

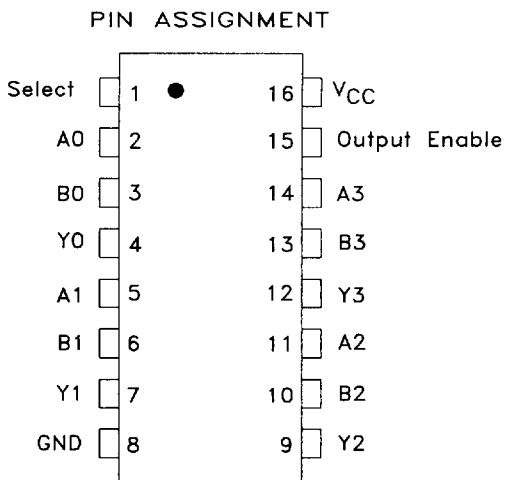
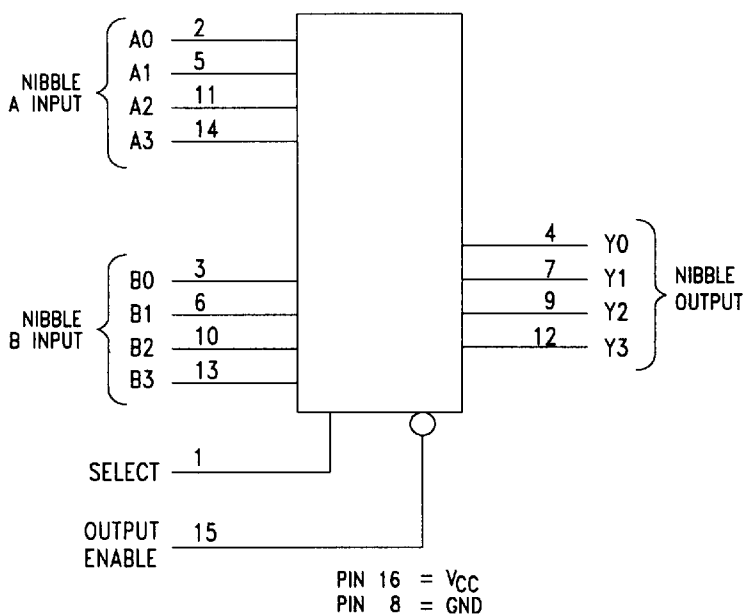
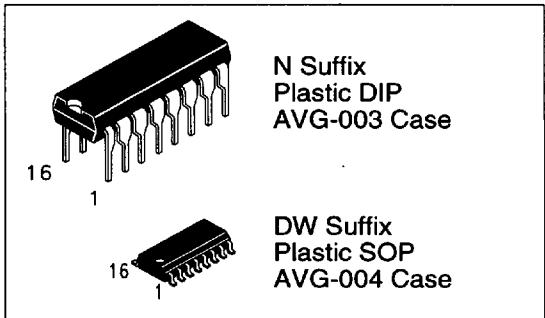
Available Q3, 1995

Quad 2-Input Multiplexor with 3-State Outputs

In these device, four bits of data from 2 sources can be selected using a Common Data Selection Input. The 4 outputs present the selected data in true(non-inverted) form in the 'AC/ACT 257 and in complimentary form (inverted) in the 'AC/ACT 258. The outputs may be switched to a high impedance state with a HIGH on the common Output Enable Input, allowing the outputs to interface directly with bus oriented systems.

- 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

DV74AC257
DV74ACT257
DV74AC258
DV74ACT258



FUNCTION TABLE

Output Enable	Select Input	Inputs		Outputs	
		Data Input A _n	Data Input B _n	'257 Y _n	'258 Y _n
H	X	X	X	Z	Z
L	H	X	L	L	H
L	H	X	H	H	L
L	L	L	X	L	H
L	L	H	X	H	L

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

257, 258

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	AC257, ACT257	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

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	
C _{PD}	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 — 257, 258

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	AC257, 258			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		
			5.5	5.49	5.4	5.4		
		V _{IN} = V _{IL} or V _{IH}	-12mA	3.0		2.56	2.46	V
			I _{OH} -24mA	4.5		3.86	3.76	
		-24 mA	5.5		4.86	4.76		

