

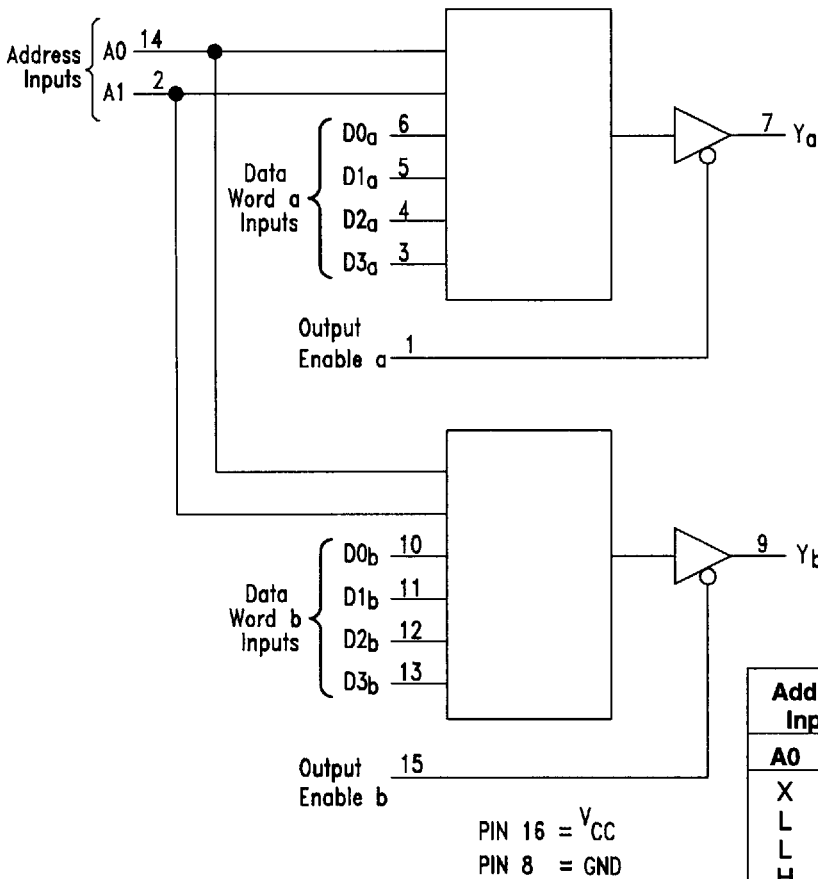
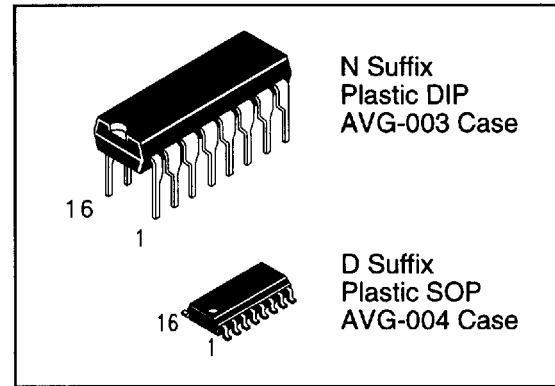
Available Q2, 1995

Dual 4-Input Multiplexer with 3-State Outputs

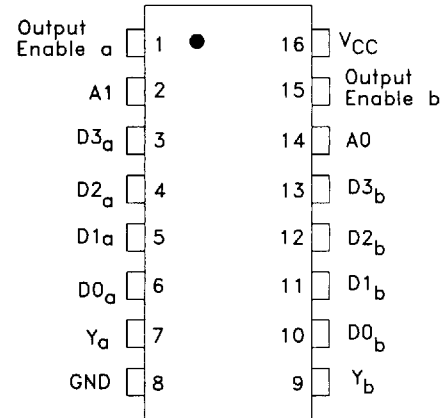
This device is a high speed, dual four input multiplexer with common select inputs. It can select two lines of data from four sources. The outputs may be individually switched to a high impedance state with a HIGH on the respective Output Enable inputs, allowing the outputs to directly interface with bus oriented systems.

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

DV74AC253
DV74ACT253



PIN ASSIGNMENT



TRUTH TABLE

Address Inputs		Data Inputs				Output Enable	Output
A0	A1	D0	D1	D2	D3		Y
X	X	X	X	X	X	H	Z
L	L	L	X	X	X	L	L
L	L	L	X	X	X	L	H
L	L	X	L	X	X	L	L
H	L	X	H	X	X	L	H
L	H	X	X	L	X	L	L
L	H	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

H=HIGH Voltage Level L=LOW Voltage Level
X=Either Low or High Logic Level Z=High Impedance

253

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	AC253, ACT253	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 except Schmitt Inputs	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 except Schmitt Inputs	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	
CPD	Power Dissipation Capacitance	V _{CC} = 5.0 V		50	pF	

