

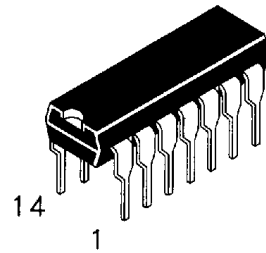
Available Q3, 1995

# Quad 2-Input NAND Schmitt Trigger

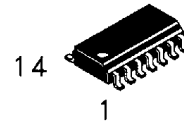
This inverter contains four 2-input NAND gates, capable of transforming slowly changing inputs to sharp edged, jitter free outputs.

- Advanced very high speed CMOS
- Outputs source/sink 24 mA
- Transmission line driving 50 ohms
- ACT has TTL compatible inputs
- AC device operation guaranteed from 2 to 6 volts
- DC & AC Parameters guaranteed over -40 to +85°C

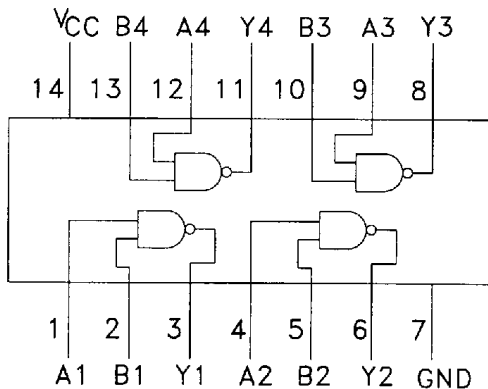
**DV74AC132**  
**DV74ACT132**



N Suffix  
Plastic DIP  
AVG-001 Case



D Suffix  
Plastic SOP  
AVG-002 Case



Inputs		Output
A	B	$\bar{Y}$
L	L	H
L	H	H
H	L	H
H	H	L

H=High Level Logic  
L=Low Level Logic

### ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	AC132, ACT132	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND)	- 0.5 to +7.0	V
V <sub>IN</sub>	DC Input Voltage (Referenced to GND)	- 0.5 to V <sub>CC</sub> +0.5	V
V <sub>OUT</sub>	DC Output Voltage (Referenced to GND)	- 0.5 to V <sub>CC</sub> +0.5	V
I <sub>IN</sub>	DC Input Current, per Pin	± 20	mA
I <sub>OUT</sub>	DC Output Sink/Source Current, per Pin	± 50	mA
I <sub>CC</sub>	DC V <sub>CC</sub> or GND Current per Output Pin	± 50	mA
T <sub>stg</sub>	Storage Temperature	- 65 to +150	°C

### GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	Min	Typ	Max	Unit	
V <sub>CC</sub>	Supply Voltage	'AC	2.0	5.0	6.0	V
		'ACT	4.5	5.0	5.5	
V <sub>IN</sub> , V <sub>OUT</sub>	DC Input Voltage, Output Voltage, (Ref. to GND)	0		V <sub>CC</sub>	V	
T <sub>A</sub>	Operating Ambient Temperature Range	-40	25	85	°C	
C <sub>IN</sub>	Input Capacitance		4.5		pF	
C <sub>PD</sub>	Power Dissipation Capacitance		30		pF	

1. V<sub>IN</sub> from 30% to 70% V<sub>CC</sub>

2. V<sub>IN</sub> from 0.8 to 2.0 V

## DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V <sub>CC</sub> (V)	AC132			Unit		
				T <sub>A</sub> = +25°C		T <sub>A</sub> = -40 to +85°C			
				Typ	Guaranteed Limits				
V <sub>T+</sub>	Maximum Positive Threshold		3.0	2.2			V		
			4.5	3.2					
			5.5	3.9					
V <sub>T-</sub>	Minimum Negative Threshold		3.0	0.5			V		
			4.5	0.9					
			5.5	1.1					
V <sub>H</sub>	Minimum Input Hysteresis		3.0	0.3			V		
			4.5	0.4					
			5.5	0.5					
V <sub>OH</sub>	Minimum High Level Output Voltage	I <sub>OUT</sub> = -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 <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub>	I <sub>OH</sub>	-12mA	3.0		2.56	2.46	V
				-24mA	4.5		3.86	3.76	
				-24mA	5.5		4.86	4.76	
V <sub>OL</sub>	Maximum Low Level Output Voltage	I <sub>OUT</sub> = 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 <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub>	I <sub>OL</sub>	12mA	3.0		0.36	0.44	V
				24mA	4.5		0.36	0.44	
				24mA	5.5		0.36	0.44	
I <sub>IN</sub>	Maximum Input Leakage Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		±0.1	±1.0	μA		
I <sub>CC</sub>	Maximum Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		4.0	40	μA		

