	$V_{OFF} = 0.45\text{ V}$ $V_{OFF} = 5.25\text{ V}$
V_{IL}	Input LOW Voltage – A Side – B Side	–	0.8 0.9	V	$V_{CC} = 5.0\text{ V}$, See Note 2 $V_{CC} = 5.0\text{ V}$, See Note 2
V_{IH}	Input HIGH Voltage	2.0	–		$V_{CC} = 5.0\text{ V}$, See Note 2
C_{IN}	Input Capacitance	–	12	pF	$F = 1\text{ MHz}$ $V_{BIAS} = 2.5\text{ V}$, $V_{CC} = 5\text{ V}$ $T_A = 25^\circ\text{C}$

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: $I_{OL} = 32\text{ mA}$; $I_{OH} = -5\text{ mA}$; $C_L = 300\text{ pF}$
A Outputs: $I_{OL} = 16\text{ mA}$; $I_{OH} = -1\text{ mA}$; $C_L = 100\text{ pF}$

A.C. Characteristics

$T_A = 0$ to $+70^\circ\text{C}$; $V_{CC} = +5\text{ V} \pm 10\%$

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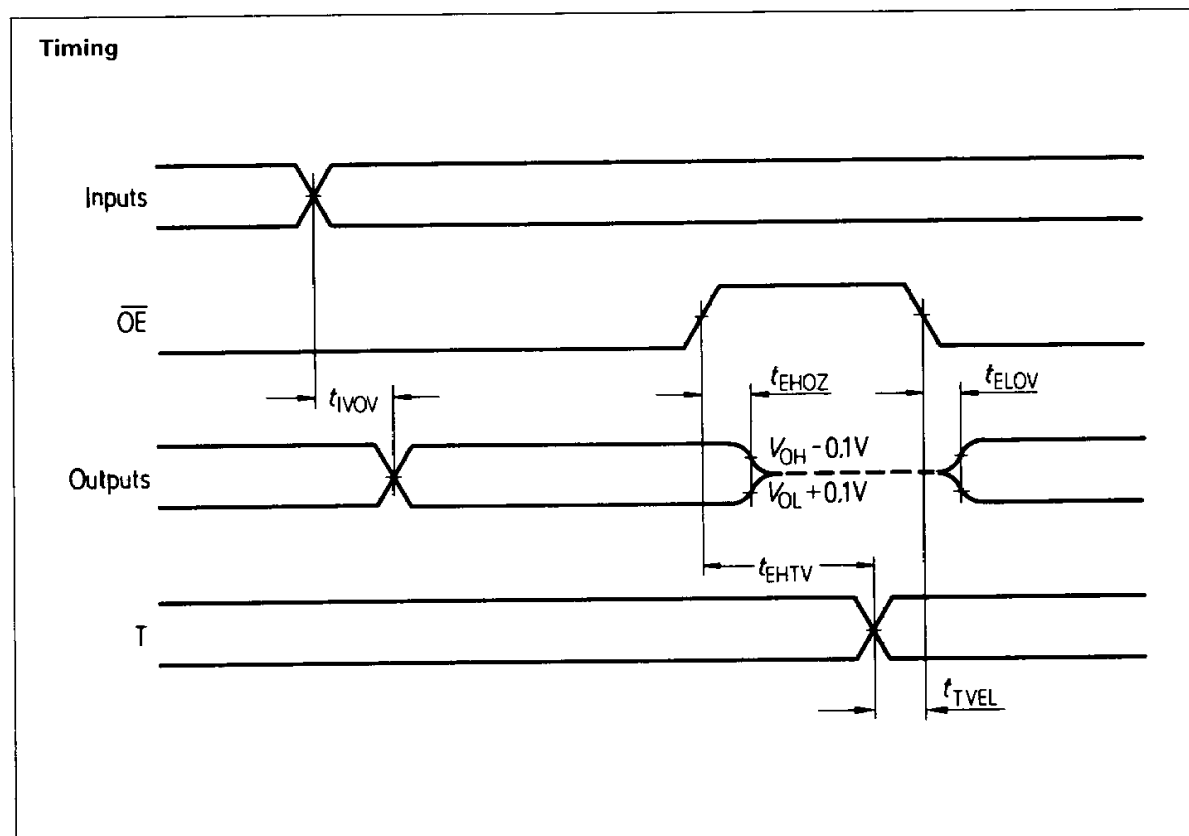
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Symbol	Parameter	Limit Values		Unit	Test Condition
		Min.	Max.		
t_{IVOV}	Input to Output Delay Inverting Non-Inverting	5 5	22 30	ns	1)
t_{EHTV}	Transmit/Receive Hold Time	5	—		
t_{TVEL}	Transmit/Receive Setup	10	—		
t_{EHOZ}	Output Disable Time	5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

