



**THE DATASHEET OF
74AC05SCX**



74AC05

Hex Inverter with Open Drain Outputs

General Description

The AC05 contains six inverters.

Features

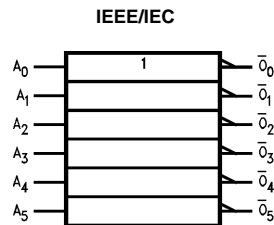
- Outputs sink 24 mA
- Open drain for wired NOR function
- Radiation tolerant FACT™ process

Ordering Code:

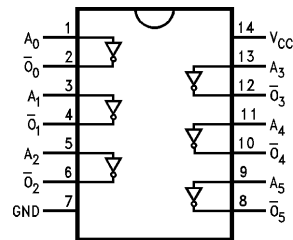
| Order Number | Package Number | Package Description |
|--------------|----------------|--|
| 74AC05SC | M14A | 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow |

Device also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

Logic Symbol



Connection Diagram



Pin Descriptions

| Pin Names | Description |
|-------------|-------------|
| A_n | Inputs |
| \bar{O}_n | Outputs |

FACT™ is a trademark of Fairchild Semiconductor Corporation.

Absolute Maximum Ratings (Note 1)

| | |
|--|--------------------------|
| Supply Voltage (V_{CC}) | -0.5V to +7.0V |
| DC Input Diode Current (I_{IK}) | |
| $V_I = -0.5V$ | -20 mA |
| $V_I = V_{CC} + 0.5V$ | +20 mA |
| DC Input Voltage (V_I) | -0.5V to $V_{CC} + 0.5V$ |
| DC Output Diode Current (I_{OK}) | |
| $V_O = -0.5V$ | -20 mA |
| $V_O = V_{CC} + 0.5V$ | +20 mA |
| DC Output Voltage (V_O) | -0.5V to +7.0V |
| DC Output Sink Current (I_O) | + 50 mA |
| DC V_{CC} or Ground Current | |
| per Output Pin (I_{CC} or I_{GND}) | ± 50 mA |
| Storage Temperature (T_{STG}) | -65°C to +150°C |

Recommended Operating Conditions

| | |
|---|----------------|
| Supply Voltage (V_{CC}) | 2.0V to 6.0V |
| Input Voltage (V_I) | 0V to V_{CC} |
| Output Voltage (V_O) | 0V to 6.0V |
| Operating Temperature (T_A) | -40°C to +85°C |
| Minimum Input Edge Rate ($\Delta V/\Delta t$) | |
| V_{IN} from 30% to 70% of V_{CC} | |
| V_{CC} @ 3.3V, 4.5V, 5.5V | 125 mV/ns |

Note 1: Absolute maximum ratings are those values beyond which damage to the device may occur. The databook specifications should be met, without exception, to ensure that the system design is reliable over its power supply, temperature, and output/input loading variables. Fairchild does not recommend operation of FACT™ circuits outside databook specifications.

DC Electrical Characteristics

| Symbol | Parameter | V_{CC} (V) | $T_A = +25^\circ\text{C}$ | | $T_A = -40^\circ\text{C to } +85^\circ\text{C}$ | | Units | Conditions |
|-------------------|--|-----------------|---------------------------|-------------------|---|--|---------------|--|
| | | | Typ | Guaranteed Limits | | | | |
| V_{IH} | Minimum HIGH Level Input Voltage | 3.0 | 1.5 | 2.1 | 2.1 | | V | $V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$ |
| | | 4.5 | 2.25 | 3.15 | 3.15 | | | |
| | | 5.5 | 2.75 | 3.85 | 3.85 | | | |
| V_{IL} | Maximum LOW Level Input Voltage | 3.0 | 1.5 | 0.9 | 0.9 | | V | $V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$ |
| | | 4.5 | 2.25 | 1.35 | 1.35 | | | |
| | | 5.5 | 2.75 | 1.65 | 1.65 | | | |
| V_{OL} | Maximum LOW Level Output Voltage | 3.0 | 0.002 | 0.1 | 0.1 | | V | $I_{OUT} = 50 \mu\text{A}$ |
| | | 4.5 | 0.001 | 0.1 | 0.1 | | | |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | |
| | | 3.0 | | 0.32 | 0.44 | | V | $V_{IN} = V_{IL}$ or V_{IH} $I_{OL} = 12 \text{ mA}$ $I_{OL} = 24 \text{ mA}$ $I_{OL} = 24 \text{ mA (Note 2)}$ |
| | | 4.5 | | 0.36 | 0.44 | | | |
| | 5.5 | | 0.36 | 0.44 | | | | |
| I_{IN} (Note 4) | Maximum Input Leakage Current | 5.5 | | ± 0.1 | ± 1.0 | | μA | $V_I = V_{CC}, \text{ GND}$ |
| I_{OHZ} | Off-State Current | 6 | | +0.5 | +10.0 | | μA | $V_{IN} = \text{GND}, V_O = 6V$ |
| I_{OLD} | Minimum Dynamic Output Current (Note 3) | 5.5 | | 50 | 75 | | mA | $V_{OLD} = 1.65V \text{ Max}$ |
| I_{CC} (Note 4) | Maximum Quiescent Supply Current | 5.5 | | 4.0 | 20.0 | | μA | $V_{IN} = V_{CC}$ or GND |