## AC CHARACTERISTICS

Symbol	Parameter	V <sub>CC</sub> ±10% (V)	AC132				Unit
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = -40°C to +85°C C <sub>L</sub> = 50 pF		
			Min	Max	Min	Max	
t <sub>PLH</sub>	Propogation Delay	3.3 5.0	2.0	13.0	1.5	14.0	ns
			2.0	9.0	1.5	11.0	
t <sub>PHL</sub>	Propogation Delay	3.3 5.0	2.0	13.5	1.5	15.0	ns
			2.0	9.0	1.5	10.0	

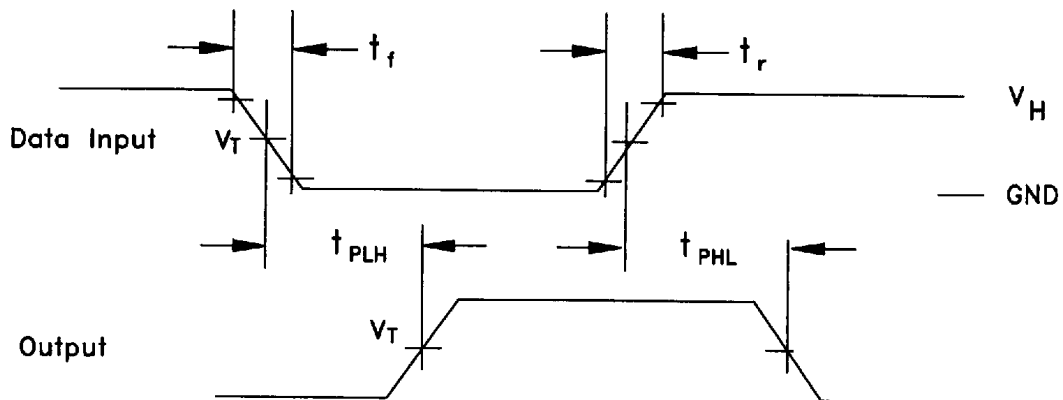
**DC ELECTRICAL CHARACTERISTICS**

Symbol	Parameter	Conditions	V <sub>CC</sub> (V)	ACT132			Unit
				T <sub>A</sub> = +25°C		T <sub>A</sub> = -40 to +85°C	
				Typ	Guaranteed Limits		
V <sub>T+</sub>	Maximum Positive Threshold		4.5	2.0			V
V <sub>T-</sub>	Minimum Negative Threshold		4.5	0.8			V
V <sub>H</sub>	Minimum Input hysteresis		4.5	0.4			V
V <sub>OH</sub>	Minimum High Level Output Voltage	I <sub>OUT</sub> = -50 μA	4.5 5.5	4.49 5.49	4.4 5.4	4.4 5.4	V
		V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> I <sub>OH</sub> -24mA -24 mA	4.5 5.5		3.86 4.86	3.76 4.76	V
V <sub>OL</sub>	Maximum Low Level Output Voltage	I <sub>OUT</sub> = 50 μA	4.5 5.5	0.001 0.001	0.1 0.1	0.1 0.1	V
		V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> I <sub>OL</sub> 24mA 24 mA	4.5 5.5		0.36 0.36	0.44 0.44	V
I <sub>IN</sub>	Maximum Input Leakage Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		±0.1	±1.0	μA
ΔI <sub>CC</sub>	Additional Max I <sub>CC</sub> /Input	V <sub>IN</sub> = V <sub>CC</sub> - 2.1 V	5.5	0.6		1.5	mA
I <sub>CC</sub>	Maximum Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		4.0	40	μA

**AC CHARACTERISTICS** over full operating conditions

Symbol	Parameter	V <sub>CC</sub> ±10% (V)	ACT132				Unit
			T <sub>A</sub> = +25°C C <sub>L</sub> = 50 pF		T <sub>A</sub> = - 40°C to +85°C C <sub>L</sub> = 50 pF		
			Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	5.0	3.0	11.5	2.5	13.0	ns
t <sub>PHL</sub>	Propagation Delay	5.0	3.0	11.0	2.5	12.5	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