

DM7402

Quad 2-Input NOR Gates

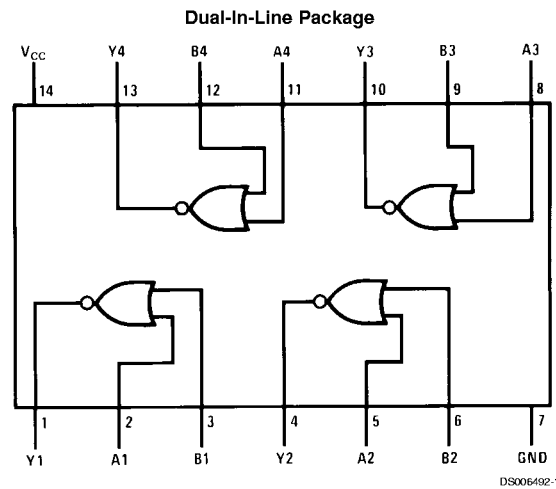
General Description

This device contains four independent gates each of which performs the logic NOR function.

Features

- Alternate Military/Aerospace device (5402) is available. Contact a Fairchild Semiconductor Sales Office/Distributor for specifications.

Connection Diagram



Order Number 5402DMQB, 5402FMQB, DM5402J, DM5402W or DM7402N
See Package Number J14A, N14A or W14B

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

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	DM5402			DM7402			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			–0.4			–0.4	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 (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	$V_{CC} = \text{Min}$, $I_{OH} = \text{Max}$ $V_{IL} = \text{Max}$	2.4	3.4		V
V_{OL}	Low Level Output Voltage	$V_{CC} = \text{Min}$, $I_{OL} = \text{Max}$ $V_{IH} = \text{Min}$		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	$V_{CC} = \text{Max}$ (Note 3)	DM54 –20 DM74 –18		–55 –55	mA
I_{CCH}	Supply Current with Outputs High	$V_{CC} = \text{Max}$		8	16	mA
I_{CCL}	Supply Current with Outputs Low	$V_{CC} = \text{Max}$		14	27	mA

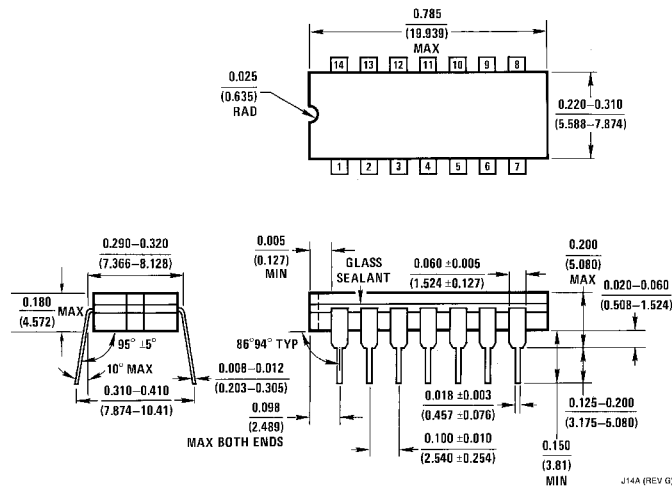
Switching Characteristicsat $V_{CC} = 5 \text{ V}$ and $T_A = 25^\circ\text{C}$ (for Test Waveforms and Output Load)

Symbol	Parameter	Conditions	Min	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	$C_L = 15 \text{ pF}$ $R_L = 400\Omega$		22	ns
t_{PHL}	Propagation Delay Time High to Low Level Output			15	ns

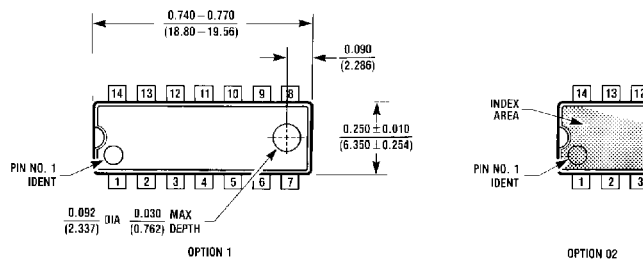
Note 2: All typicals are at $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$.

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

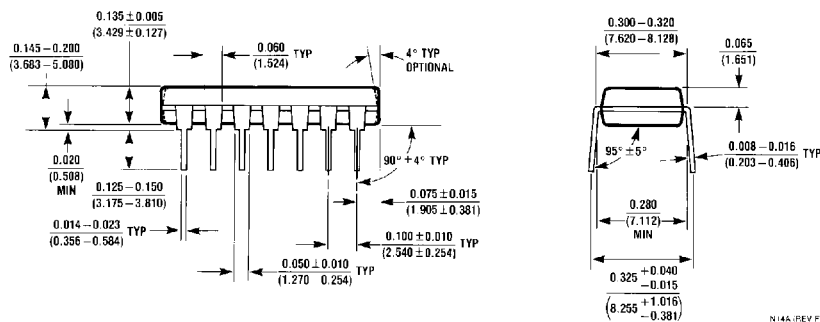
Physical Dimensions inches (millimeters) unless otherwise noted



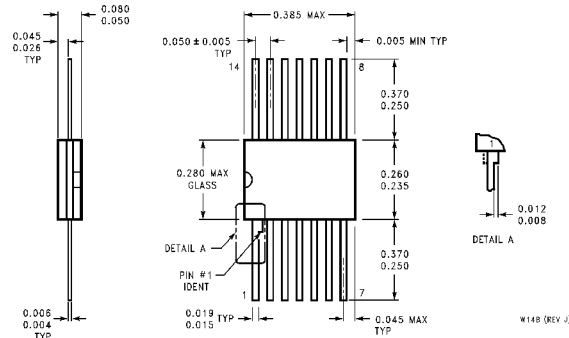
14-Lead Ceramic Dual-In-Line Package (J)
Order Number 5402DMQB or DM5402J
Package Number J14A



14-Lead Molded Dual-In-Line Package (N)
Order Number DM7402N
Package Number N14A



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



14-Lead Ceramic Flat Package (W)
Order Number 5402FMQB or DM5402W
Package Number W14B

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