

## DM7486

### Quad 2-Input Exclusive-OR Gates

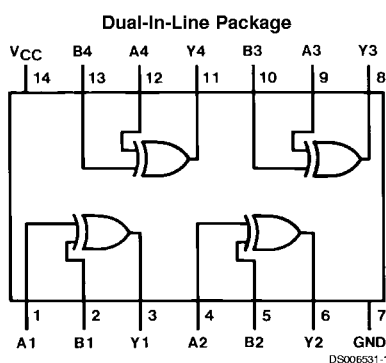
#### General Description

This device contains four independent gates each of which performs the logic exclusive-OR function.

#### Features

- Alternate Military/Aerospace device (5486) is available. Contact a Fairchild Semiconductor Sales Office/Distributor for specifications.

#### Connection Diagram



Order Number 5486DMQB, 5486FMQB, DM5486J, DM5486W or DM7486N  
See Package Number J14A, N14A or W14B

#### Function Table

$$Y = A \oplus B$$

| Inputs |   | Output |
|--------|---|--------|
| A      | B | Y      |
| L      | L | L      |
| L      | H | H      |
| H      | L | H      |
| H      | H | L      |

H = High Logic Level  
L = Low Logic Level

**Absolute Maximum Ratings** (Note 1)

Supply Voltage

7V

Input Voltage

5.5V

Operating Free Air Temperature Range

DM54 and 54

DM74

Storage Temperature Range

–55°C to +125°C

0°C to +70°C

–65°C to +150°C

**Recommended Operating Conditions**

| Symbol   | Parameter                      | DM5486 |     |      | DM7486 |     |      | Units |
|----------|--------------------------------|--------|-----|------|--------|-----|------|-------|
|          |                                | Min    | Nom | Max  | Min    | Nom | Max  |       |
| $V_{CC}$ | Supply Voltage                 | 4.5    | 5   | 5.5  | 4.75   | 5   | 5.25 | V     |
| $V_{IH}$ | High Level Input Voltage       | 2      |     |      | 2      |     |      | V     |
| $V_{IL}$ | Low Level Input Voltage        |        |     | 0.8  |        |     | 0.8  | V     |
| $I_{OH}$ | High Level Output Current      |        |     | –0.8 |        |     | –0.8 | mA    |
| $I_{OL}$ | Low Level Output Current       |        |     | 16   |        |     | 16   | mA    |
| $T_A$    | Free Air Operating Temperature | –55    |     | 125  | 0      |     | 70   | °C    |

**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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

**Electrical Characteristics**

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

| Symbol    | Parameter                         | Conditions                                                                               | Min                        | Typ<br>(Note 2) | Max        | Units |
|-----------|-----------------------------------|------------------------------------------------------------------------------------------|----------------------------|-----------------|------------|-------|
| $V_I$     | Input Clamp Voltage               | $V_{CC} = \text{Min}, I_I = -12 \text{ mA}$                                              |                            |                 | –1.5       | V     |
| $V_{OH}$  | High Level Output Voltage         | $V_{CC} = \text{Min}, I_{OH} = \text{Max}$<br>$V_{IL} = \text{Max}, V_{IH} = \text{Min}$ | 2.4                        | 3.4             |            | V     |
| $V_{OL}$  | Low Level Output Voltage          | $V_{CC} = \text{Min}, I_{OL} = \text{Max}$<br>$V_{IH} = \text{Min}, V_{IL} = \text{Max}$ |                            | 0.2             | 0.4        | V     |
| $I_I$     | Input Current @ Max Input Voltage | $V_{CC} = \text{Max}, V_I = 5.5 \text{ V}$                                               |                            |                 | 1          | mA    |
| $I_{IH}$  | High Level Input Current          | $V_{CC} = \text{Max}, V_I = 2.4 \text{ V}$                                               |                            |                 | 40         | μA    |
| $I_{IL}$  | Low Level Input Current           | $V_{CC} = \text{Max}, V_I = 0.4 \text{ V}$                                               |                            |                 | –1.6       | mA    |
| $I_{OS}$  | Short Circuit Output Current      | $V_{CC} = \text{Max}$<br>(Note 3)                                                        | DM54<br>–20<br>DM74<br>–18 |                 | –55<br>–55 | mA    |
| $I_{CCH}$ | Supply Current with Outputs High  | $V_{CC} = \text{Max}$                                                                    | DM54<br>DM74               | 30<br>30        | 43<br>50   | mA    |
| $I_{CCL}$ | Supply Current with Outputs Low   | $V_{CC} = \text{Max}$ (Note 3)                                                           |                            | 36              | 57         | mA    |

