

Technical Data

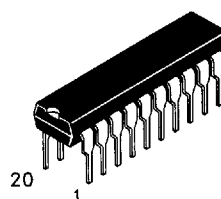
DV74AC240 and DV74AC241 Available Q2 1995

Octal Buffer/Line Driver with 3-state Outputs

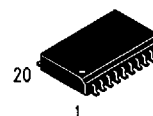
These devices are octal buffer and line drivers designed to be used as a memory address driver, clock driver and bus oriented transmitter or receiver which provides improved PC board density.

- 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

DV74AC240, 241, 244 DV74ACT240, 241, 244

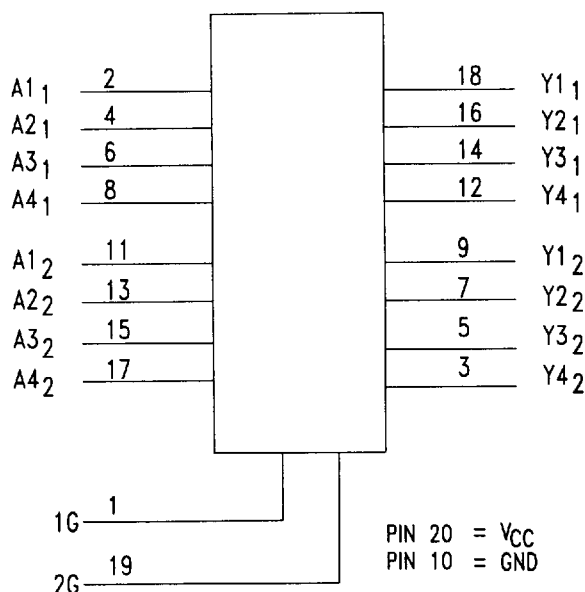


N Suffix
Plastic DIP
AVG-005 Case

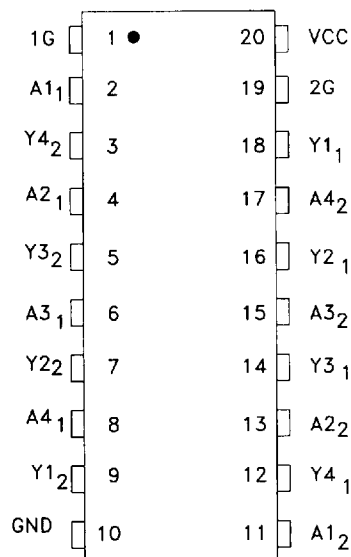


D Suffix
Plastic SOP
AVG-006 Case

LOGIC DIAGRAM



PIN ASSIGNMENT



Note: Please refer to appropriate truth table for signal phases.

AC240, ACT240

Inputs		Output
G _n	A _n	Y _n
L	L	H
L	H	L
H	X	Z

AC241-ACT241

Inputs		Output	Inputs		Output
1G	A _n	Y _n	2G	A _n	Y _n
L	L	L	H	L	L
L	H	H	H	H	H
H	X	Z	L	X	Z

AC244, ACT244

Inputs		Output
G _n	A _n	Y _n
L	L	L
L	H	H
H	X	Z

H=HIGH Voltage Level
L=LOW Voltage Level
Z=High Impedance

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	AC240, 241, 244 ACT240, 241, 244	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	V
		'ACT	4.5	5.0	
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 _{PD}	Power Dissipation Capacitance	V _{CC} = 5.0 V	45		pF
C _{IN}	Input Capacitance V _{CC} = 5.0 V	V _{CC} = 5.0 V	4.5		pF

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

2. V_{IN} from 0.8 to 2.0 V

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	AC240,241,244			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}					V
		-12mA	3.0		2.56	2.46	
		I _{OH} -24mA	4.5		3.86	3.76	
		-24 mA	5.5		4.86	4.76	

240,241,244

Symbol	Parameter	Conditions	V _{CC} (V)	AC240,241,244			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}			0.36	0.44	V
		12mA					
		I _{OH} 24mA					
	24 mA	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 _{OZ}	Maximum 3-state current	V _I , OE = V _{CC} , GND V _O =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 (C _L = 50 pF)	V _{CC} ±10% (V)	AC240				Unit
			T _A = +25°C		T _A = − 40°C to +85°C		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay Data to Output	3.3	1.5	8.0	1.0	9.0	ns
t _{PHL}		5.0	1.5	6.5	1.0	7.0	
t _{PHL}		3.3	1.5	8.0	1.0	8.5	
		5.0	1.5	6.0	1.0	6.5	
t _{PZH}	Output Enable Time	3.3	1.5	10.5	1.0	11.0	ns
		5.0	1.5	7.0	1.0	8.0	
t _{PZL}		3.3	1.5	10	1.0	11.0	ns
		5.0	1.5	8.0	1.0	8.5	
t _{PHZ}	Output Disable Time	3.3	1.5	10.0	1.0	10.5	ns
		5.0	1.5	9.0	1.0	9.5	
t _{PLZ}		3.3	1.5	10.5	1.0	11.5	ns
		5.0	1.5	9.0	1.0	9.5	

