

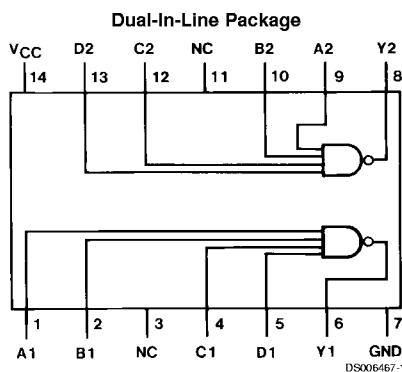
DM74S140

Dual 4-Input NAND 50Ω Line Driver

General Description

This device contains two independent line driver gates each of which performs the logic NAND function.

Connection Diagram



Function Table

$$Y = \overline{ABCD}$$

| Inputs | | | | Output |
|--------|---|---|---|--------|
| A | B | C | D | Y |
| X | X | X | L | H |
| X | X | L | X | H |
| X | L | X | X | H |
| L | X | X | X | H |
| H | H | H | H | L |

H = High Logic Level
L = Low Logic Level
X = Either Low or High Logic Level

DM74S140 Dual 4-Input NAND 50Ω Line Driver

Absolute Maximum Ratings (Note 1)

| | | | |
|--------------------------------------|------|---------------------------|-----------------|
| Supply Voltage | 7V | DM54S | -55°C to +125°C |
| Input Voltage | 5.5V | DM74S | 0°C to +70°C |
| Operating Free Air Temperature Range | | Storage Temperature Range | -65°C to +150°C |

Recommended Operating Conditions

| Symbol | Parameter | DM54S140 | | | DM74S140 | | | 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 | | | -3 | | | -3 | mA |
| I _{OL} | Low Level Output Current | | | 60 | | | 60 | 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 (unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ (Note 2) | Max | Units |
|------------------|-----------------------------------|---|------|-----------------|------|-------|
| V _I | Input Clamp Voltage | V _{CC} = Min, I _I = -18 mA | | | -1.2 | V |
| V _{OH} | High Level Output Voltage | V _{CC} = Min, V _{IL} = Max | DM54 | 2.5 | 3.4 | V |
| | | I _{OH} = Max | DM74 | 2.7 | 3.4 | |
| | | V _{IL} = 0.5V, R _O = 50Ω to GND | | 2.0 | | |
| V _{OL} | Low Level Output Voltage | V _{CC} = Min, I _{OL} = Max V _{IH} = Min | | | 0.5 | V |
| I _I | Input Current @ Max Input Voltage | V _{CC} = Max, V _I = 5.5V | | | 1 | mA |
| I _{IH} | High Level Input Current | V _{CC} = Max, V _I = 2.7V | | | 100 | μA |
| I _{IL} | Low Level Input Current | V _{CC} = Max, V _I = 0.5V | | | -4 | mA |
| I _{OS} | Short Circuit Output Current | V _{CC} = Max (Note 3) | DM54 | -50 | -225 | mA |
| | | | DM74 | -50 | -225 | |
| I _{COH} | Supply Current with Outputs High | V _{CC} = Max | | 10 | 18 | mA |
| I _{COL} | Supply Current with Outputs Low | V _{CC} = Max | | 25 | 44 | mA |

Switching Characteristics

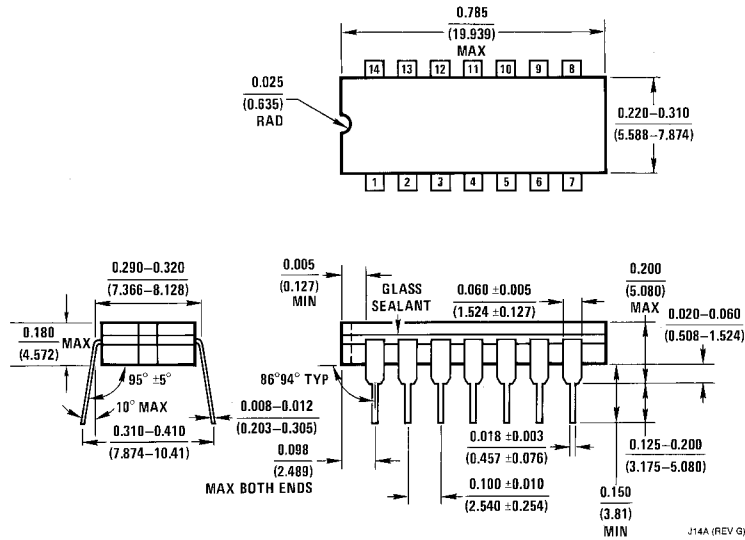
at V_{CC} = 5V and T_A = 25°C

| Symbol | Parameter | R _L = 93Ω | | | | Units |
|------------------|--|------------------------|-----|-------------------------|-----|-------|
| | | C _L = 50 pF | | C _L = 150 pF | | |
| | | Min | Max | Min | Max | |
| t _{PLH} | Propagation Delay Time Low to High Level Output | 2 | 6.5 | 3 | 9 | ns |
| t _{PHL} | Propagation Delay Time High to Low Level Output | 2 | 6.5 | 3 | 9 | ns |

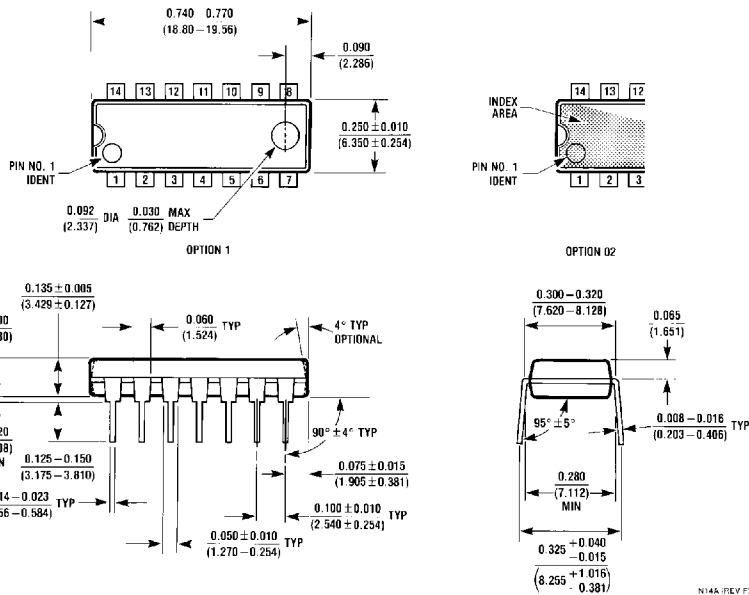
Note 2: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 3: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Physical Dimensions inches (millimeters) unless otherwise noted



14-Lead Ceramic Dual-In-Line Package (J)
Order Number DM54S140J
Package Number J14A



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74S140N
Package Number N14A