1. V_{IN} from 30% to 70% V_{CC}

2. V_{IN} from 0.8 to 2.0 V

AC — 253

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	AC253			Unit		
				T _A = +25°C		T _A = -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			
			5.5	5.49	5.4	5.4			
		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	

253

Symbol	Parameter	Conditions	V _{CC} (V)	AC253			Unit
				T _A = +25°C		T _A = -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 _{OZ}	Maximum 3-State Current	V _{IN} =(OE)=V _{IL} , V _{IH} V _{IN} =V _{CC} , GND V _{OUT} =V _{CC} , GND	5.5		±0.5	±5.0	mA
I _{IN}	Maximum Input Leakage Current	V _{IN} =V _{CC} , GND	5.5		±0.1	±1.0	μA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND	5.5		8.0	80	μA

AC CHARACTERISTICS

Symbol	Parameter (C _L = 50 pF)	V _{CC} (V) ±10%	AC253				Unit
			T _A = +25°C		T _A = -40°C to +85°C		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay A _n to Y _n	3.3	2.0	15.5	2.0	17.5	ns
t _{PHL}		5.0	2.0	11	1.5	12.5	
		3.3	2.5	16	2.0	18.0	
		5.0	2.0	11.5	1.5	13.0	
t _{PLH}	Propagation Delay I _n to Y _n	3.3	1.5	14.5	1.5	17.0	ns
t _{PHL}		5.0	1.0	10	1.5	11.5	
		3.3	2.0	13	1.5	15.0	ns
		5.0	1.5	9.5	1.5	11.0	
t _{PZH}	Output Enable Time	3.3	1.5	8.0	1.0	8.5	ns
t _{PZL}		5.0	1.5	6.0	1.0	6.5	
		3.3	1.5	8.0	1.0	9.0	ns
		5.0	1.5	6.0	1.0	7.0	
t _{PHZ}	Output Disable Time	3.3	2.0	9.5	1.5	10.0	ns
t _{PLZ}		5.0	2.0	8.0	1.5	8.5	
		3.3	1.5	8.0	1.0	9.0	ns
		5.0	1.5	7.0	1.0	7.5	

ACT — 253

DC ELECTRICAL CHARACTERISTICS

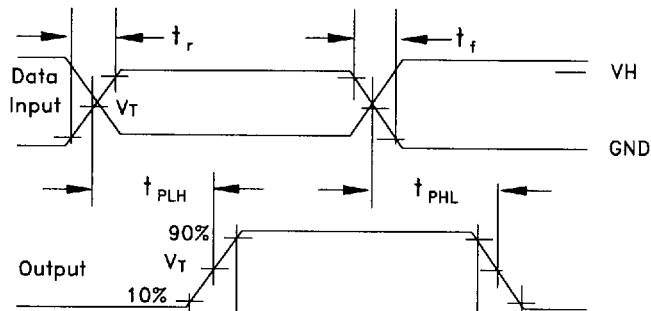
Symbol	Parameter	Conditions	V _{CC} (V)	ACT253			Unit
				T _A = +25°C		T _A = -40 to +85°C	
				Typ	Guaranteed Limits		
V _{IH}	Minimum High Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	4.5	1.5	2.0	2.0	V
			5.5	1.5	2.0	2.0	
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 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	

Symbol	Parameter	Conditions	V _{CC} (V)	ACT253			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
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	
I _{OZ}	Maximum 3-State Current	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 _{OZ}	Maximum 3-State Current	V _{IN} = (OE) = V _{IL} , V _{IH} V _{IN} = V _{CC} , GND V _{OUT} = V _{CC} , GND	5.5		±0.5	±5.0	mA
I _{IN}	Maximum Input Leakage Current	V _{IN} = V _{CC} , GND	5.5		±0.1	±1.0	μA
ΔI _{CC}	Additional Max I _{CC} /Input	V _{IN} = V _{CC} - 2.1 V	5.5	0.6		1.5	mA
I _{CC}	Maximum Quiescent Supply Current	V _{IN} = V _{CC} or GND	5.5		8.0	80	μA

AC CHARACTERISTICS

Symbol	Parameter	V _{CC} (V) ±10%	ACT253				Unit
			TA = +25°C C _L = 50 pF		TA = -40°C to +85°C C _L = 50 pF		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay A _n to Y	5.0	2.0	11.5	2.0	13	ns
t _{PHL}			3.0	13	2.5	14.5	
t _{PLH}	Propagation Delay D _n to Y	5.0	2.5	10	2.0	11	ns
t _{PHL}			3.5	11	3.0	12.5	
t _{PZH}	Output Enable Time	5.0	2.0	7.5	1.5	8.5	ns
t _{PZL}			2.0	8.0	1.5	9.0	
t _{PHZ}	Output Disable Time	5.0	3.0	9.5	2.5	10	ns
t _{PLZ}			2.5	7.5	2.0	8.5	

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