Symbol	Parameter (C _L = 50 pF)	V _{CC} ±10% (V)	AC241				Unit
			T _A = +25°C		T _A = − 40°C to +85°C		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay Data to Output	3.3 5.0	1.5 1.5	9.0 7.0	1.5 1.0	10.0 7.5	ns
t _{PHL}		3.3 5.0	1.5 1.5	9.0 7.0	1.0 1.0	10.5 7.5	
t _{PZH}	Output Enable Time	3.3 5.0	1.5 1.5	12.5 9.0	1.0 1.0	13.0 9.5	ns
t _{PZL}		3.3 5.0	1.5 1.5	12.0 9.0	1.5 1.0	13.0 9.5	ns
t _{PHZ}	Output Disable Time	3.3 5.0	1.5 1.5	12.0 10.0	2.0 1.0	12.5 10.5	ns
t _{PLZ}		3.3 5.0	1.5 1.5	12.5 10.0	1.0 1.0	13.5 10.5	ns

Symbol	Parameter (C _L = 50 pF)	V _{CC} (V)	AC244				Unit
			T _A = +25°C		T _A = - 40°C to +85°C		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay Data to Output	3.3	2.0	9.0	1.5	10.0	ns
t _{PHL}		5.0	1.5	7.0	1.0	7.5	
t _{PZH}	Output Enable Time	3.3	2.0	9.0	2.0	10.0	ns
t _{PZL}		5.0	1.5	7.0	1.0	7.5	
t _{PHZ}	Output Diable Time	3.3	2.5	10.0	2.0	11.0	ns
t _{PLZ}		5.0	1.5	8.0	1.5	8.5	
		3.3	3.0	10.0	1.5	10.5	ns
		5.0	2.5	9.0	1.0	9.5	
		3.3	2.5	10.5	2.5	11.5	ns
		5.0	2.0	9.0	2.0	9.5	

ACT — 240,241,244

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	ACT240,241,244			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 5.5	1.5 1.5	2.0 2.0	2.0 2.0	V
V _{IL}	Maximum Low Level Input Voltage	V _{OUT} = 0.1V or V _{CC} − 0.1 V	4.5 5.5	1.5 1.5	0.8 0.8	0.8 0.8	V
V _{OH}	Minimum High Level Output Voltage	I _{OUT} = −50 μA	4.5 5.5	4.49 5.49	4.4 5.4	4.4 5.4	V
		V _{IN} = V _{IL} or V _{IH} I _{OH} −24mA −24 mA	4.5 5.5		3.86 4.86	3.76 4.76	V
V _{OL}	Maximum Low Level Output Voltage	I _{OUT} = 50 μA	4.5 5.5	0.001 0.001	0.1 0.1	0.1 0.1	V
		V _{IN} = V _{IL} or V _{IH} I _{OL} 24mA 24 mA	4.5 5.5		0.36 0.36	0.44 0.44	V
I _{IN}	Maximum Input Leakage Current	V _I = 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
ΔI _{CCT}	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

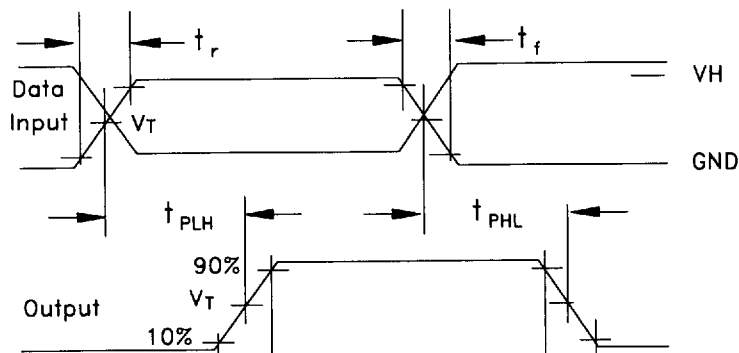
Symbol	Parameter (C _L = 50 pF)	V _{CC} ±10% (V)	ACT240				Unit
			T _A = +25°C		T _A = - 40°C to +85°C		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay, Data to Output	5.0	1.5	8.5	1.5	9.5	ns
t _{PHL}		5.0	1.5	7.5	1.5	8.5	ns

Symbol	Parameter (C _L = 50 pF)	V _{CC} ±10% (V)	ACT240				Unit
			T _A = +25°C		T _A = − 40°C to +85°C		
			Min	Max	Min	Max	
t _{PZH}	Output Enable Time	5.0	1.5	8.5	1.0	9.5	ns
t _{PZL}		5.0	2.0	9.5	1.5	10.5	ns
t _{PHZ}	Output Disable Time	5.0	2.0	9.5	2.0	10.5	ns
t _{PLZ}		5.0	2.5	10.0	2.0	10.5	ns

Symbol	Parameter	$V_{CC} \pm 10\% \text{ (V)}$	ACT241				Unit
			Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Data to Output	5.0	1.5	9.0	1.5	10.0	ns
t_{PHL}		5.0	1.5	9.0	1.5	10.0	ns
t_{PZH}	Output Enable Time	5.0	1.5	9.0	1.0	10.0	ns
t_{PZL}		5.0	1.5	10.0	1.5	11.0	ns
t_{PHZ}	Output Disable Time	5.0	1.5	10.5	1.5	11.5	ns
t_{PLZ}		5.0	2.0	10.5	1.5	11.5	ns

Symbol	Parameter	$V_{CC} \pm 10\% \text{ (V)}$	ACT244				Unit
			Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Data to Output	5.0	2.0	9.0	1.5	10.0	ns
t_{PHL}		5.0	2.0	9.0	1.5	10.0	ns
t_{PZH}	Output Enable Time	5.0	1.5	8.5	1.0	9.5	ns
t_{PZL}		5.0	2.0	9.5	1.5	10.5	ns
t_{PHZ}	Output Disable Time	5.0	2.0	9.5	1.5	10.5	ns
t_{PLZ}		5.0	2.5	10.0	2.0	10.5	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

