National Semiconductor

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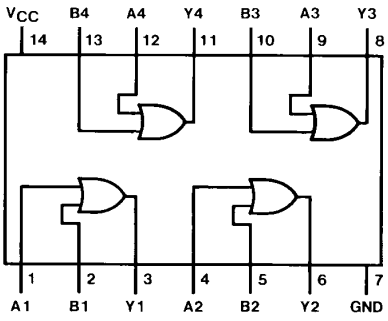
DM54S32/DM74S32 Quad 2-Input OR Gates

General Description

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

Connection Diagram

Dual-In-Line Package



TL/F/6452–1

Order Number DM54S32J, DM54S32W or DM74S32N
See NS Package Number J14A, N14A or W14B

Function Table

$$Y = A + B$$

Inputs		Output
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

H = High Logic Level
L = Low Logic Level

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Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

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

Note: *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.*

Recommended Operating Conditions

Symbol	Parameter	DM54S32			DM74S32			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			−1			−1	mA
I_{OL}	Low Level Output Current			20			20	mA
T_A	Free Air Operating Temperature	−55		125	0		70	°C

Electrical Characteristics over recommended operating free air temperature (unless otherwise noted)

Symbol	Parameter	Conditions		Min	Typ (Note 1)	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, I_{OH} = Max, V_{IH} = Min	DM54	2.5	3.4		V
			DM74	2.7	3.4		
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = Max, V_{IL} = Max				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				50	μA
I_{IL}	Low Level Input Current	V_{CC} = Max, V_I = 0.5V				−2	mA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 2)	DM54	−40		−100	mA
			DM74	−40		−100	
I_{CCH}	Supply Current with Outputs High	V_{CC} = Max			18	32	mA
I_{CCL}	Supply Current with Outputs Low	V_{CC} = Max			38	68	mA

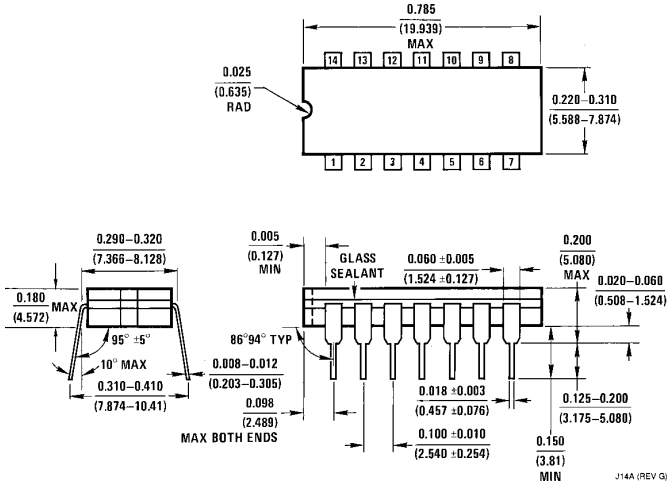
Switching Characteristics at V_{CC} = 5V and T_A = 25°C (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	R_L = 280Ω				Units
		C_L = 15 pF		C_L = 50 pF		
		Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output	2	7	2	9	ns
t_{PHL}	Propagation Delay Time High to Low Level Output	2	7	2	9	ns

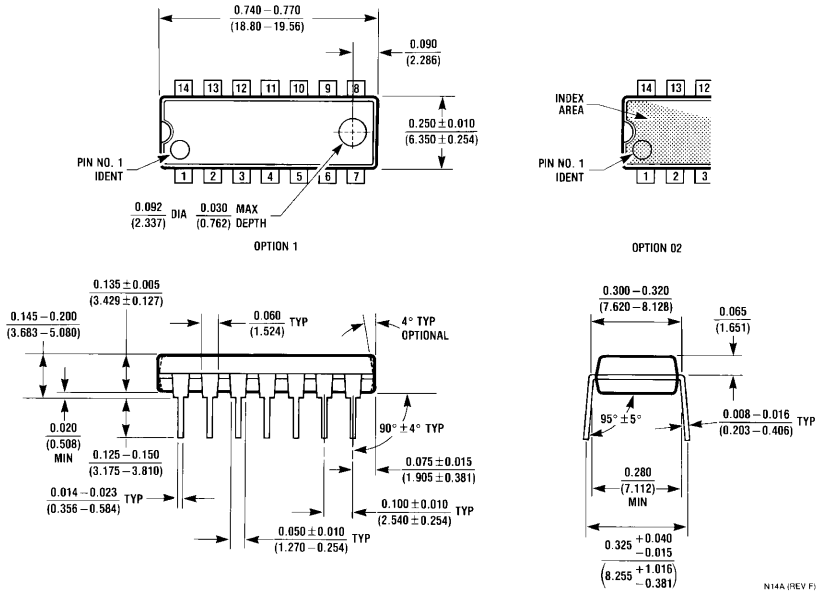
Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.

Physical Dimensions inches (millimeters)

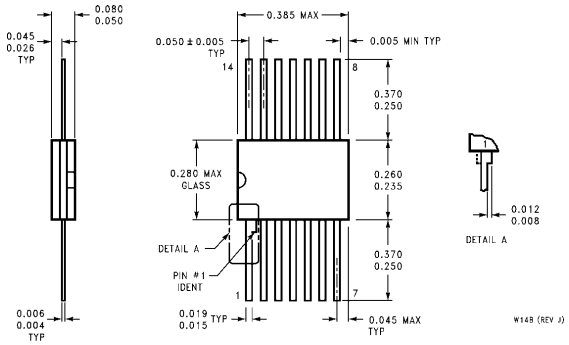


14-Lead Ceramic Dual-In-Line Package (J)
Order Number DM54S32J
NS Package Number J14A



14-Lead Molded Dual-In-Line Package (N)
Order Number DM74S32N
NS Package Number N14A

Physical Dimensions inches (millimeters) (Continued)



14-Lead Ceramic Flat Package (W)
Order Number DM54S32W
NS Package Number W14B

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