

AC540 • ACT540 • AC541 • ACT541

NATIONAL SEMICONDUCTOR LOGIC D 6501122 0062580 0

54AC/74AC540 • 54ACT/74ACT540

54AC/74AC541 • 54ACT/74ACT541

T-52-09

Octal Buffer/Line Driver With 3-State Outputs

Description

The 'AC/'ACT540 and 'AC/'ACT541 are octal buffer/line drivers designed to be employed as memory and address drivers, clock drivers and bus oriented transmitter/receivers. The 'AC/'ACT541 is a noninverting option of the 'AC/'ACT540.

These devices are similar in function to the 'AC/'ACT240 and 'AC/'ACT244 while providing flow-through architecture (Inputs on opposite side from outputs). This pinout arrangement makes these devices especially useful as output ports for microprocessors, allowing ease of layout and greater PC board density.

- 3-State Outputs
- Inputs and Outputs Opposite Side of Package, Allowing Easier Interface to Microprocessors
- Output Source/Sink 24 mA
- 'AC/'ACT540 Provides Inverted Outputs
- 'AC/'ACT541 Provides Noninverted Outputs
- 'ACT540 and 'ACT541 have TTL-Compatible Inputs

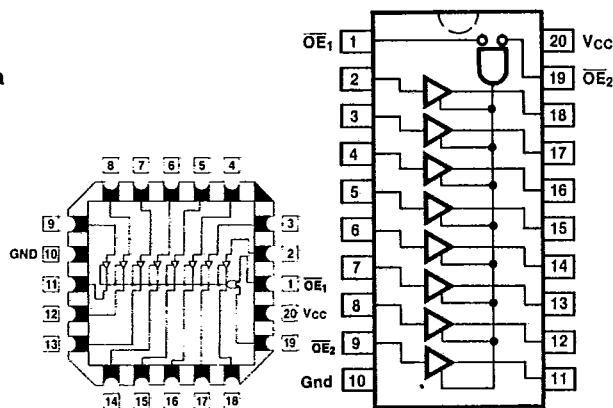
Ordering Code: See Section 6

Truth Table

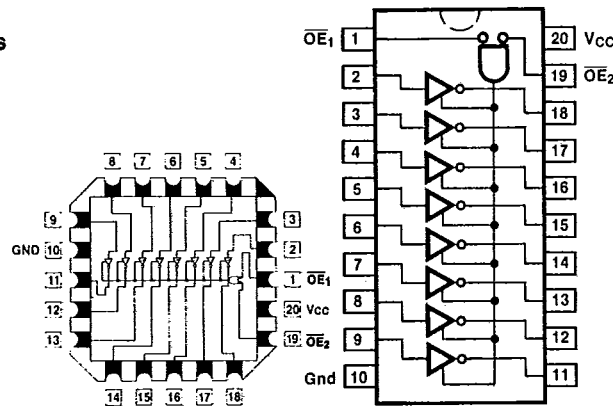
Inputs			Outputs	
$\overline{OE}_1$	$\overline{OE}_2$	D	'540	'541
L	L	H	L	L
H	X	X	Z	Z
X	H	X	Z	Z
L	L	L	H	L

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

Connection Diagrams



'AC/'ACT540



'AC/'ACT541

Pin Assignment
for LCC

Pin Assignment
for DIP, Flatpak and SOIC

AC540 • ACT540 • AC541 • ACT541

NATIONAL SEMICONDUCTOR LOGIC DATA SHEET 6501122 0062581 2

DC Characteristics (unless otherwise specified)

Symbol	Parameter	54AC/ACT	74AC/ACT	Units	Conditions
I _{CC}	Maximum Quiescent Supply Current	160	80	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5 V, T _A = Worst Case
I _{CC}	Maximum Quiescent Supply Current	8.0	8.0	μA	V _{IN} = V _{CC} or Ground, V _{CC} = 5.5 V, T _A = 25°C
I _{CC(T)}	Maximum Additional I _{CC} /Input ('ACT540/541)	1.6	1.5	mA	V _{IN} = V _{CC} - 2.1 V V _{CC} = 5.5 V, T _A = Worst Case