Note 2: All outputs loaded; thresholds on input associated with output under test.

Note 3: Maximum test duration 2.0 ms, one output loaded at a time.

Note 4: I_{IN} and I_{CC} @ 3.0V are guaranteed to be less than or equal to the respective limit @ 5.5V V_{CC} .

AC Electrical Characteristics

| Symbol | Parameter | V _{CC} (V) (Note 5) | T _A = +25°C | | T _A = -40°C to +85°C | | Units |
|------------------|-------------------------------|------------------------------------|------------------------|------|---------------------------------|------|-------|
| | | | C _L = 50 pF | | Min | Min | |
| | | | Min | Max | | | |
| t _{PLZ} | Propagation Delay (Note 6) | 3.3 | 2.0 | 14.5 | 2.0 | 14.5 | ns |
| | | 5.0 | 2.0 | 14.0 | 2.0 | 14.0 | |
| t _{PZL} | Propagation Delay | 3.3 | 2.0 | 6.5 | 2.0 | 6.5 | ns |
| | | 5.0 | 2.0 | 5.0 | 2.0 | 5.0 | |

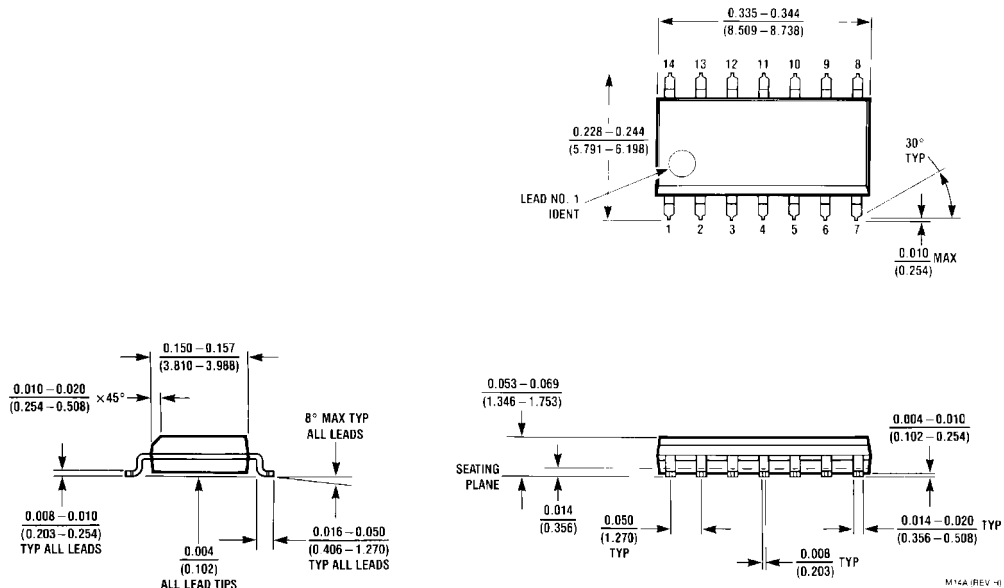
Note 5: Voltage Range 3.3 is 3.3V ± 0.3V
Voltage Range 5.0 is 5.0V ± 0.5V

Note 6: AC Load is V_{CC} × 2, R_L = 1 kΩ
C_L = 50 pF

Capacitance

| Symbol | Parameter | Typ | Units | Conditions |
|-----------------|-------------------------------|------|-------|------------------------|
| C _{IN} | Input Capacitance | 4.5 | pF | V _{CC} = 5.0V |
| C _{PD} | Power Dissipation Capacitance | 30.0 | pF | V _{CC} = 5.0V |

Physical Dimensions inches (millimeters) unless otherwise noted



14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow Package Number M14A

Fairchild does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and Fairchild reserves the right at any time without notice to change said circuitry and specifications.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

www.fairchildsemi.com

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- [View 74AC05SCX on WIN SOURCE](#)
- [Fairchild/ON Semiconductor Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management