**Note 2:** All typicals are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ \text{C}$ .

**Note 3:** Not more than one output should be shorted at a time.

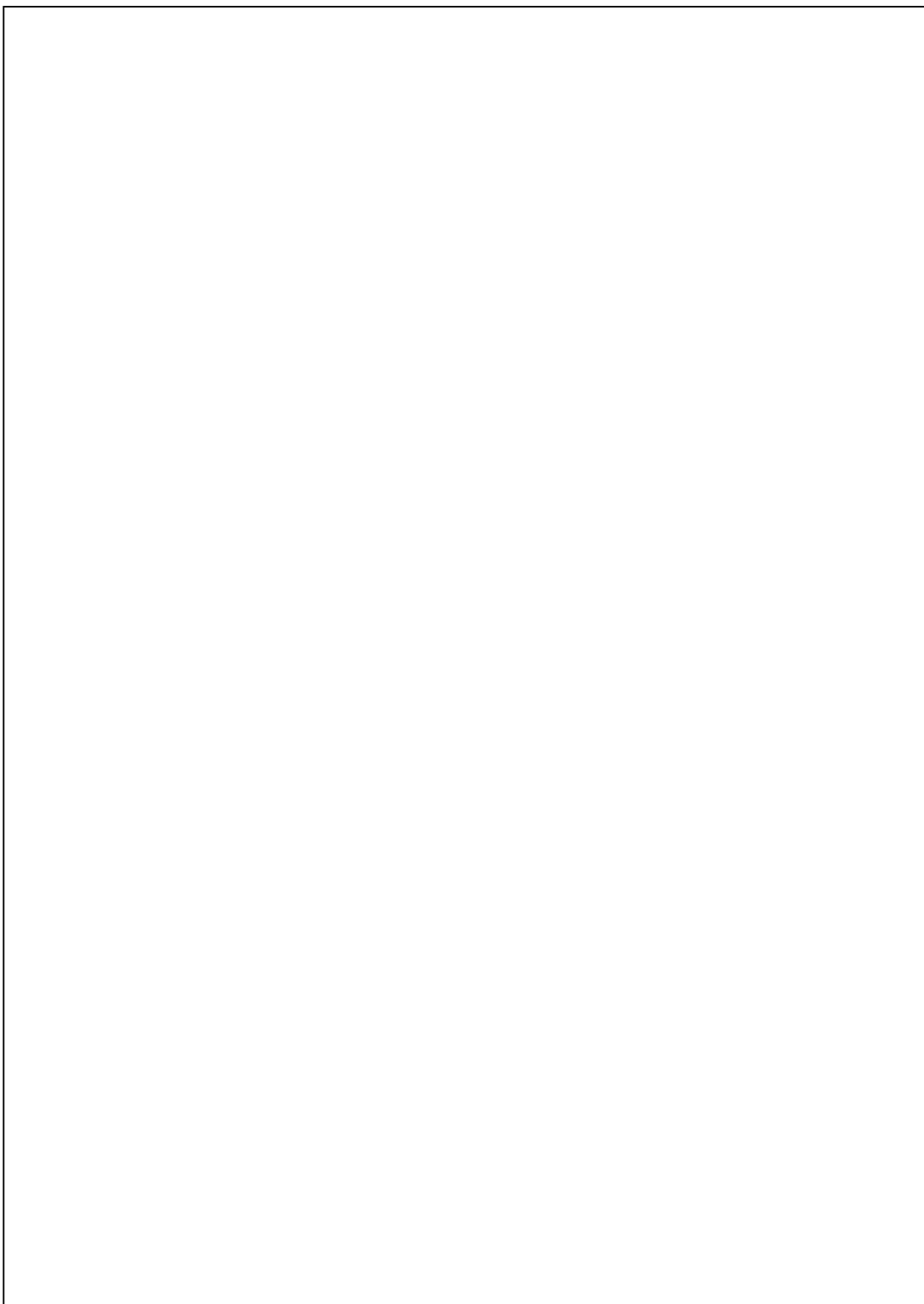
**Note 4:**  $I_{CCH}$  is measured with all outputs open, one input of each gate at 4.5V, and the other inputs grounded.

