

Technical Data

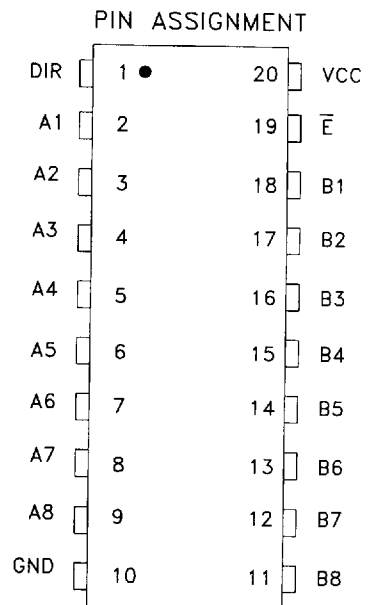
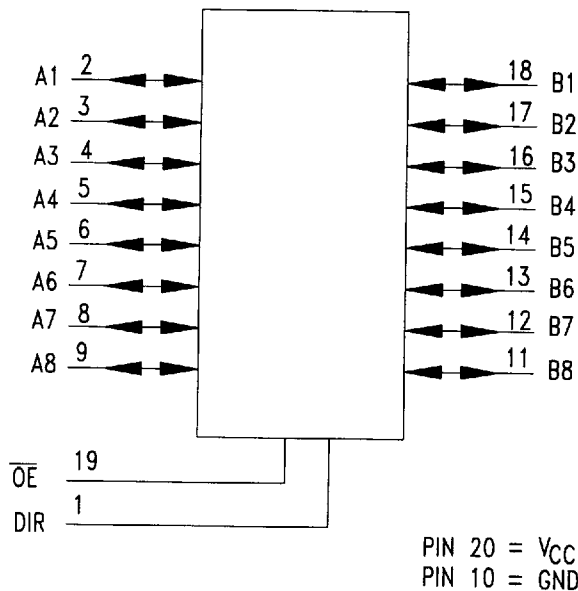
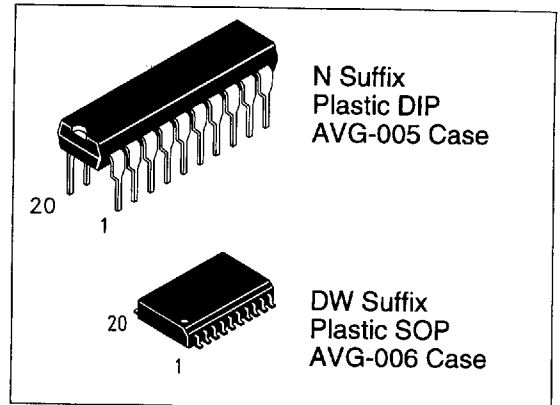
DV74AC245 Available Q2, 1995

Octal Bidirectional Transceiver with 3-State Inputs/Outputs

This device contains eight non-inverting bidirectional buffers with 3-state outputs and is intended for bus-oriented applications. Current sinking capability is 24 mA at both the A and B ports. The DIR input determines the direction of data flow through the bidirectional transceiver. HIGH enables data from A ports to B ports; LOW enables data from B ports to A ports. The Output Enable input, when HIGH, disables both A and B ports by placing them in a High Z condition.

- Advanced very high speed CMOS
- Outputs source/sink 24 mA
- Transmission line driving 50 ohms
- ACT has TTL compatible inputs
- Operation from 2 to 6 volts guaranteed
- DC & AC Parameters guaranteed over -40 to +85°C

DV74AC245 DV74ACT245



TRUTH TABLE

Inputs		Outputs
$\bar{O}E$	DIR	
L	L	Bus B Data to Bus A
L	H	Bus A Data to Bus B
H	X	High Z State

