

# 54ACT11802, 74ACT11802 TRIPLE 4-INPUT OR/NOR CLOCK DRIVERS

D3594, JULY 1990

- Inputs Are TTL-Voltage Compatible
- Flow-Through Architecture Optimizes PCB Layout
- Center-Pin V<sub>CC</sub> and GND Configurations Minimize High-Speed Switching Noise
- 500-mA Typical Latch-Up Immunity at 125°C
- EPIC™ (Enhanced-Performance Implanted CMOS) 1-μm Process
- Package Options Include "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

## description

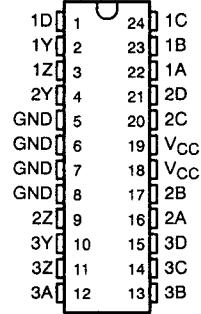
The 'ACT11802 contains three independent 4-input AND/NAND gates. They perform the Boolean functions in positive logic  $Y = A + B + C + D$  and  $Z = \overline{A + B + C + D}$ . These devices are designed to have low skew between outputs for clock driver applications.

The 54ACT11802 is characterized for operation over the full military temperature range of -55°C to 125°C. The 74ACT11802 is characterized for operation from -40°C to 85°C.

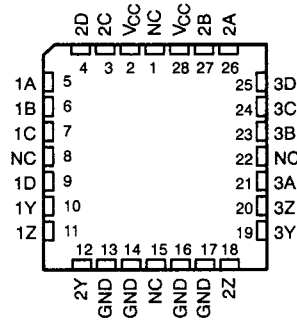
FUNCTION TABLE

INPUTS				OUTPUTS	
A	B	C	D	Y	Z
H	X	X	X	H	L
X	H	X	X	H	L
X	X	H	X	H	L
X	X	X	H	H	L
L	L	L	L	L	H

54ACT11802... JT PACKAGE  
74ACT11802... DW OR NT PACKAGE  
(TOP VIEW)



54ACT11802... FK PACKAGE  
(TOP VIEW)



NC - No internal connection

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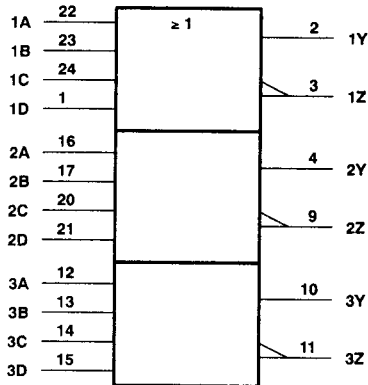
TEXAS  
INSTRUMENTS

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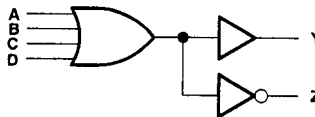
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D3594, JULY 1990

## logic symbol†



## logic diagram (positive logic) (one section)



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for DW, JT, and NT packages.

## absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

Supply voltage range, $V_{CC}$ .....	- 0.5 V to 7 V
Input voltage range, $V_I$ (see Note 1) .....	- 0.5 V to $V_{CC} + 0.5$ V
Output voltage range, $V_O$ (see Note 1) .....	- 0.5 V to $V_{CC} + 0.5$ V
Input clamp current, $I_{IK}$ ( $V_I < 0$ or $V_I > V_{CC}$ ) .....	$\pm 20$ mA
Output clamp current, $I_{OK}$ ( $V_O < 0$ or $V_O > V_{CC}$ ) .....	$\pm 50$ mA
Continuous output current, $I_O$ ( $V_O = 0$ to $V_{CC}$ ) .....	$\pm 50$ mA
Continuous current through $V_{CC}$ or GND pins .....	$\pm 150$ mA
Storage temperature range .....	- 65°C to 150°C

‡ Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

## recommended operating conditions

		54ACT11802		74ACT11802		UNIT
		MIN	MAX	MIN	MAX	
$V_{CC}$	Supply voltage	4.5	5.5	4.5	5.5	V
$V_{IH}$	High-level input voltage	2		2		V
$V_{IL}$	Low-level input voltage	0.8		0.8		V
$V_I$	Input voltage	0	$V_{CC}$	0	$V_{CC}$	V
$V_O$	Output voltage	0		$V_{CC}$		V
$I_{OH}$	High-level output current	-24		-24		mA
$I_{OL}$	Low-level output current	24		24		mA
$\Delta t/\Delta v$	Input transition rise or fall rate	0	10	0	10	ns/V
$T_A$	Operating free-air temperature	-55	125	-40	85	°C

PRODUCT PREVIEW



# 54ACT11802, 74ACT11802 TRIPLE 4-INPUT OR/NOR CLOCK DRIVERS

D3594, JULY 1990

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			54ACT11802		74ACT11802		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V <sub>OH</sub>	I <sub>OH</sub> = - 50 μA	4.5 V	4.4			4.4		4.4	V	
		5.5 V	5.4			5.4		5.4		
	I <sub>OH</sub> = - 24 mA	4.5 V	3.94			3.7		3.8		
		5.5 V	4.94			4.7		4.8		
	I <sub>OH</sub> = - 50 mA †	5.5 V				3.85				
I <sub>OH</sub> = - 75 mA †	5.5 V						3.85			
V <sub>OL</sub>	I <sub>OL</sub> = 50 μA	4.5 V			0.1		0.1	0.1	V	
		5.5 V			0.1		0.1	0.1		
	I <sub>OL</sub> = 24 mA	4.5 V			0.36		0.5	0.44		
		5.5 V			0.36		0.5	0.44		
	I <sub>OL</sub> = 50 mA †	5.5 V					1.65			
I <sub>OL</sub> = 75 mA †	5.5 V						1.65			
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5.5 V			± 0.1		± 0.1	± 0.1	mA	
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	5.5 V			4		80	40	mA	
ΔI <sub>CC</sub> ‡	One input at 3.4 V, Other inputs at GND or V <sub>CC</sub>	5.5 V			0.9		1	1	mA	
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5 V			4				pF	

† Not more than one output should be tested at a time and the duration of the test should not exceed 10 ms.

‡ This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than 0 V to V<sub>CC</sub>.

switching characteristics over recommended operating free-air temperature range,  
V<sub>CC</sub> = 5 V ± 0.5 V (unless otherwise noted) (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T <sub>A</sub> = 25°C			54AC11802		74AC11802		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A or B	Y	3.8							ns
t <sub>PHL</sub>			3.8							

NOTE 2: Load circuit and voltage waveforms are shown in Section 1.

operating characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C

PARAMETER	TEST CONDITIONS	TYP	UNIT
C <sub>pd</sub> Power dissipation capacitance per gate	C <sub>L</sub> = 50 pF, f = 1 MHz	27	pF

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