AC Characteristics

Symbol	Parameter	V _{CC} * (V)	74AC			54AC		74AC		Units	Fig. No.
			T _A = + 25°C C _L = 50 pF			T _A = − 55°C to + 125°C C _L = 50 pF		T _A = − 40°C to + 85°C C _L = 50 pF			
			Min	Typ	Max	Min	Max	Min	Max		
t _{PLH}	Propagation Delay Data to Output ('AC540)	3.3 5.0	1.0 1.0	5.5 4.0	7.5 6.0	1.0 1.0	9.0 7.0	1.0 1.0	8.0 6.5	ns	3-5
t _{PHL}	Propagation Delay Data to Output ('AC540)	3.3 5.0	1.0 1.0	5.0 4.0	7.0 5.5	1.0 1.0	8.0 6.5	1.0 1.0	7.5 6.0	ns	3-5
t _{PZH}	Output Enable Time ('AC540)	3.3 5.0	1.0 1.0	8.5 6.5	11.0 8.5	1.0 1.0	13.0 10.0	1.0 1.0	12.0 9.5	ns	3-7
t _{PZL}	Output Enable Time ('AC540)	3.3 5.0	1.0 1.0	7.5 6.0	10.0 7.5	1.0 1.0	12.0 9.0	1.0 1.0	11.0 8.5	ns	3-8
t _{PHZ}	Output Disable Time ('AC540)	3.3 5.0	1.0 1.0	8.5 7.5	13.0 10.5	1.0 1.0	15.5 12.0	1.0 1.0	14.0 11.0	ns	3-7
t _{PLZ}	Output Disable Time ('AC540)	3.3 5.0	1.0 1.0	7.0 6.0	10.0 8.0	1.0 1.0	12.0 10.0	1.0 1.0	11.0 9.0	ns	3-8
t _{PLH}	Propagation Delay Data to Output ('AC541)	3.3 5.0	1.0 1.0	5.5 4.0	8.0 6.0	1.0 1.0	10.0 7.0	1.0 1.0	9.0 6.5	ns	3-5
t _{PHL}	Propagation Delay Data to Output ('AC541)	3.3 5.0	1.0 1.0	5.5 4.0	8.0 6.0	1.0 1.0	9.5 7.0	1.0 1.0	8.5 6.5	ns	3-5
t _{PZH}	Output Enable Time ('AC541)	3.3 5.0	1.0 1.0	8.0 6.0	11.5 8.5	1.0 1.0	13.5 10.0	1.0 1.0	12.5 9.5	ns	3-7
t _{PZL}	Output Enable Time ('AC541)	3.3 5.0	1.0 1.0	7.0 5.5	10.0 7.5	1.0 1.0	12.5 9.0	1.0 1.0	11.5 8.5	ns	3-8
t _{PHZ}	Output Disable Time ('AC541)	3.3 5.0	1.0 1.0	9.0 7.0	12.5 9.5	1.0 1.0	15.0 12.0	1.0 1.0	14.0 10.5	ns	3-7
t _{PLZ}	Output Disable Time ('AC541)	3.3 5.0	1.0 1.0	6.5 5.5	9.5 7.5	1.0 1.0	11.0 9.0	1.0 1.0	10.5 8.5	ns	3-8

*Voltage Range 3.3 is 3.3 V ± 0.3 V

Voltage Range 5.0 is 5.0 V ± 0.5 V

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

AC540 • ACT540 • AC541 • ACT541

NATIONAL SEMICONDUCTOR LOGIC DE D 6501122 0062582 4

AC Characteristics

T-52.09

Symbol	Parameter	Vcc* (V)	74ACT			54ACT		74ACT		Units	Fig. No.
			TA = + 25°C CL = 50 pF			TA = - 55°C to + 125°C CL = 50 pF		TA = - 40°C to + 85°C CL = 50 pF			
			Min	Typ	Max	Min	Max	Min	Max		
tPLH	Propagation Delay Data to Output ('ACT540)	5.0		6.0						ns	3-5
tPHL	Propagation Delay Data to Output ('ACT540)	5.0		5.5						ns	3-5
tpZH	Output Enable Time ('ACT540)	5.0		8.0						ns	3-7
tpZL	Output Enable Time ('ACT540)	5.0		6.5						ns	3-8
tPHZ	Output Disable Time ('ACT540)	5.0		10.0						ns	3-7
tPLZ	Output Disable Time ('ACT540)	5.0		7.0						ns	3-8
tPLH	Propagation Delay Data to Output ('ACT541)	5.0		6.0						ns	3-5
tPHL	Propagation Delay Data to Output ('ACT541)	5.0		6.0						ns	3-5
tpZH	Output Enable Time ('ACT541)	5.0		8.0						ns	3-7
tpZL	Output Enable Time ('ACT541)	5.0		6.5						ns	3-8
tPHZ	Output Disable Time ('ACT541)	5.0		10.0						ns	3-7
tPLZ	Output Disable Time ('ACT541)	5.0		7.0						ns	3-8

*Voltage Range 5.0 is 5.0 V ± 0.5 V

Military parameters given herein are for general references only. For current military specifications and subgroup testing information please request Fairchild's Table I data sheet from your Fairchild sales engineer or account representative.

Capacitance

Symbol	Parameter	54/74AC/ACT	Units	Conditions
		Typ		
CIN	Input Capacitance	4.5	pF	Vcc = 5.5 V
CPD	Power Dissipation Capacitance	30.0	pF	Vcc = 5.5 V