

DM74ALS02 Quad 2-Input NOR Gate

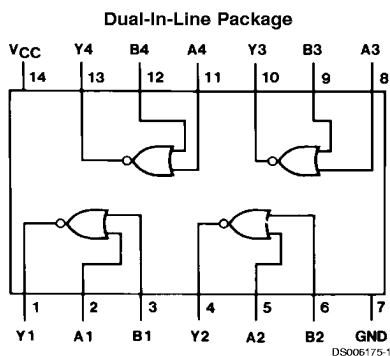
General Description

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

Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and V_{CC} range
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky and low power Schottky TTL counterpart
- Improved AC performance over Schottky and low power Schottky counterparts

Connection Diagrams



Order Number DM74ALS02M, DM74ALS02N or DM74ALS02SJ
See Package Number M14A, M14D or N14A

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 Range	0°C to +70°C
DM74ALS	

Storage Temperature Range

-65°C to +150°C

Typical θ_{JA}

N Package

86.5°C/W

M Package

116.0°C/W

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			-0.4	mA
I_{OL}	Low Level Output Current			8	mA
T_A	Free Air Operating Temperature	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. All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

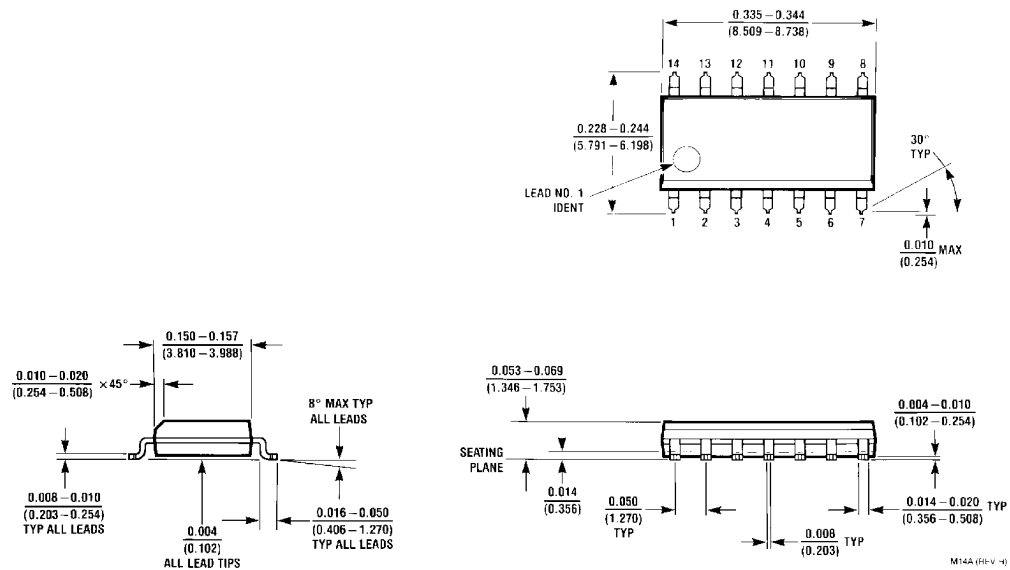
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_I = -18\text{ mA}$			-1.5	V
V_{OH}	High Level Output Voltage	$I_{OH} = -0.4\text{ mA}$ $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$			V
V_{OL}	Low Level Output Voltage	$V_{CC} = 4.5V$ $I_{OL} = 8\text{ mA}$		0.35	0.5	V
I_I	Input Current @ Max. Input Voltage	$V_{CC} = 5.5V$, $V_{IH} = 7V$			0.1	mA
I_{IH}	High Level Input Current	$V_{CC} = 5.5V$, $V_{IH} = 2.7V$			20	μA
I_{IL}	Low Level Input Current	$V_{CC} = 5.5V$, $V_{IL} = 0.4V$			-0.1	mA
I_O	Output Drive Current	$V_{CC} = 5.5V$ $V_O = 2.25V$	-30		-112	mA
I_{CC}	Supply Current	$V_{CC} = 5.5V$	Outputs High	0.85	2.2	mA
			Outputs Low	2.16	4	mA