**Note 5:**  $I_{CCL}$  is measured with all outputs open, and all inputs at ground.

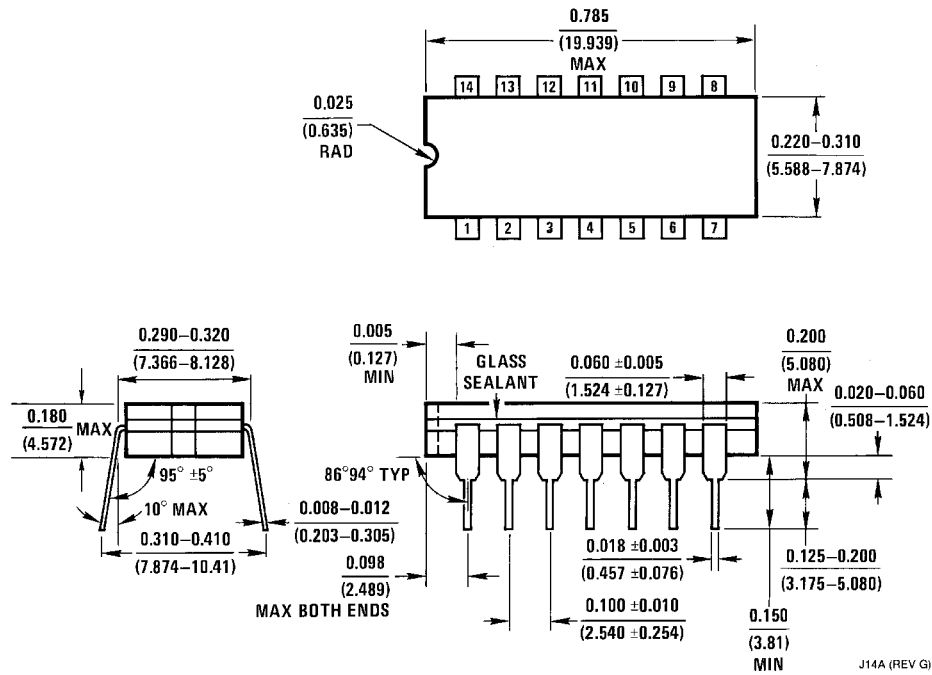
## Switching Characteristics

at  $V_{CC} = 5V$  and  $T_A = 25^\circ C$  (See Section 1 for Test Waveforms and Output Load)

