

## DM74AS1805

### Hex 2-Input NOR Driver

#### General Description

These devices contain six independent 2-Input drivers each of which performs the logic NOR function. The DM74AS1805 is equivalent to the DM74AS805B but the supply voltage and ground pins are centered in the package. This positioning of the supply voltage and ground pins reduce the lead inductance of these pins. This reduction of lead inductance will minimize noise generated onto either the supply voltage or ground bus which is significant in high current switching applications.

#### Features

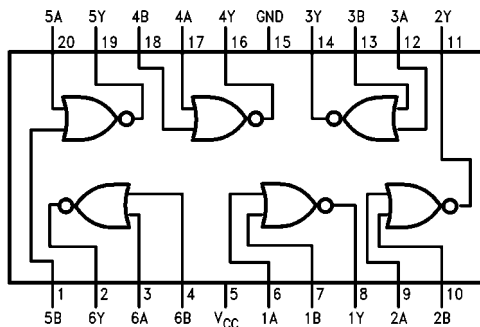
- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and  $V_{CC}$  range
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Centered  $V_{CC}$  and GND configuration provides minimum lead inductance for high current switching applications
- High capacitive drive capability

#### Ordering Code:

| Order Number | Package Number | Package Description                                                       |
|--------------|----------------|---------------------------------------------------------------------------|
| DM74AS1805WM | M20B           | 20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide |
| DM74AS1805N  | N20A           | 20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide     |

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

#### Connection Diagram



#### Function Table

$$Y = \overline{A + B}$$

| INPUTS |   | OUTPUT |
|--------|---|--------|
| A      | B | Y      |
| L      | L | H      |
| L      | H | L      |
| H      | L | L      |
| H      | H | L      |

H = HIGH Logic Level  
L = LOW Logic Level

**Absolute Maximum Ratings**(Note 1)

|                                |                 |
|--------------------------------|-----------------|
| Supply Voltage                 | 7V              |
| Input Voltage                  | 7V              |
| Operating Free Air Temperature | 0°C to 70°C     |
| Storage Temperature Range      | –65°C to +150°C |
| Typical $\theta_{JA}$          |                 |
| N Package                      | 58.3°C/W        |
| M Package                      | 154.0°C/W       |

**Note 1:** The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

**Recommended Operating Conditions**

| Symbol   | Parameter                            | Min | Nom | Max | Units |
|----------|--------------------------------------|-----|-----|-----|-------|
| $V_{CC}$ | Supply Voltage                       | 4.5 | 5   | 5.5 | V     |
| $V_{IH}$ | HIGH Level Input Voltage             | 2   |     |     | V     |
| $V_{IL}$ | LOW Level Input Voltage              |     |     | 0.8 | V     |
| $I_{OH}$ | HIGH Level Output Current            |     |     | –48 | mA    |
| $I_{OL}$ | LOW Level Output Current             |     |     | 48  | mA    |
| $T_A$    | Operating Free Air Temperature Range | 0   |     | 70  | °C    |