Switching Characteristics

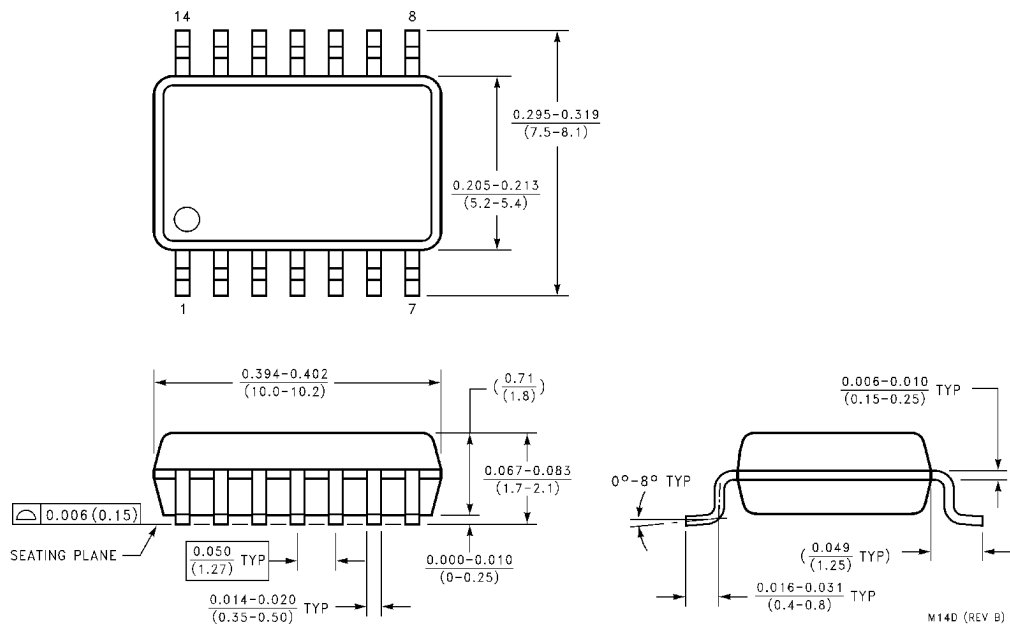
(Note 2) over recommended operating free air temperature range.

Symbol	Parameter	Conditions	DM74ALS02		Units
			Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V$ to $5.5V$ $R_L = 500\Omega$	3	12	ns
t_{PHL}	Propagation Delay Time High to Low Level Output	$C_L = 50\text{ pF}$	3	10	ns

Note 2: See Section 1 for test waveforms and output load.

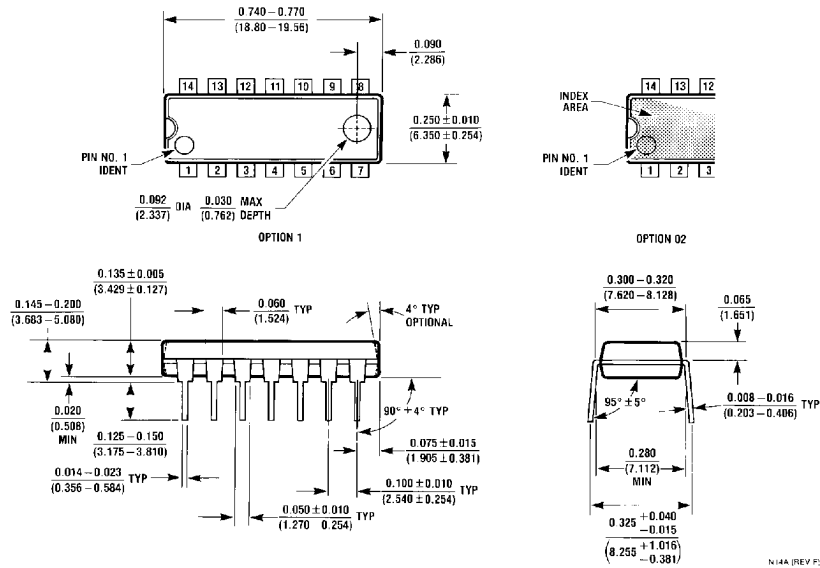
Physical Dimensions inches (millimeters) unless otherwise noted

S.O. Package (M)
Order Number DM74ALS02M
Package Number M14A



Small Outline Package (SJ)
Order Number DM74ALS02SJ
Package Number M14D

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



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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
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 Tel: 81-3-5620-6175
 Fax: 81-3-5620-6179

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