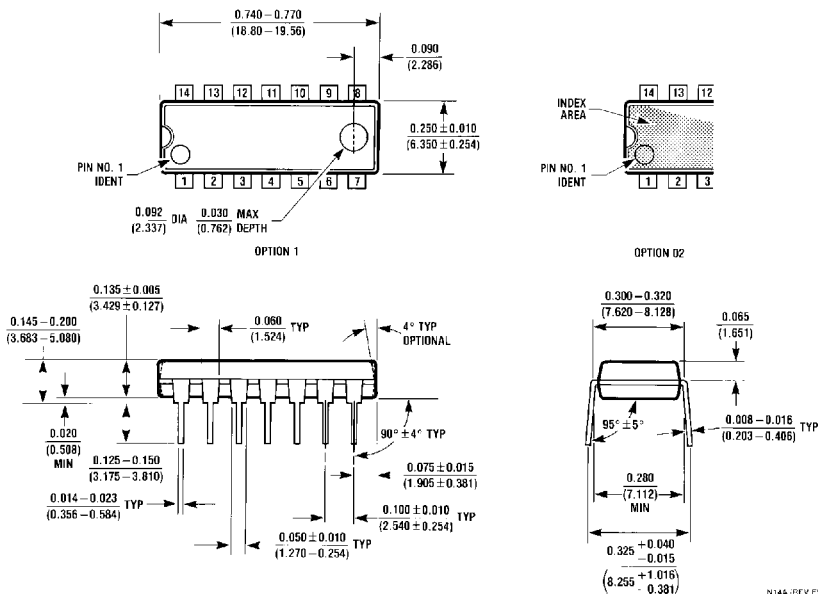
| Symbol    | Parameter                                          | Conditions       | $C_L = 15\text{ pF}$<br>$R_L = 400\Omega$ |     | Units |
|-----------|----------------------------------------------------|------------------|-------------------------------------------|-----|-------|
|           |                                                    |                  | Min                                       | Max |       |
| $t_{PLH}$ | Propagation Delay Time<br>Low to High Level Output | Other Input Low  |                                           | 23  | ns    |
| $t_{PHL}$ | Propagation Delay Time<br>High to Low Level Output |                  |                                           | 17  | ns    |
| $t_{PLH}$ | Propagation Delay Time<br>Low to High Level Output | Other Input High |                                           | 30  | ns    |
| $t_{PHL}$ | Propagation Delay Time<br>High to Low Level Output |                  |                                           | 22  | ns    |



# Physical Dimensions inches (millimeters) unless otherwise noted

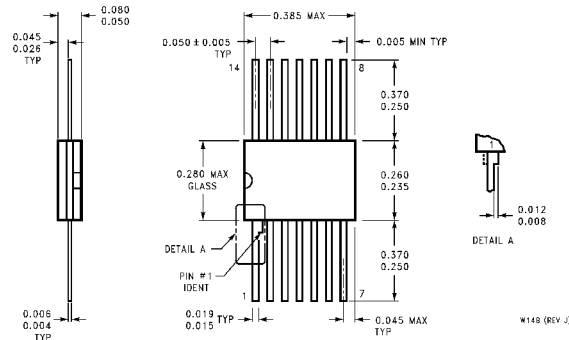


**14-Lead Ceramic Dual-In-Line Package (J)**  
Order Number 5486DMQB or DM5486J  
Package Number J14A



**14-Lead Molded Dual-In-Line Package (N)**  
Order Number DM7486N  
Package Number N14A

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



**14-Lead Ceramic Flat Package (W)**  
**Order Number 5486FMQB or DM5486W**  
**Package Number W14B**

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**Fairchild Semiconductor Corporation Americas**  
 Customer Response Center  
 Tel: 1-888-522-5372

**Fairchild Semiconductor Europe**  
 Fax: +49 (0) 1 80-530 85 86  
 Email: europe.support@nsc.com  
 Deutsch Tel: +49 (0) 8 141-35-0  
 English Tel: +44 (0) 1 793-85-68-56  
 Italy Tel: +39 (0) 2 57 5631

**Fairchild Semiconductor Hong Kong Ltd.**  
 13th Floor, Straight Block,  
 Ocean Centre, 5 Canton Rd.  
 Tsimshatsui, Kowloon  
 Hong Kong  
 Tel: +852 2737-7200  
 Fax: +852 2314-0061

**National Semiconductor Japan Ltd.**  
 Tel: 81-3-5620-6175  
 Fax: 81-3-5620-6179

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