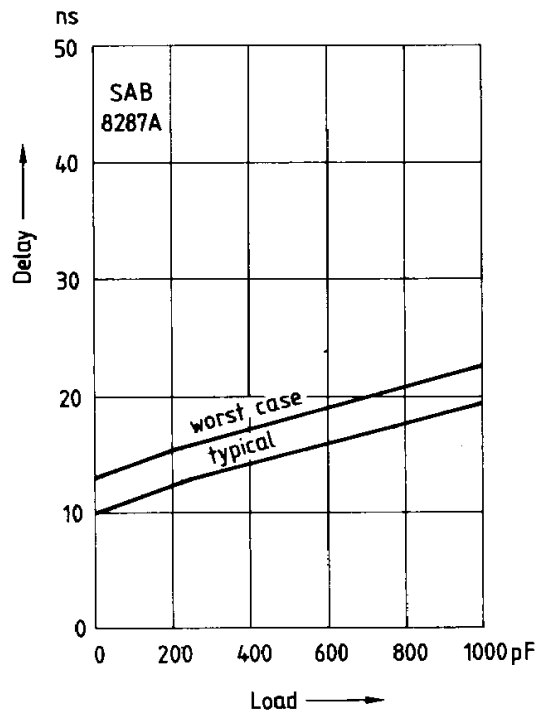
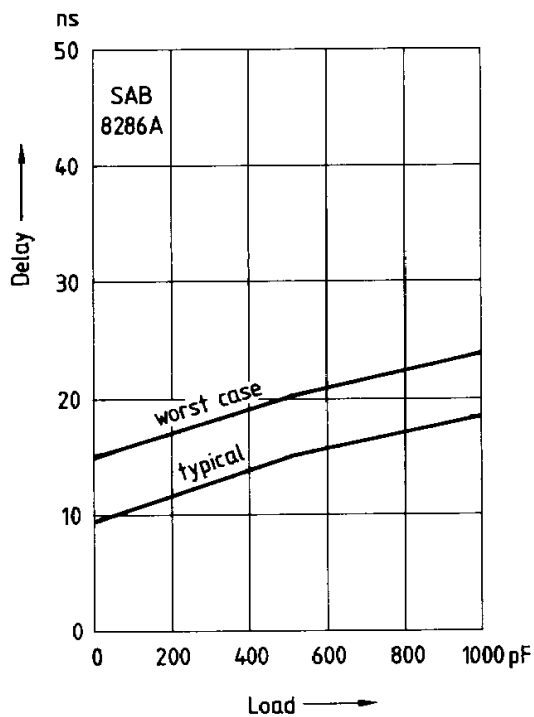
1) See waveforms and test load circuit.