257, 258

Symbol	Parameter	Conditions	V _{CC} (V)	AC257, 258			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
VOL	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	
		V _{IN} = V _{IL} or V _{IH}	3.0		0.36	0.44	V
		I _{OL} 12mA	4.5		0.36	0.44	
		I _{OL} 24 mA	5.5		0.36	0.44	
I _{IN}	Maximum Input Leakage Current	V _{IN} = V _{CC} , GND	5.5		±0.1	±1.0	μA
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	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} (V) ±10%	AC257				AC258				Unit
			TA = +25°C CL = 50 pF		TA = -40°C to +85°C CL = 50 pF		TA = +25°C CL = 50 pF		TA = -40°C to +85°C CL = 50 pF		
			Min	Max	Min	Max	Min	Max	Min	Max	
t _{PLH}	Propagation Delay Input to Output	3.3	1.5	8.5	1.0	9.0	2.0	9.5	1.5	11.0	ns
		5.0	1.5	6.5	1.0	7.0	1.5	7.5	1.0	8.5	
t _{PHL}	Propagation Delay Input to Output	3.3	1.5	8.5	1.0	9.0	2.0	8.5	1.5	9.5	ns
		5.0	1.5	6.0	1.0	7.0	1.5	6.5	1.0	7.0	
t _{PLH}	Propagation Delay Select to Output	3.3	1.5	10.5	1.5	11.5	3.0	12.0	2.5	14.0	ns
		5.0	1.5	7.5	1.0	8.5	2.0	9.5	1.5	10.5	
t _{PHL}	Propagation Delay Select to Output	3.0	1.5	10.5	1.5	11.5	2.5	11.5	2.0	13.0	ns
		5.0	1.5	7.5	1.0	8.5	1.5	9.0	1.5	10.0	
t _{PZH}	Output Enable Time	3.3	1.5	9.5	1.0	10.5	2.5	9.5	2.0	10.5	ns
		5.0	1.5	7.5	1.0	8.5	1.5	7.5	1.5	8.5	
t _{PZL}	Output Enable Time	3.3	1.5	9.0	1.0	10.5	2.0	9.0	1.5	10.0	ns
		5.0	1.5	8.5	1.0	9.5	1.5	7.0	1.0	8.0	
t _{PHZ}	Output Disable Time	3.3	1.5	10.0	1.0	11.0	2.5	10.0	2.0	11.0	ns
		5.0	1.5	9.0	1.0	10.0	2.0	8.5	1.5	9.0	
t _{PLZ}	Output Disable Time	3.3	2.0	9.0	1.0	10.0	2.0	9.0	2.0	10.0	ns
		5.0	1.5	7.0	1.0	9.0	1.5	7.0	1.5	8.0	

257, 258

ACT — 257, 258

DC ELECTRICAL CHARACTERISTICS

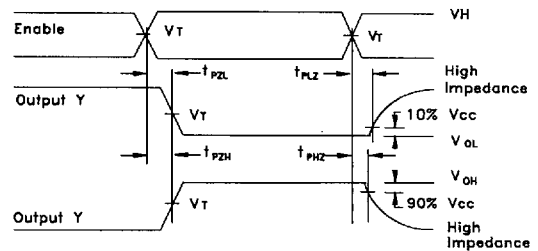
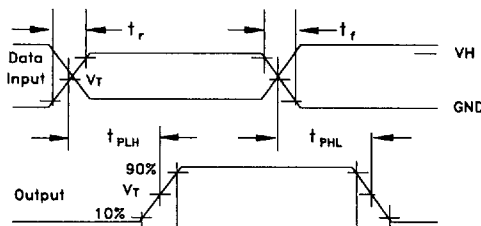
Symbol	Parameter	Conditions	V _{CC} (V)	ACT257, 258			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
V _{IH}	Minimum High Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	4.5	1.5	2.0	2.0	V
			5.5	1.5	2.0	2.0	
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1V or V _{CC} - 0.1 V	4.5	1.5	0.8	0.8	V
			5.5	1.5	0.8	0.8	

Symbol	Parameter	Conditions	V _{CC} (V)	ACT257, 258			Unit
				TA = +25°C		TA = -40 to +85°C	
				Typ	Guaranteed Limits		
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 _{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 _{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	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} (V) ±10%	ACT257				ACT258				Unit
			TA = +25°C C _L = 50 pF		TA = -40°C to +85°C C _L = 50 pF		TA = +25°C C _L = 50 pF		TA = -40°C to +85°C C _L = 50 pF		
			Min	Max	Min	Max	Min	Max	Min	Max	
t _{PLH}	Propagation Delay Input to Output	5.0	1.5	7.5	1.5	8.0	2.0	8.5	1.5	9.5	ns
t _{PHL}	Propagation Delay Input to Output	5.0	2.0	7.5	1.5	8.5	2.0	7.5	1.5	8.0	ns
t _{PLH}	Propagation Delay Select to Output	5.0	2.0	9.5	1.5	10.5	3.0	10.5	2.0	11.5	ns
t _{PHL}	Propagation Delay Select to Output	5.0	2.5	10.5	2.0	11.5	1.5	9.5	1.5	11.0	ns
t _{PZH}	Output Enable Time	5.0	2.0	8.0	1.5	9.0	2.0	8.5	1.5	9.5	ns
t _{PZL}	Output Enable Time	5.0	2.0	8.0	1.5	9.0	2.0	8.5	1.5	9.5	ns
t _{PHZ}	Output Disable Time	5.0	2.5	9.0	1.5	10.0	1.5	9.0	1.0	10.0	ns
t _{PLZ}	Output Disable Time	5.0	2.0	7.5	1.5	8.5	2.0	8.0	1.5	9.0	ns

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