

# AC540 • ACT540 • AC541 • ACT541

NATIONAL SEMICONDUCTOR (LOGIC) D2E 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

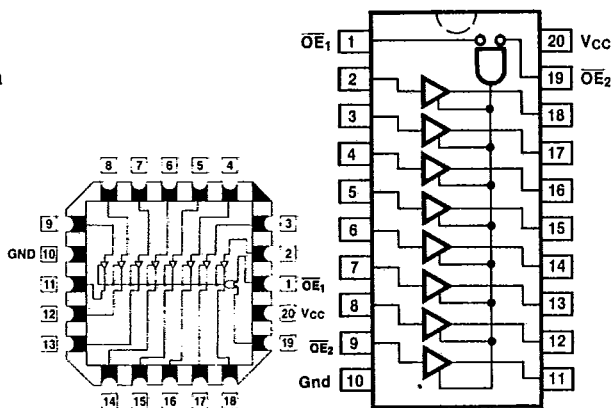
Ordering Code: See Section 6

#### Truth Table

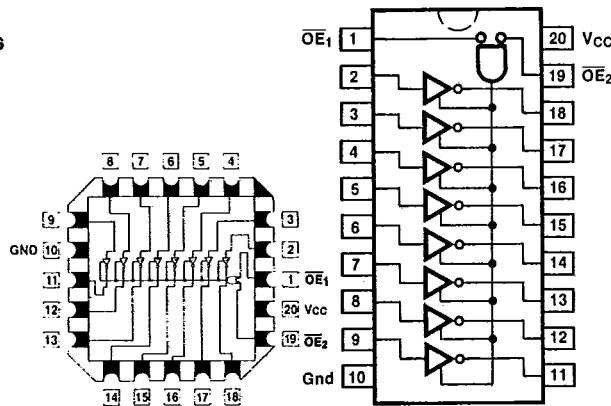
Inputs			Outputs	
$\overline{OE}_1$	$\overline{OE}_2$	D	'540	'541
L	L	H	L	L
H	X	X	Z	Z
X	H	X	Z	Z
L	L	L	H	L

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

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## DC Characteristics (unless otherwise specified)

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

## AC Characteristics

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

\*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.

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## AC Characteristics

Symbol	Parameter	V <sub>CC</sub> * (V)	74ACT			54ACT		74ACT		Units	Fig. No.
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF			T <sub>A</sub> = -55°C to +125°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF			
			Min	Typ	Max	Min	Max	Min	Max		
t <sub>PLH</sub>	Propagation Delay Data to Output ('ACT540)	5.0	6.0							ns	3-5
t <sub>PHL</sub>	Propagation Delay Data to Output ('ACT540)	5.0	5.5							ns	3-5
t <sub>PZH</sub>	Output Enable Time (ACT540)	5.0	8.0							ns	3-7
t <sub>PZL</sub>	Output Enable Time (ACT540)	5.0	6.5							ns	3-8
t <sub>PHZ</sub>	Output Disable Time (ACT540)	5.0	10.0							ns	3-7
t <sub>PLZ</sub>	Output Disable Time (ACT540)	5.0	7.0							ns	3-8
t <sub>PLH</sub>	Propagation Delay Data to Output ('ACT541)	5.0	6.0							ns	3-5
t <sub>PHL</sub>	Propagation Delay Data to Output ('ACT541)	5.0	6.0							ns	3-5
t <sub>PZH</sub>	Output Enable Time (ACT541)	5.0	8.0							ns	3-7
t <sub>PZL</sub>	Output Enable Time (ACT541)	5.0	6.5							ns	3-8
t <sub>PHZ</sub>	Output Disable Time (ACT541)	5.0	10.0							ns	3-7
t <sub>PLZ</sub>	Output Disable Time (ACT541)	5.0	7.0							ns	3-8

\*Voltage Range 5.0 to 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		
C <sub>IN</sub>	Input Capacitance	4.5	pF	V <sub>CC</sub> = 5.5 V
C <sub>PD</sub>	Power Dissipation Capacitance	30.0	pF	V <sub>CC</sub> = 5.5 V