Waveforms

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

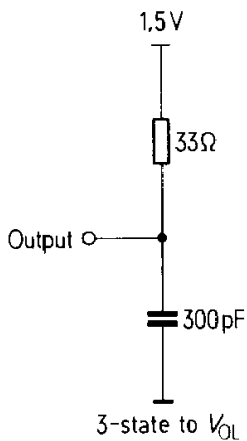


Output Delay vs. Capacitance

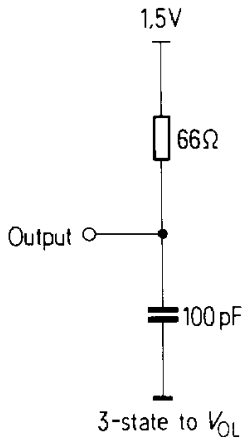


Output Test Load Circuit

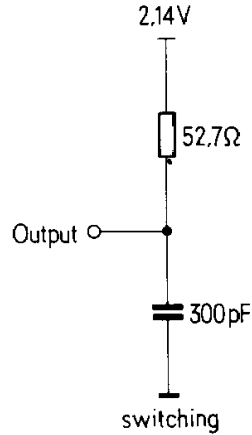
B Output

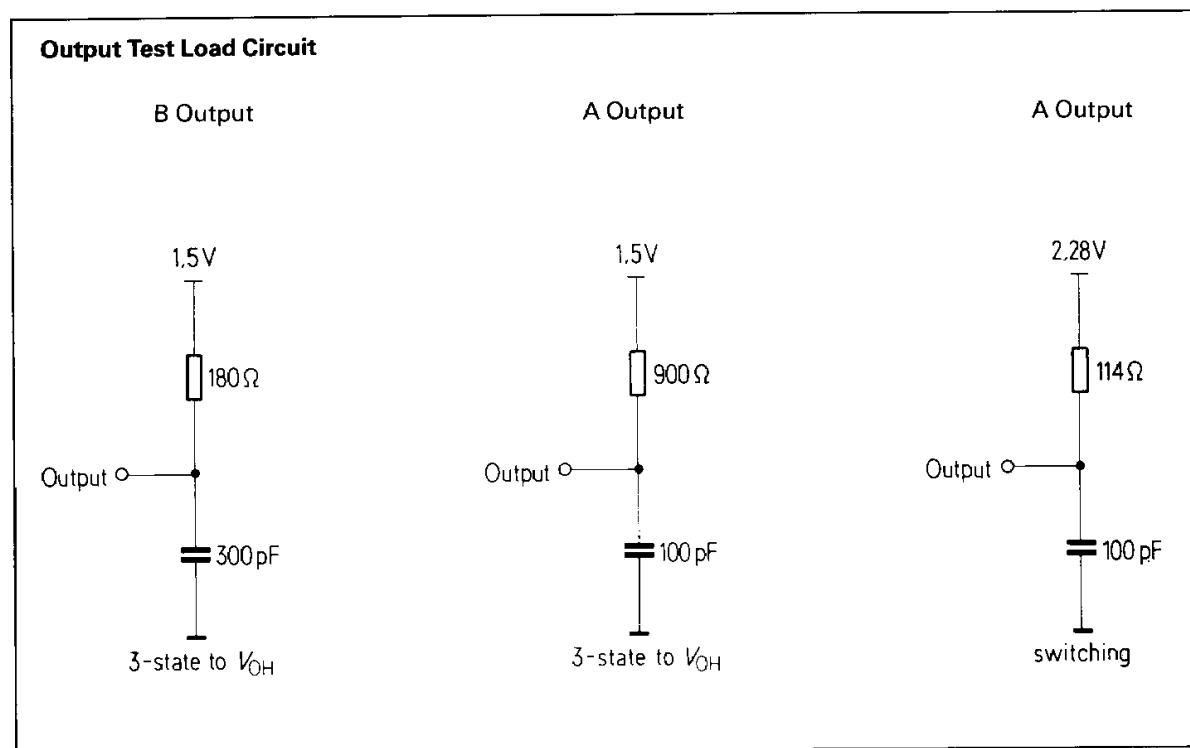


A Output



B Output





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