H=High Level Logic
L=Low Level Logic
X=Don't Care

ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	AC245, ACT245	Unit
V _{CC}	DC Supply Voltage (Referenced to GND)	- 0.5 to +7.0	V
V _{IN}	DC Input Voltage (Referenced to GND)	- 0.5 to V _{CC} +0.5	V
V _{OUT}	DC Output Voltage (Referenced to GND)	- 0.5 to V _{CC} +0.5	V
I _{IN}	DC Input Current, per Pin	± 20	mA
I _{OUT}	DC Output Sink/Source Current, per Pin	± 50	mA
I _{CC}	DC V _{CC} or GND Current per Output Pin	± 50	mA
T _{STG}	Storage Temperature	- 65 to +150	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit	
V _{CC}	Supply Voltage	'AC	2.0	5.0	6.0	V
		'ACT	4.5	5.0	5.5	
V _{IN} , V _{OUT}	DC Input Voltage, Output Voltage, (Ref. to GND)	0		V _{CC}	V	
t _r , t _f	Input Rise and Fall Time (Note 1) AC Devices	V _{CC} @ 3.0 V			150	ns/V
		V _{CC} @ 4.5 V			40	ns/V
		V _{CC} @ 5.5 V			25	ns/V
t _r , t _f	Input Rise and Fall Time (Note 2) ACT Devices	V _{CC} @ 4.5 V			10	ns/V
		V _{CC} @ 5.5 V			8.0	ns/V
T _A	Operating Ambient Temperature Range	-40		85	°C	
C _{IN}	Input Capacitance V _{CC} = 5.0 V	V _{CC} = 5.0 V	4.5		pF	
C _{PD}	Power Dissipation Capacitance	V _{CC} = 5.0 V	45		pF	

- 1. V_{IN} from 30% to 70% V_{CC}
- 2. V_{IN} from 0.8 to 2.0 V

AC — 245

DC ELECTRICAL CHARACTERISTICS

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Symbol	Parameter	Conditions	V _{CC} (V)	AC245			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
V _{IH}	Minimum High Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	3.0	1.5	2.1	2.1	V
			4.5	2.25	3.15	3.15	
			5.5	2.75	3.85	3.85	
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	3.0	1.5	0.9	0.9	V
			4.5	2.25	1.35	1.35	
			5.5	2.75	1.65	1.65	
V _{OH}	Minimum High Level Output Voltage	I _{OUT} = -50 µA	3.0	2.99	2.9	2.9	V
			4.5	4.49	4.4	4.4	
		V _{IN} = V _{IL} or V _{IH}					
		I _{OH} -12mA	3.0		2.56	2.46	V
		-24mA	4.5		3.86	3.76	
		-24 mA	5.5		4.86	4.76	

DC ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Conditions	V _{CC} (V)	AC245			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
V _{OL}	Maximum Low Level Output Voltage	I _{OUT} = 50 μA	3.0	0.002	0.1	0.1	V
			4.5	0.001	0.1	0.1	
			5.5	0.001	0.1	0.1	
		V _{IN} = V _{IL} or V _{IH} 12mA I _{OL} 24mA 24 mA	3.0		0.36	0.44	V
			4.5		0.36	0.44	
			5.5		0.36	0.44	
I _{IN}	Maximum Input Leakage Current	V _I =V _{CC} , GND	5.5		±0.1	±1.0	μA
I _{OZT}	Maximum 3-State Current	V _I (OE)=V _{IL} , V _{IH} V _J =V _{CC} , GND V _O V _{CC} , GND	5.5		±0.6	±6.0	μA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND	5.5		8.0	80	μA

AC CHARACTERISTICS

Symbol	Parameter	V _{CC} ±10% (V)	AC245					Unit
			TA = +25°C C _L = 50 pF			TA = -40°C to +85°C C _L = 50 pF		
			Min	Typ	Max	Min	Max	
t _{PLH}	Propagation Delay A _n to B _n or B _n to A _n	3.3	1.5	5.0	8.5	1.0	9.0	ns
		5.0	1.5	3.5	6.5	1.0	7.0	
t _{PHL}	Propagation Delay A _n to B _n or B _n to A _n	3.3	1.5	5.0	8.5	1.0	9.0	ns
		5.0	1.5	3.5	6.0	1.0	7.0	
t _{PZH}	Output Enable Time	3.3	2.5	7.0	11.5	2.0	12.5	ns
		5.0	1.5	5.0	8.5	1.0	9.0	
t _{PZL}	Output Enable Time	3.3	2.5	7.5	12.0	2.0	13.5	ns
		5.0	1.5	5.5	9.0	1.0	9.5	
t _{PHZ}	Output Disable Time	3.3	2.0	6.5	12.0	1.0	12.5	ns
		5.0	1.5	5.5	9.0	1.0	10.0	
t _{PLZ}	Output Disable Time	3.3	2.0	7.0	11.5	1.5	13.0	ns
		5.0	1.5	5.5	9.0	1.0	10.0	

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DC ELECTRICAL CHARACTERISTICS