**Electrical Characteristics**

over recommended operating free air temperature range

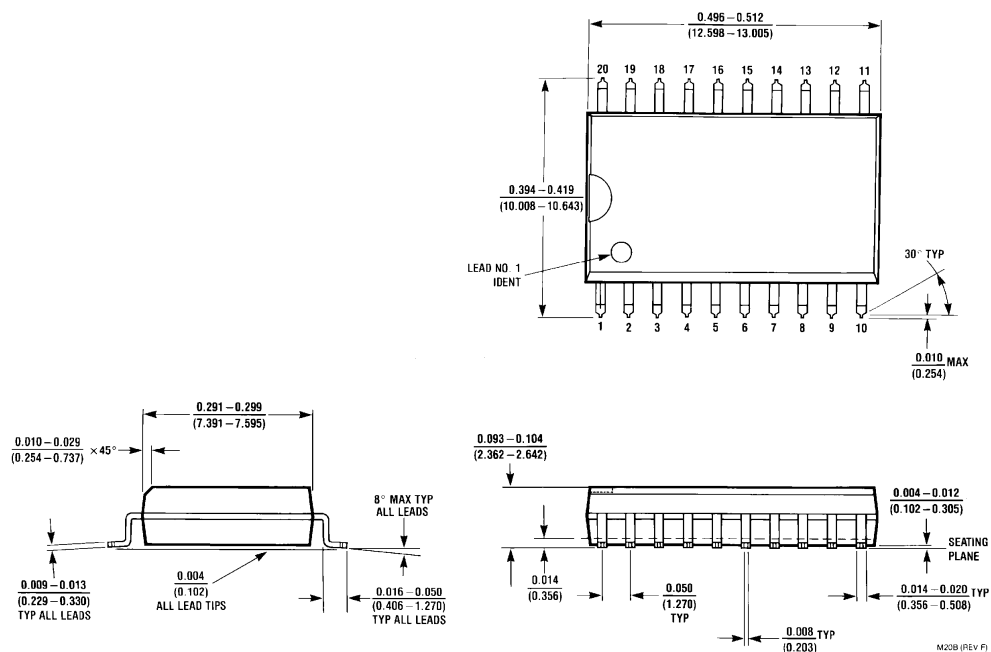
| Symbol    | Parameter                              | Conditions                                            | Min          | Typ  | Max  | Units         |
|-----------|----------------------------------------|-------------------------------------------------------|--------------|------|------|---------------|
| $V_{IK}$  | Input Clamp Voltage                    | $V_{CC} = 4.5V, I_I = -18\text{ mA}$                  |              |      | –1.2 | V             |
| $V_{OH}$  | HIGH Level Output Voltage              | $I_{OH} = -2\text{ mA}, V_{CC} = 4.5V\text{ to }5.5V$ | $V_{CC} - 2$ |      |      | V             |
|           |                                        | $I_{OH} = -3\text{ mA}, V_{CC} = 4.5V$                | 2.4          | 3.2  |      |               |
|           |                                        | $I_{OH} = \text{Max}, V_{CC} = 4.5V$                  | 2            |      |      |               |
| $V_{OL}$  | LOW Level Output Voltage               | $V_{CC} = 4.5V, I_{OL} = \text{Max}, V_{IH} = 2V$     |              |      | 0.5  | V             |
| $I_I$     | Input Current at Maximum Input Voltage | $V_{CC} = 5.5V, V_I = 7V$                             |              |      | 100  | $\mu\text{A}$ |
| $I_{IH}$  | HIGH Level Input Current               | $V_{CC} = 5.5V, V_I = 2.7V$                           |              |      | 20   | $\mu\text{A}$ |
| $I_{IL}$  | LOW Level Input Current                | $V_{CC} = 5.5V, V_I = 0.4V$                           |              |      | –500 | $\mu\text{A}$ |
| $I_O$     | Output Drive Current                   | $V_{CC} = 5.5V, V_O = 2.25V$                          | –50          | –135 | –200 | mA            |
| $I_{CCH}$ | Supply Current with Outputs HIGH       | $V_{CC} = 5.5V$                                       |              | 6.5  | 10   | mA            |
| $I_{CCL}$ | Supply Current with Outputs LOW        | $V_{CC} = 5.5V$                                       |              | 20   | 32   | mA            |

**Switching Characteristics**

over recommended operating free air temperature range

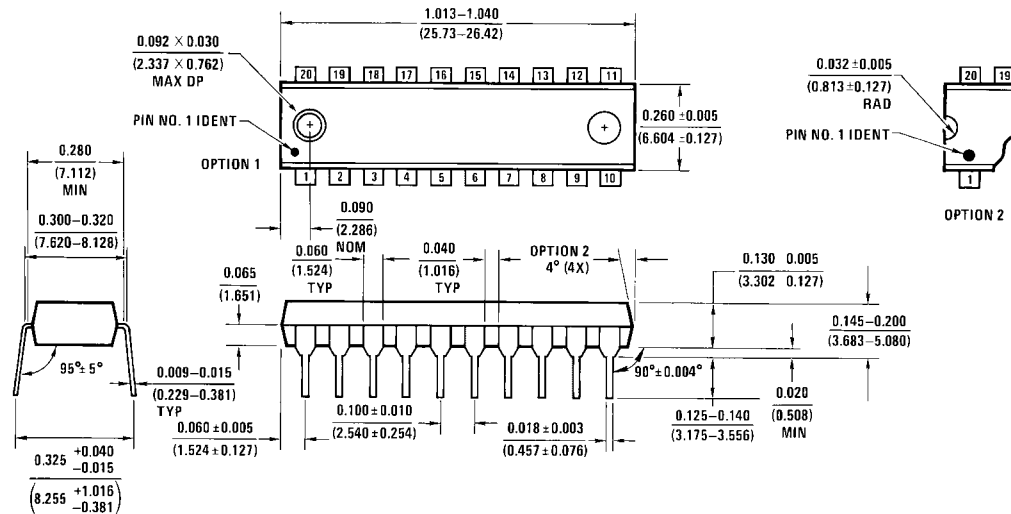
| Symbol    | Parameter                                          | Conditions                                          | Min | Max | Units |
|-----------|----------------------------------------------------|-----------------------------------------------------|-----|-----|-------|
| $T_{PLH}$ | Propagation Delay Time<br>LOW-to-HIGH Level Output | $V_{CC} = 4.5V\text{ to }5.5V$<br>$R_L = 500\Omega$ | 1   | 4.3 | ns    |
| $T_{PHL}$ | Propagation Delay Time<br>HIGH-to-LOW Level Output | $C_L = 50\text{ pF}$                                | 1   | 4.3 | ns    |

**Physical Dimensions** inches (millimeters) unless otherwise noted



**20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide  
Package Number M20B**

# Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



N20A (REV G)

20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide  
Package Number N20A

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](http://www.fairchildsemi.com)