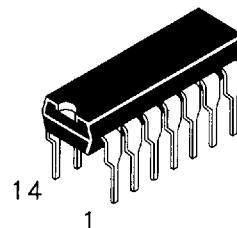


Available Q3, 1995

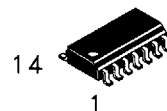
# Quad 2-Input NAND Schmitt Trigger

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

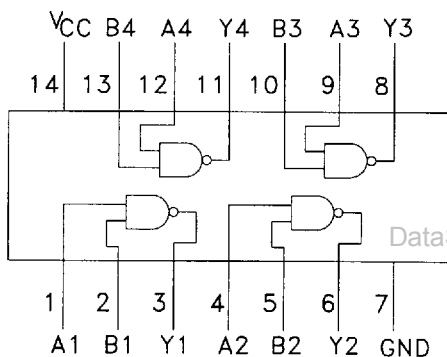
- **Advanced very high speed CMOS**
- **Outputs source/sink 24 mA**
- **Transmission line driving 50 ohms**
- **ACT has TTL compatible inputs**
- **AC device operation guaranteed from 2 to 6 volts**
- **DC & AC Parameters guaranteed over -40 to +85°C**

**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   |   |
| CPD                                | 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><br>(V) | AC132                  |                   |                                  | Unit |   |
|-----------------|--------------------------------------|------------------------------------------------------|------------------------|------------------------|-------------------|----------------------------------|------|---|
|                 |                                      |                                                      |                        | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> = -40<br>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<br>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> | -12mA                  | 3.0                    |                   | 2.56                             | 2.46 | V |
|                 |                                      |                                                      |                        | 4.5                    |                   | 3.86                             | 3.76 |   |
|                 |                                      |                                                      |                        | 5.5                    |                   | 4.86                             | 4.76 |   |
| V <sub>OL</sub> | Maximum Low Level<br>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> | 12mA                   | 3.0                    |                   | 0.36                             | 0.44 | V |
|                 |                                      |                                                      |                        | 4.5                    |                   | 0.36                             | 0.44 |   |
|                 |                                      |                                                      |                        | 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   |   |
|                 |                                      |                                                      | 5.5                    |                        | 4.0               | 40                               | μA   |   |
| I <sub>CC</sub> | Maximum Quiescent<br>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><br>±10%<br>(V) | AC132                                            |      |                                                           |      | Unit |
|------------------|-------------------|--------------------------------|--------------------------------------------------|------|-----------------------------------------------------------|------|------|
|                  |                   |                                | T <sub>A</sub> = +25°C<br>C <sub>L</sub> = 50 pF |      | T <sub>A</sub> = -40°C to +85°C<br>C <sub>L</sub> = 50 pF |      |      |
|                  |                   |                                | Min                                              | Max  | Min                                                       | Max  |      |
| t <sub>PLH</sub> | Propogation Delay | 3.3                            | 2.0                                              | 13.0 | 1.5                                                       | 14.0 | ns   |
|                  |                   |                                | 5.0                                              | 2.0  | 9.0                                                       | 11.0 |      |
| t <sub>PHL</sub> | Propogation Delay | 3.3                            | 2.0                                              | 13.5 | 1.5                                                       | 15.0 | ns   |
|                  |                   |                                | 5.0                                              | 2.0  | 9.0                                                       | 10.0 |      |

**ACT — 132****DC ELECTRICAL CHARACTERISTICS**

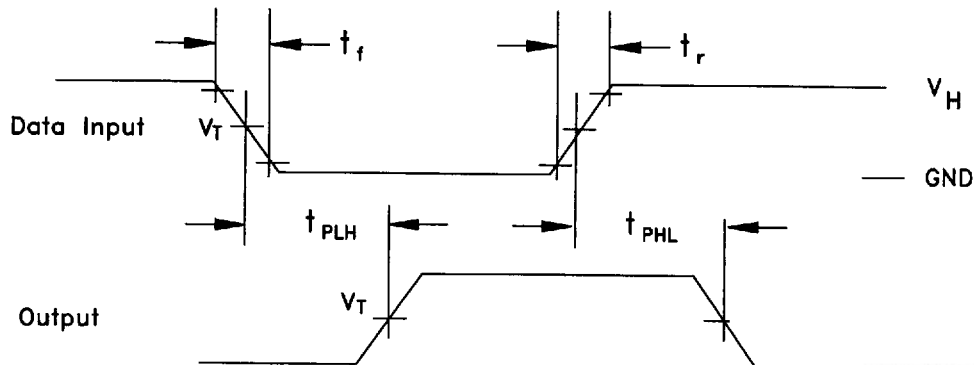
| Symbol           | Parameter                             | Conditions                                                                                | V <sub>CC</sub><br>(V) | ACT132                 |                   |                                  | Unit |
|------------------|---------------------------------------|-------------------------------------------------------------------------------------------|------------------------|------------------------|-------------------|----------------------------------|------|
|                  |                                       |                                                                                           |                        | T <sub>A</sub> = +25°C |                   | T <sub>A</sub> = -40<br>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<br>5.5             | 4.49<br>5.49           | 4.4<br>5.4        | 4.4<br>5.4                       | V    |
|                  |                                       | V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>I <sub>OH</sub> = -24mA<br>-24 mA | 4.5<br>5.5             |                        | 3.86<br>4.86      | 3.76<br>4.76                     | V    |
| V <sub>OL</sub>  | Maximum Low Level Output Voltage      | I <sub>OUT</sub> = 50 μA                                                                  | 4.5<br>5.5             | 0.001<br>0.001         | 0.1<br>0.1        | 0.1<br>0.1                       | V    |
|                  |                                       | V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub><br>I <sub>OL</sub> = 24mA<br>24 mA   | 4.5<br>5.5             |                        | 0.36<br>0.36      | 0.44<br>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   |

et4U.com

DataSheet4U.com

**AC CHARACTERISTICS** over full operating conditions

| Symbol           | Parameter         | V <sub>CC</sub><br>±10%<br>(V) | ACT132                                           |      |                                                           |      | Unit |
|------------------|-------------------|--------------------------------|--------------------------------------------------|------|-----------------------------------------------------------|------|------|
|                  |                   |                                | T <sub>A</sub> = +25°C<br>C <sub>L</sub> = 50 pF |      | T <sub>A</sub> = -40°C to +85°C<br>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**

DataSheet4U.com

www.DataSheet4U.com

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

DataSheet4U.com

DataSheet4U.com