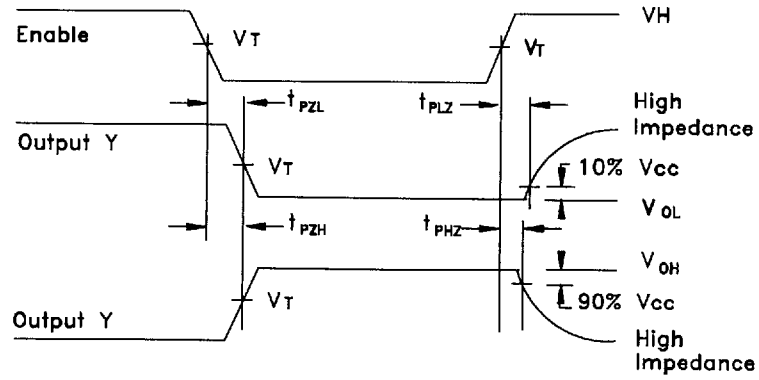
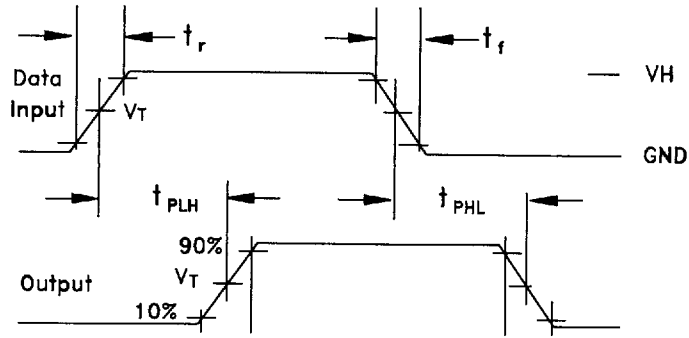
Symbol	Parameter	Conditions	V _{CC} (V)	ACT245			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
V _{IH}	Minimum High Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	4.5	1.5	2.0	2.0	V
			5.5	1.5	2.0	2.0	
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	4.5	1.5	0.8	0.8	V
			5.5	1.5	0.8	0.8	
V _{OH}	Minimum High Level Output Voltage	I _{OUT} = -50 μA	4.5	4.49	4.4	4.4	V
			5.5	5.49	5.4	5.4	
		V _{IN} = V _{IL} or V _{IH} I _{OH} = -24mA -24 mA	4.5		3.86	3.76	V
			5.5		4.86	4.76	
V _{OL}	Maximum Low Level Output Voltage	I _{OUT} = 50 μA	4.5	0.001	0.1	0.1	V
			5.5	0.001	0.1	0.1	
		V _{IN} = V _{IL} or V _{IH} I _{OL} = 24mA 24 mA	4.5		0.36	0.44	V
			5.5		0.36	0.44	
I _{IN}	Maximum Input Leakage Current	V _I = V _{CC} , GND	5.5		±0.1	±1.0	μA
ΔI _{CC} T	Additional Max I _{CC} /Input	V _I = V _{CC} - 2.1 V	5.5	0.6		1.5	mA
I _{OZ} T	Maximum 3-State Current	V _I = (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND	5.5		±0.6	±6.0	μA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND	5.5		8.0	80	μA

AC CHARACTERISTICS

Symbol	Parameter	V _{CC} ±10% (V)	ACT245					Unit
			TA = +25°C C _L = 50 pF			TA = -40°C to +85°C C _L = 50 pF		
			Min	Typ	Max	Min	Max	
t _{PLH}	Propagation Delay A _n to B _n or B _n to A _n	5.0	1.5	4.0	7.5	1.5	8.0	ns
t _{PHL}	Propagation Delay A _n to B _n or B _n to A _n	5.0	1.5	4.0	8.0	1.0	9.0	ns
t _{PZH}	Output Enable Time	5.0	1.5	5.0	10	1.5	11.0	ns
t _{PZL}	Output Enable Time	5.0	1.5	5.5	10	1.5	12.0	ns
t _{PHZ}	Output Disable Time	5.0	1.5	5.5	10	1.0	11.0	ns
t _{PLZ}	Output Disable Time	5.0	2.0	5.0	10	1.5	11.0	ns

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SWITCHING WAVEFORMS



Input and output threshold voltage:
 $V_T = 50\% V_{CC}$ for AC; 1.5V for ACT
 $V_H = V_{CC}$ for AC, 3V for ACT